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# THE EFFECTS OF DEFENCE EXPENDITURES ON GROWTH: THE CASE OF TURKEY

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*The aim of this paper is to examine the relationship between defence expenditure and economic growth in Turkey. Definition of defence and defence expenditure, characteristics of defence expenditure, definition of economic growth and economic growth models are explained. Defence expenditure and the economic growth data of Turkey provided by the International Stockholm Peace Research Institute (SIPRI) reports between 1999-2019 is analyzed with correlation and regression tests via time series analysis. According to the results of Engle-Granger Cointegration and Toda and Yamamoto Causality tests defence expenditure and economic growth series are not correlated in the long run. Also, no two-way causality relationship between growth rate and defence expenditure is reached.*

**Key words:** Defence, Defence Expenditure, Economic Growth, Time Series Analysis.

## 1. INTRODUCTION

Following the end of the cold war, the world witnessed new developments and regional conflicts. Developments and technological awareness in every field have made it easier for countries to see the differences in industry compared to other countries. With the end of conventional wars, countries have increased their defence expenditures in order to deter their neighbors and enemy forces maintaining their superiority, which has led to an

increase in defence expenditures in the world in general.

The main purpose of this article is to find out the impact of military spending on economic growth for Turkey through some analysis. As one of the NATO countries with the highest defense spending, Turkey with its geopolitical location is very important for the future economic and political situation of the Alliance.

The International Stockholm Peace Research Institute (SIPRI) reports show defence expenditures

declared by countries, monitors their changes, and publish them as an annual report. Studies examining the effects of defence expenditures on countries' economies began with Benoit (1973). Based on the related literature review, there have been many studies covering different countries and applying different methods in various time periods. In some of these studies, it was found that defence expenditures affected the economy negatively, while in others economy was affected positively. There was a limited number of studies on the subject conducted for Turkey.

Defence economics has emerged as a relatively new field of study in the sub-disciplines of the Department of Economics. Interest in defence economy started during the Second World War, and has continued with various researches until today.

Defence spending has been one of the main components of public spending for both developed and developing countries. Countries' responsibility for defence varies by country, depending on the economic, social and political dimensions of both local and international environments. A detailed study of the link between defence spending and economic growth suggests that there may be some situations in which the generalization of

the defence-growth relationship is not reliable. Confirming the relationship between defence spending and economic growth has been an important field of study for defence economists, including Benoit's significant contribution, stating that spending can lead to growth through a variety of factors (Benoit, 1973, 1978). After the striking results of Benoit's research half century ago, the relationship between defence spending and economic growth has attracted great attention among many defence economists, and various empirical studies have been carried out to reveal a relationship between these variables.

This article examines the evolution of defence spending between the years 1999-2019 in Turkey and intends to demonstrate the quantitative research of the effects on economic development via time series analysis. Econometric models are determined and empirically tested to reveal the growth and welfare balances of military spending. A general evaluation of the findings and outputs obtained from the analysis is presented. According to the results of Cointegration and Causality tests defence expenditure and economic growth series are not correlated in the long run. Also, no two-way causality relationship between growth rate and defence expenditure is reached.

## **2. DEFENCE EXPENDITURES AND ECONOMIC GROWTH**

### **2.1. Defence expenditures**

Defence services, which are of vital importance for countries to maintain their sovereignty in the world, have been the first service provided as a sign of the independence of nations (Altun, 1998). For this reason, countries must be constantly prepared to ensure their independence to guarantee their security.

Public spending is one of the most important determinants of economic and social development and plays an important role for the sustainable growth of economies. Defence budgets cover critical parts of fiscal policies in developing and developed countries to manage the security level of a country against political and economic risks (Mangır & Kabaklarlı, 2016). Although no product is produced at the end of defence expenditures, a service is provided to all citizens equally free of charge. Because these expenses are based on deterrence, superiority, and other political concerns of the countries (Çelik, 1999).

Defence expenditures refer to the expenditures made on personnel assigned to protect the country and nation, such as soldiers, police, intelligence personnel, etc., and the expenses for purchasing goods and

services (weapons, tools, equipment, maintenance, repair, construction and R&D etc.) to be used in the defence of the country including the expenses for defensive aid and mobilization carried out abroad (Durgun & Timur, 2017).

The classification of defence expenditures has been shown in different ways in international institutions due to the differentiation of social, demographic, and economic structures of countries to ensure their own security. Defence expenditure concept of each country may differ from each other according to their national defence expenditure scope in SIPRI data. For example, a budget of an expenditure item within the Ministry of National Defence in a country may be included in the budget of the Ministry of Health in another country, and the presidency / branches within the ministries can be referred to with the same name. These changes make it difficult for countries around the world to compare their defence spending. On the other hand, the quadruple classification used by NATO is generally used in the world. This classification consists of personnel, materials, infrastructure, and other operational expenses.

World defence spending model trends took some time to form since the end of the Cold War. Concerning how the money is spent, it is observed that there is a clear separation

between former NATO members and the dismantled Warsaw Pact countries and the rest of the world (SIPRI, 2019). While the old and long-established states are both shrinking their armies in size and number they are also shifting their equipment and force structures towards mobility, flexibility. However, the main actor countries having a say in the world -especially in certain regions follow a more traditional path. Regional stability throughout the world is difficult to maintain therefore, the potential for regional arms races, prompted by longstanding and latent differences and conflicts between the constituent states is considerable. Only time will tell whether these races will enhance regional stability or precipitate open military conflict. Should it be the latter, it is highly debatable whether the traditional military powers of the Cold War period have either the forces, the capability, or the will to do anything about it (Edmonds, 1995).

There are various factors affecting defence spending in the world and the sensitivity of these factors varies according to each country. Considering the determinants of the defence budget expenditures, the geographical situation and the deterrence factors are the premier ones to focus on. Participation in military associations

and international organizations, defence spending by its neighbors, the country's administrative policy, economic and technological developments, and the country's gross national product rates are the other factors affecting defence budget spending (Değer & Smith, 1983).

## **2.2. Economic growth**

Economic growth is defined as increasing the production amount of a state in agriculture, industry and service sector that generates income for itself and increase its added value (Sümer, 2005). In numerical terms, the increase of the per capita useful incomes, gradually over the years, is called economic growth. In other words, economic growth can be evaluated as the growth of a country both in terms of quantity and quality.

Economic growth is a very important criterion in international comparisons (such as the World Bank), in the policy choices of countries and in ensuring social peace. Each country has a value that will grow its economy according to its own capabilities and geography. Based on literature, the factors determining economic growth are human and physical factors such as capital accumulation, employment, technological development, and labor force (Kayan, 2017).

Capital accumulation is the name given to the total of goods

and services produced. It can be a firm or a country producing goods and services. In addition, the use of some of the values produced by the community living in the country for goods for capital can be defined as capital accumulation. Capital accumulation, technological development and employment increase are considered to be the main determinants of economic growth.

The science of application, which covers the construction methods used, tools and equipment used in an industry branch is called technology (Britannica, 2020). Technological development is a phenomenon that started with the existence of the first human and reached today's conditions with small inventions. Technological innovations contribute to the growth of the economy as they are used in the production and service sectors at the optimum level.

Nowadays, population growth among individuals and institutions that direct the economy has become an issue which should be considered in relation to the decrease in the rate of economic growth. Because the economic development of the country is affected to the maximum by the population of that country. The decreasing young population in developed countries causes difficulties in finding labor force. In addition, the increase of the elderly

population and the inability to reach a sufficient increase in the young population puts a great economic pressure on social security systems in these countries (Polat, 2018).

One of the most important economic growth affecting factor is the human capital. It relates to education, experience, ability, know-how, injustices in the deposit economy, economic growth, employment and import and export. Human capital is defined as the sum of the knowledge and skills of the labor force (Özgüner & Özgüner, 2014). Besides, education, health, staying in the country of knowledgeable people, knowledgeable and talented people contribute to the development of human capital.

Foreign trade, especially exports, has an important contribution to the economic growth of developing countries (Demir, Kutlar, & Adem, 2005). With the increase in exports, the increase in production and service sectors in every field provides the formation of new business areas and new investment sectors. This situation makes it effective for countries to specialize more in their core skills (Şimşek, 2003). In addition, products with the largest share in exports will increase their value added return and foreign currency inflow to the country will increase. This situation will directly affect the economic

growth and increase the production capability in every field (Yiğidim & Köse, 1997).

Income distribution is the distribution of GDP in a certain period of time between individuals, households, social groups or regions in that country (Elveren, 2013). One of the evaluation criteria for a country's economic size and the prosperity of its citizens is income distribution. Even if the per capita income is high, when this income is distributed unfairly, there is no real economic income justice (Peçe, Said Ceyhan, & Akpolat, 2016). It is considered that the injustice experienced in the distribution of income reduces public expenditures such as education and health that the state has to do, and parallel to this, the development of human capital is hindered and produces negative effects on growth. Therefore, in order to ensure peace and tranquility in the country, citizens to live freely in prosperity and to reach the level of developed societies, income justice must be provided (Cural, 2009).

### **3. LITERATURE REVIEW**

The research on defence expenditures shows that the researchers have examined the effects of strategic decisions on issues such as threat and security perception. Few studies have examined these

expenditures within the framework of budget payment and savings. On the other hand, defence expenditures also have positive effects on developing the defence industry technology, developing the R&D production system, demand increasing activities, creating specialized units and sectors in training qualified personnel, and high added value product increasing (Ergin, 1991).

At first glance, defence expenditures are considered to have a negative impact on their economic effects. Because the resources allocated to defence require long-term and high budgets, it is considered that when the process is run incorrectly in defence expenditures, it will have a severe and solid impact on the country's economy. Concerning the negative effects, it appears as the use of resources in areas other than the production system and a parallel decrease in investment and consumption. As a result of the improper use of resources, the production costs of the goods produced in the private sector increase and as a consequence, the deterioration of the balance of payment appears. On the other hand, concerning the positive effects, these expenditures will contribute to R&D and technological processes and will increase the production and demand in this sector as well as will enable some of the employment in the country to

be used in the defence industry. Thus, it contributes a little to the solution of the unemployment problem. In this context, defence expenditures have effects on the economy, employment inflation, R&D and technological development resource allocation, and balance of payments.

Sweezy and Baran put forward the idea that increasing the current demand of defence spending may provide new job opportunities to unemployed citizens and may bring the current economic system out of recession. As a matter of fact, they stated in their studies that in 1937, the American people did not have sufficient purchasing power but also had a lot of debts, and after 1945 they paid all their debts and reached the level of economic welfare (Sweezy, Baran, & Magdoff, 1975).

It is under consideration that the supply-demand policy of the defence industry and security policies in the world also affect employment in this sector. In this context, it is seen that the employment opportunities created by the defence sector provide less employment opportunities compared to the employment opportunities created by other alternative investment opportunities. The US Labor Organization conducted a research on the subject and accordingly showed that the employment opportunities provided by the investments made in the

health and education sector were greater than in the defence industry (Çınar, 2002).

The main logic of the defence is to ensure the welfare and survival of the people living in the country and to protect the national sovereignty of the country. Many concepts such as the geopolitical position of countries, population, conflicts, foreign policy, and defence expenditures of neighboring countries are effective in determining the level of defence expenditures. Although the main goal of defence spending is to ensure the security of the country, it is an economic fact that these expenditures have economic effects. For this purpose, it is evaluated and discussed that defence expenditures influence inflation (Karakurt, Şentürk, & Şahingöz, 2018).

Boulding (1979) divided the US economy into four periods following the end of the First World War in his research named "The War Industry". He stated that in the 1930s, the time of the Great Depression, defence expenditures were enough to affect inflation rate. It was stated that in the second period, almost all of the budget deficits and inflation of this period were related to the war industry and the Second World War. The Korean War, called "Long Boom" in the third period, accelerated both the budget deficit and the inflation rate compared to the

Second World War. It was also stated that the budget deficits after the Korean War were not closely related to defence spending, except for the Vietnam War. These deficits were reported to be less than during the Korean War period, but qualitatively it can be judged to have a much greater impact. Because the inflation rate increased during this period. It was stated that the relationship changed in the fourth period, in the 1970s. It has been found that defence spending declining steadily as a proportion of Gross Domestic Product (GDP). It is considered that the reason for the increase in inflation in this period cannot be attributed to budget deficits and defence expenditures (Boulding, 1979).

There are some national studies having different results done for Turkey. Mercan (2014) did a study using panel data analysis covering 1990-2012 period. He concluded that the crisis affected economic growth negatively; on the other hand public expenditures, exports and private consumption expenditures increased economic growth positively (Mercan, 2014).

Göçer (2013) used ARDL boundary test in his study covering the period of 1992-2012 years. He found out that exports and direct foreign investments affected the economic growth rate positively (Göçer, 2013).

Günana (2004) stated in his study that both defence expenditures and inflation were very complex phenomena. Based on his study, he determined that there was a direct bidirectional causality relationship between these two concepts (Günana, 2004). He also recommended that other factors should be taken into account in order to reach more detailed results.

Various studies have been conducted around the world on the impact of defence spending on inflation. Although this effect varies from country to country, it is evaluated that it may change with the effect of the method applied and the current economic events of the period.

It is under consideration that defence expenditures have a positive effect on R&D (Research and Development) and technological development in general, but this is used more in the defence sector. It is claimed that military spending contributes positively to economic growth. According to this idea, it is seen that the main company establishes independent subsidiary companies (spin-offs) for innovations arising from military activities, especially military research, and technical development (Cappelen, Gleditsch, & Bjerkholt, 1984).

Most of the large companies in the United States grow through defence industry-related tenders

owned by the Ministry of Defence. When the effect of defence expenditures on sectoral growth and intensity of economic power is analyzed, it is seen that defence tenders are undertaken by large companies. Post-war economy, rapidly growing industries of aviation and space electronics communications developed through R&D and defence spending in final production (Reich, 1972).

The most contributing effect of defence industry investments is that it sheds light on new investors and activates idle and unused resources. The degree of benefiting from these investments is directly related to how effectively and efficiently these idle resources are used (Kiziroğlu, 2007). If we evaluate the allocation of resources of Turkey, it is assessed that it is possible to see positive results. Information skills and infrastructures of some industrial systems, which have not been used until today, can be used at the most effective level. In addition, it has contributed to the training of expert personnel in the defence industry. Local participation in defence industry projects has been achieved at a maximum rate. The return of the resources used in the investments made in the defence industry in accordance with the "Off-Set" agreements are also guaranteed (Kiziroğlu, 2007).

The expenditures made by developing countries to meet the defence needs are more dependent on foreign sources compared to other public expenditures such as education and health. This situation creates a budget deficit and negatively affects the balance of payments (Chan, 1985).

Sezgin (2004) using 1979-2000 period data of defence spending made a study of the effects of Turkey's arms imports and external debt data. The results show that there is a negative relationship between foreign debt and defence spending in the long run, but when arms imports and equipment expenditures are considered separately, they become insignificant as a coefficient. Short-term external debt is directly related to Turkey's arms imports. Turkey's foreign debt is one of the results for defence expenditures of Turkey (Sezgin, 2004).

### **3.1. Theoretical approaches related to defence spending**

Factors affecting economic growth have been investigated in many studies. Different conceptual and methodological perspectives have been used, and these studies emphasize different sets of explanatory parameters and provide information about the sources of economic growth. There are basically two theoretical approaches regarding defence expenditures. These are

Military Keynesian approach and Neoclassical approach theory.

The term military Keynesianism refers to economic policies in which the government allocates a large amount of budget to defence spending to stimulate economic growth (Custers, 2010). It is similar to the Keynesian model of Economy introduced by the British economist John Maynard Keynes. According to Keynes Theory, consumer demand is one of the conditions of economic growth. If an economy is expanding and a large group of workers are employed, households will have more income through the working sector and then consumption expenditure will increase, but if a contracting economy and a large group of workers become unemployed, household income will fall and consumption expenditure will decrease. Keynes Theory supports expansionary fiscal policy. The government spends infrastructure training and unemployment benefits as the main vehicle for defence. In addition, it is seen that extreme Keynesian policies increase inflation (Picatinny Arsenal, 2017) (Sanyang, 2019).

In a study based on Keynesian theory, the structure of 50 developing and underdeveloped countries was examined and the spin-off effect was mentioned, which defends that the technological structure of the

country can be improved with R&D activities. In less developed countries, security forces are generally the most modern organizations in the country. Security forces can accelerate the development of the defence industry through research and development activities (Deger, 1986).

Critics have also been criticized for this theory for the excessive share allocated to defence spending and insufficient spending on other public areas. However, there is an opinion that if enough shares are allocated to other public expenditures, sufficient employment can be created. In addition, the extra defence spending in peacetime is thought to lead the country to the brink of war, and this situation is thought to encourage ideas such as militarism and nationalism (Mat, 2020).

The other theory is the neoclassical approach theory. Contrary to the “Military Keynesian Theory”, this theory is an approach based on the negative impact of security-related expenditures (Dunne & Nikolaidou, 2005). The neo-classical growth theory states that a stable economic growth can be achieved with the proper use of the three driving forces. These forces are considered to be labor force, capital, and technological opportunities. The theory states that a state of equilibrium can be achieved by varying the amount of labor and capital in the production

function. Moreover, it is stated that economic growth cannot be achieved without advances in technology, so technological changes have a significant impact on the economy.

Three important predictions have been made according to the neo-classical growth theory. First, increasing capital over labor brings economic growth because giving more capital can make people more productive. Second, poor countries with less capital per capita in terms of faster growth tend to grow faster than rich countries with sufficient capital because every investment in capital yields higher returns. Third, because the return on capital decreases, economies reach a steady state where any increase in capital no longer creates economic growth. According to the theory of Robert Solow and Trevor Swan, a steady state is a point where investment equals depreciation and may arise during the growth period of the economy (Swan, 1956) (Solow, 1956).

Within the framework of these theoretical approaches, the perspectives that defence expenditures have positive and negative effects have been developed by researchers.

A group of academics argue that defence spending promotes economic growth (Benoit, 1973, 1978) (DeRouen, 1994) (Ateşoğlu & Mueller, 1990; Biswas, 2019). As an organizational force, helping the

modernization process, the Armed Forces contributes to technological progress. It also establishes special organizations that encourage R&D, which creates new skills when insufficient resources are available, and creates demand for industries that are in trouble due to underemployment. That is, defence spending increases aggregate demand and purchasing power, and also produces positive externalities. Defence spending creates new jobs and new contracts that increase the purchasing power of workers. Increased purchasing power will lead to more demand. Defence spending helps economic growth through the process of increasing total demand and employment (DeGrasse, 1983).

Another group of academics argues that defence spending has a negative impact on economic growth, as it puts too much burden on the general budget. Military spending had a small positive impact on growth with modernization effects, but on the savings side, it had a larger negative impact. As the latter outweighs the first, the net effect on growth rate becomes negative (Değer & Smith, 1983).

Weapons and investment trading can be explained by two different types of business transactions. The first type of exchange is a budget exchange (Cappelen et al., 1984). Generally, government spending is financed through taxes or printing

new money. Since defence spending is government spending, each increase in defence spending implies either a heavier tax burden, a larger government budget deficit, or both (Chan, 1987)(Chan, 1985, 1987). A country's capacity to provide capital resources for future productive capacities depends on savings and investment. Because it is thought that the increase in defence expenditures will decrease the available funds for the planned investment.

The second type of barter occurs because the defence sector takes a significant share of capital stock and natural resources (Ram, 2018). For example, the defence industry owns most of the capital equipment structures and stocks. Most of these capital goods could be used for productive investment. Moreover, the Armed Forces use resources that could be used in other ways for military purposes such as training. In addition, military spending tends to demand more imports than other public spending in developing countries and thus contribute more negatively to the budget. In the long run, they will increase domestic inflation or problems in the balance of payments, which will reduce the competitiveness of the economy in international trade.

#### **4. METHOD**

In this chapter the relationship between Turkey's defence spending

and economic growth in the period of 1999-2019 is explained by time series analysis. By applying the 'Extended Dickey Fuller (ADF) Unit Root, Phillips Perron (PP) Unit Root, Johansen Cointegration, Engle Granger and Toda and Yamamoto Causality' tests, the 10<sup>th</sup> version of EViews program is used to investigate the relationship as a method of the study.

The aim of the research is how the defence spending has a relationship with the economic growth rates in Turkey. In the research two variables - Defence expenditures and Growth Rate- are analyzed with time series analysis.

Turkey's defence spending between 1999-2019 years and the growth rate were analyzed in the study. Defence expenditure data of Turkey was taken from Stockholm International Peace Institute (SIPRI), growth rate data was taken from World Bank Indicator.

Descriptive information will be displayed with the abbreviations written below.

Defence Expenditures: LNSAV  
Economic Growth: LGSYH\_BO

The variables used in the E-views program are not linear in level values and generally become linear when their logarithm is taken (Göktaş, 2015). For this reason, the logarithmic values of the series are included in the analysis instead of the level values.

**Table 1.** Descriptive Statistics

|               | LGSYH_BO | LNSAV |
|---------------|----------|-------|
| Observation   | 21       | 21    |
| Mean          | 11.75    | 4.09  |
| Maximum       | 11.98    | 4.31  |
| Minimum       | 11.30    | 4.02  |
| St. Deviation | 0.22     | 0.08  |
| Skewness      | -0.85    | 1.60  |
| Kurtosis      | 2.20     | 4.69  |
| Jarque-Bera   | 3.10     | 11.46 |
| Probability   | 0.21     | 0.01  |

In Table 1, whether the series is normally distributed or not it is evaluated according to Skewness, Kurtosis and Jarque-Bera statistics. When the skewness coefficients are interpreted, the value of skewness equal to zero indicates that the series has a normal distribution, while the skewness value greater than zero indicates that the series is positively skewed and less than zero indicates that the series is negatively skewed (Kapusuzoğlu & Karan, 2010). Considering the skewness values, the growth rate (LGSYH\_BO) is skewed negatively because the skewness value is (-0.85), and the defence expenditure (LNSAV) variable is positively skewed because it is 1.60 greater than zero. If the kurtosis value of the series is greater than 3, it indicates that the series is sharp and less than 3 indicates that the series is flattened. Since the kurtosis coefficient is greater than zero (2.20

and 4.69, respectively), the growth rate is flattened, and the defence expenditure variable is sharp.

**4.1. Unit root test and analysis**

Before interpreting the causality relationship between variables, it is necessary to test the stationarities of the variables in the series in order to make more precise predictions.

The hypotheses established in the stationarity analysis determined using the ADF and PP test is as follows.

$H_0$ : Time series are not stationary,

$H_1$ : Time series are stationary.

**Table 2.** ADF and PP Unit Root Test Level

| Level             | Variable | ADF       | PP        |
|-------------------|----------|-----------|-----------|
|                   |          |           |           |
| Intercept         | LGSYH_BO | -1.54(0)  | -1.54(0)  |
|                   |          | p/0.4934  | p/0.4934  |
|                   | LNSAV    | 1.38(0)   | 1.077(2)  |
|                   |          | p/0.9981  | p/0.9957  |
| Intercept + Trend | LGSYH_BO | -0.495(0) | -0.495(0) |
|                   |          | p/0.9746  | p/0.9746  |
|                   | LNSAV    | -0.017(0) | 0.375(1)  |
|                   |          | p/0.9927  | p/0.9976  |

Values of \*, \*\* and \*\*\* show significance at 1%, 5% and 10% levels, respectively.

According to Table 2, it is determined that the variables are

not stationary in both ADF and PP tests in the model with constant level values. Both variables are unit rooted. Similar results were obtained in the fixed and trended models of the same variables. It is determined that the variables are not stationary in ADF and PP tests, that is, they are unit rooted.

**Table 3.** ADF and PP Unit Root Test 1<sup>st</sup> Difference

|                   |                       | Variable                   | ADF                     | PP                       |
|-------------------|-----------------------|----------------------------|-------------------------|--------------------------|
|                   |                       | 1 <sup>st</sup> Difference | Intercept               | LGSYH_BO                 |
| LNSAV             | -1,147(1)<br>p/0.6729 |                            |                         | 3.189(2)<br>p/0.037**    |
| Intercept + Trend | LGSYH_BO              |                            | -3.678(0)<br>p/0.0496** | -3.635(4)<br>p/0.0536*** |
|                   | LNSAV                 |                            | -5.692(0)<br>p/0.0011*  | -5.692(0)<br>p/0.0011*** |

The ADF and PP tests are repeated by taking the difference from the first order due to the fact that the variables are unit rooted, and the ADF test with the Growth Rate (LGSYH\_BO) constant is unit rooted, and it is stable at the level of 5% in the PP test. In the fixed and trend model, it is found to be stable at the level of 5% in the ADF test and at the level of 10% in the PP

test. Defence Expenditures (LNSAV) variable is found to be stable at the level of 5% in the PP test in the fixed model, while it is stable at the level of 1% in the ADF and PP tests in the fixed and trend models.

#### 4.2. Engle-Granger cointegration test and analysis

One of the phenomena encountered in time series is that non-stationary data in tests using variables cause spurious regression problems. There are two ways to prevent this situation. The first is to test the series by making them static and the most commonly used method of stationarization is to take the difference of variables. However, this destroys the long-term properties of the manipulated variables. (Kızılkaya, 2018). In order for the analysis of tests using non-stationary variables to be meaningful and to give real results, there should be a cointegration relationship between these variables.

While Engle-Granger cointegration test investigates the long-term relationship between two variables, it is assumed that all variables used in the model are stationary in the same order. In other words, after applying unit root tests for each variable, it is necessary to find out that they are stationary in the same order. Otherwise, Engle-Granger approximation cannot be used if they are stationary to different degrees.

The hypotheses established in the analysis created using the Engle-Granger cointegration test are as follows.

$H_0$ : There is no long-term cointegration relationship between variables

$H_1$ : There is a long-term cointegration relationship between variables.

**Table 4.** Engle-Granger Cointegration Test Results

| Dependent Variable    | LGSYH_BO  | LNSAV    |
|-----------------------|-----------|----------|
| Tau/t Statistic Value | -1.587618 | 0.792822 |
| Possibility           | 0.7299    | 0.9991   |
| Z Statistic Value     | -3.292889 | 1.924673 |
| Possibility           | 0.8512    | 0.9991   |

According to Table 4, Engle-Granger cointegration test is conducted among variables. According to the result of this test, the  $H_0$  hypothesis is accepted because the probability value of both variables is greater than 0.05. In other words, it is concluded that there is no long-term co-integration relationship between variables.

**4.3. Toda and Yamamoto causality test and analysis**

If there is a time-dependent delayed relationship between the two variables, one of the tests used to statistically determine the

direction of the causality of the relationship is the Toda Yamamoto causality test. Although there are various differences of opinion in the conceptual definition of causation, it is agreed that this concept establishes a relationship between cause and effect. Causality analysis is generally based on the following assumption: the future cannot be the cause of the past. Precise causality is possible only if the past causes the present or the future. The cause always happens before the effect. This requires a time delay between cause and effect.

The hypotheses established in the analysis created using the Toda and Yamamoto causality test are as follows.

$H_0$ : There is no unidirectional relationship of Toda and Yamamoto causality from defence spending to growth rates.

$H_1$ : There is a one-way relationship of Toda and Yamamoto causality from defence spending to growth rates.

**Table 5.** Toda Yamamoto Causality Test Results

| Test Statistic | Value     | df | Probability |
|----------------|-----------|----|-------------|
| Chi-square     | 3.764.201 | 2  | 0.1523      |

According to the test results, the probability value is found to be 0.1523. Since this probability value is greater than 1%, 5% and 10% significance values,  $H_1$  hypothesis is rejected and  $H_0$  hypothesis “There

is no one-way Toda and Yamamoto causality relationship from defence expenditures to growth rates” has been accepted.

## 5. CONCLUSIONS

The relationship between defence spending and economic growth has always been a debated topic in the economics literature. The effect of defence expenditures on economic growth is examined by Toda-Yamamoto causality analysis and Engle-Granger cointegration analysis for Turkish economic data. As a result of the study, it is concluded that there is no relationship between the relevant variables in the long term and there is no causality relationship in the short term.

The reason for the absence of a relationship or causality between variables is due to the reason that other economic indicators are ignored. In order to overcome the deficiency of the theoretical model, which is the most important limitation of the study, researches that include other economic variables other than growth may be developed. As a result of this study, it is thought that other economic variables could have an impact on economic growth, and conducting studies covering more countries and a longer period, including other variables, will be useful in terms of testing the consistency of the results of this study.

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# ANALYSIS OF DEFENCE, HEALTH, AND EDUCATION EXPENDITURES IN EUROPE'S COUNTRIES

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*Nowadays the amount of money that a state is allocating for the defense is very important, along with the education and health. In this paper we have analyzed, with the help of the data provided by the United Nations Human Development Report 2019 and the Global Firepower 2020 what is the situation of these expenses in the countries in Europe.*

**Key words:** HDI rank; GDP; military expenses; health expenses; education expenses; ratio; trends.

## 1. INTRODUCTION

The United Nations Organization is publishing regularly a Human Development Report for almost all the countries worldwide.

The main indicator for ranking the countries is the Human Development Index – HDI. It is a composite indicator comprising complex calculations and taking into consideration as main dimensions the Life expectancy index, the Education index, and the GNI index (Gross National Income).

Each year the HDR has a different theme and in 2019 the military expenses were also presented.

## 2. STATISTICAL ANALYSIS

We have chosen to present in this paper the situation in the

European countries. We synthesized the data for 5 different indicators: the percentage of GDP allocated for military expenditure (2010-2018); the Ratio of education and health expenditure to military expenditure (2010-2016); Military Strength Rank 2020, Government expenditure on education as percentage of GDP (2013-2018); Current health expenditure as percentage of GDP (2016).

We have eliminated, of course, the countries for which we didn't have all the data for all the indicators – Andorra, Bosnia and Herzegovina, Cyprus, Greece, Iceland, Liechtenstein, Luxembourg, Malta, Montenegro, and North Macedonia. In order to have a more compact presentation of the data we have used the countries codes. We ended up with 36 European countries to present.

### 2.1. HDI ranks

The first indicator presented in each of the HDR is the Human Development Index (HDI). The countries in Europe are placed at “very high human development” – Norway (NO), Switzerland (CH), Ireland (IE), Germany (DE), Sweden (SE), Netherlands (NL), Denmark (DK), Finland (FI), United Kingdom (UK), Belgium (BE), Austria (AT), Slovenia (SI), Spain (ES), Czechia (CZ), France (FR), Italy (IT), Estonia (EE), Poland (PL), Lithuania (LT), Slovakia (SK), Latvia (LV), Portugal (PT), Hungary (HU), Croatia (HR), Russian Federation (RU), Belarus

(BY), Bulgaria (BG), Romania (RO), Turkey (TR), and “high human development” – Serbia (RS), Albania (AL), Georgia (GE), Armenia (AM), Azerbaijan (AZ), Ukraine (UA), Republic of Moldova (MD). The exact HDI Rank for each country mentioned above is presented in the next 4 tables.

For a simpler presentation of the different groups of countries we have split them in 4 tables for each one of the indicators. We will name them: G1, G2, G3, and G4.

We will keep this order of the countries for all the tables in this paper.

**Table 1** HDI Ranks for G1

| HDI Ranks |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|
| NO        | CH | IE | DE | SE | NL | DK | FI | UK |
| 1         | 2  | 3  | 4  | 8  | 10 | 11 | 12 | 15 |

**Table 2** HDI Ranks for G2

| HDI Ranks |    |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|----|
| BE        | AT | SI | ES | CZ | FR | IT | EE | PL | LT |
| 17        | 20 | 24 | 25 | 26 | 26 | 29 | 30 | 32 | 34 |

**Table 3** HDI Ranks for G3

| HDI Ranks |    |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|----|
| SK        | LV | PT | HU | HR | RU | BY | BG | RO | TR |
| 36        | 39 | 40 | 43 | 46 | 49 | 50 | 52 | 52 | 59 |

**Table 4** HDI Ranks for G4

| HDI Ranks |    |    |    |    |    |     |
|-----------|----|----|----|----|----|-----|
| RS        | AL | GE | AM | AZ | UA | MD  |
| 63        | 69 | 70 | 81 | 87 | 88 | 107 |

As you can observe, Romania is ranking 52, in the group of the countries with “very high human development”.

**2.2. Military expenditure**

We have made a ranking of the 36 European countries mentioned above according to the percentage of GDP allocated for Military expenditure. The results are in the 4 tables below.

**2.3. Ratio of education and health expenditure to military expenditure**

The next ranking of the European countries was the one according to education and health compared to military expenses.

**Table 5** Military expenditure ranks for G1

| Military expenditure ranks |    |    |    |    |    |    |    |    |
|----------------------------|----|----|----|----|----|----|----|----|
| NO                         | CH | IE | DE | SE | NL | DK | FI | UK |
| 17                         | 34 | 36 | 24 | 30 | 23 | 26 | 19 | 14 |

**Table 6** Military expenditure ranks for G2

| Military expenditure ranks |    |    |    |    |    |    |    |    |    |
|----------------------------|----|----|----|----|----|----|----|----|----|
| BE                         | AT | SI | ES | CZ | FR | IT | EE | PL | LT |
| 32                         | 33 | 31 | 21 | 28 | 6  | 20 | 7  | 9  | 10 |

**Table 7** Military expenditure ranks for G3

| Military expenditure ranks |    |    |    |    |    |    |    |    |    |
|----------------------------|----|----|----|----|----|----|----|----|----|
| SK                         | LV | PT | HU | HR | RU | BY | BG | RO | TR |
| 25                         | 8  | 15 | 29 | 18 | 2  | 22 | 16 | 12 | 5  |

**Table 8** Military expenditure ranks for G4

| Military expenditure ranks |    |    |    |    |    |    |
|----------------------------|----|----|----|----|----|----|
| RS                         | AL | GE | AM | AZ | UA | MD |
| 13                         | 27 | 11 | 1  | 4  | 3  | 35 |

Romania is on the 12<sup>th</sup> place out of 36 with 1.9% of GDP. The first 3 countries in this ranking are Armenia (4.8%), Russian Federation (3.9%), and Ukraine and Azerbaijan (3.8%). The last ones – with only 0.3% are Moldova and Ireland.

This Ratio was calculated by the statistical experts as a composite index, taking into consideration also external variables. You can see the results of our personal ranking in the next 4 tables.

**Table 9** Ratio of education and health expenditure to military expenditure for G1

| Ratio h+e / m ranks |    |    |    |    |    |    |    |    |
|---------------------|----|----|----|----|----|----|----|----|
| NO                  | CH | IE | DE | SE | NL | DK | FI | UK |
| 24                  | 34 | 35 | 26 | 31 | 28 | 30 | 23 | 15 |

**Table 10** Ratio of education and health expenditure to military expenditure for G2

| Ratio h+e / m ranks |    |    |    |    |    |    |    |    |    |
|---------------------|----|----|----|----|----|----|----|----|----|
| BE                  | AT | SI | ES | CZ | FR | IT | EE | PL | LT |
| 32                  | 33 | 29 | 21 | 27 | 13 | 22 | 9  | 6  | 17 |

**Table 11** Ratio of education and health expenditure to military expenditure for G3

| Ratio h+e / m ranks |    |    |    |    |    |    |    |    |    |
|---------------------|----|----|----|----|----|----|----|----|----|
| SK                  | LV | PT | HU | HR | RU | BY | BG | RO | TR |
| 19                  | 20 | 14 | 25 | 10 | 1  | 16 | 12 | 7  | 5  |

**Table 12** Ratio of education and health expenditure to military expenditure for G4

| Ratio h+e / m ranks |    |    |    |    |    |    |
|---------------------|----|----|----|----|----|----|
| RS                  | AL | GE | AM | AZ | UA | MD |
| 11                  | 18 | 8  | 3  | 2  | 4  | 36 |

Romania is on the 7<sup>th</sup> place in this ranking, with a Ratio of 5.5. In the first 3 places are the Russian Federation with 1.9, Azerbaijan with 2.6, and Armenia with 3.9. Austria (22.6), Switzerland (25.5), Ireland (32.7), and Moldova (35.8) are the countries that are allocating much more money on education and health compared with the military sector.

#### 2.4. Military Strength Rank

The fourth ranking that we have calculated in this paper is the one arranging the countries in accordance with their Military Strength Rank that took into consideration over 50 individual factors to determine a given nation's PowerIndex. The results are displayed in the next 4 tables.

**Table 13 Military Strength Rank for G1**

| MSR |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|
| NO  | CH | IE | DE | SE | NL | DK | FI | UK |
| 11  | 10 | 30 | 6  | 12 | 14 | 16 | 20 | 3  |

**Table 14 Military Strength Rank for G2**

| MSR |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|
| BE  | AT | SI | ES | CZ | FR | IT | EE | PL | LT |
| 27  | 25 | 31 | 7  | 13 | 2  | 5  | 36 | 8  | 28 |

**Table 15 Military Strength Rank for G3**

| MSR |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|
| SK  | LV | PT | HU | HR | RU | BY | BG | RO | TR |
| 19  | 32 | 21 | 18 | 26 | 1  | 17 | 22 | 15 | 4  |

**Table 16 Military Strength Rank for G4**

| MSR |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|
| RS  | AL | GE | AM | AZ | UA | MD |
| 24  | 35 | 29 | 33 | 23 | 9  | 34 |

Romania has the 15<sup>th</sup> place in this Ranking. The first 3 countries in Europe are Russian Federation (2<sup>nd</sup> in the World), France (7<sup>th</sup> in the World), and United Kingdom (8<sup>th</sup> in the World).

### **2.5. Government expenditure on education**

The fifth ranking presented here refers to government expenditure on education, as percent of GDP. The Scandinavian

countries – Denmark, Norway, Sweden, and Finland have more than 7%. Romania is among the last 3 countries in Europe, with only 3.1%, alongside with

Azerbaijan (2.9%), and Armenia (2.8%). The exact ranking for all the 36 countries is presented in the 4 tables below.

**Table 17** Government expenditure on education ranks for G1

| Government expenditure on education ranks |    |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|----|
| NO  | CH | IE | DE | SE | NL | DK | FI | UK |
| 2   | 14 | 33 | 20 | 3  | 11 | 1  | 4  | 8  |

**Table 18** Government expenditure on education ranks for G2

| Government expenditure on education ranks |    |    |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|----|----|
| BE  | AT | SI | ES | CZ | FR | IT | EE | PL | LT |
| 6   | 10 | 16 | 25 | 7  | 9  | 27 | 13 | 19 | 26 |

**Table 19** Government expenditure on education ranks for G3

| Government expenditure on education ranks |    |    |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|----|----|
| SK  | LV | PT | HU | HR | RU | BY | BG | RO | TR |
| 21  | 12 | 17 | 22 | 23 | 32 | 18 | 28 | 34 | 24 |

**Table 20** Government expenditure on education ranks for G4

| Government expenditure on education ranks |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| RS  | AL | GE | AM | AZ | UA | MD |
| 30  | 29 | 31 | 36 | 35 | 15 | 5  |

## 2.6. Current health expenditure

The last indicator that we have analyzed is the current health expenditure as percent of GDP in the European countries. This category is similar with the one referring to education. Here the first 3 countries are: Switzerland (12.2%), France (11.5%), and

Germany (11.1%). Also Sweden, Norway, Austria, Netherlands, Denmark, and Belgium have more than 10%.

Romania again, unfortunately, is among the last 2 countries (with 5%). Compared to this, Bulgaria has allocated 8.2% for health expenditures, and Moldova 9%!

**Table 21** Current health expenditure ranks for G1

| Current health expenditure ranks |    |    |    |    |    |    |    |    |
|----------------------------------|----|----|----|----|----|----|----|----|
| NO                               | CH | IE | DE | SE | NL | DK | FI | UK |
| 5                                | 1  | 21 | 3  | 4  | 7  | 8  | 12 | 11 |

**Table 22** Current health expenditure ranks for G2

| Current health expenditure ranks |    |    |    |    |    |    |    |    |    |
|----------------------------------|----|----|----|----|----|----|----|----|----|
| BE                               | AT | SI | ES | CZ | FR | IT | EE | PL | LT |
| 9                                | 6  | 18 | 16 | 24 | 2  | 17 | 29 | 31 | 30 |

**Table 23** Current health expenditure ranks for G3

| Current health expenditure ranks |    |    |    |    |    |    |    |    |    |
|----------------------------------|----|----|----|----|----|----|----|----|----|
| SK                               | LV | PT | HU | HR | RU | BY | BG | RO | TR |
| 25                               | 33 | 15 | 22 | 23 | 34 | 32 | 20 | 35 | 36 |

**Table 24** Current health expenditure ranks for G4

| Current health expenditure ranks |    |    |    |    |    |    |
|----------------------------------|----|----|----|----|----|----|
| RS                               | AL | GE | AM | AZ | UA | MD |
| 13                               | 28 | 19 | 10 | 26 | 27 | 15 |

### 3. CONCLUSIONS

Military expenditure is just a small part of all the elements involved in the process of building a strong defense of a nation. Along with the equipment and the infrastructure, the investment in the personnel is of paramount importance. For that we need that the sectors of education and health be also very well-funded.

### ENDNOTES

**Military expenditures:** All current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities.

**Ratio of education and health expenditure to military expenditure:** Sum of government

expenditure on education and health divided by military expenditure

**Government expenditure on education:** Current, capital and transfer spending on education, expressed as a percentage of GDP.

**Current health expenditure:** Spending on healthcare goods and services, expressed as a percentage of GDP. It excludes capital health expenditures such as buildings, machinery, information technology and stocks of vaccines for emergency or outbreaks

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# CHALLENGES OF DEFINING A COUNTRY'S MILITARY POWER

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*The concept of military power seems straightforward, but it is a lot more complex than it appears at first glance, which has direct implications on defense decisions and analyses. A crucial issue in building a country's armed forces and deciding on its appropriate size/strength derives from the fact that there is only one situation in which a country's military power can be precisely assessed, that is in time of military conflict. Excluding this situation, the best military planners and decision makers can do in peacetime is try to estimate the required and actual strength of a country's military, an attempt not devoid of challenges. The focus of this paper is to address a few of the issues and challenges encountered in defining the concept of a country's military power.*

**Key words:** *military, power, challenges.*

## 1. INTRODUCTION

The concept of national security and the duty of the armed forces to provide national defense is found in many strategic documents, in most of the countries around the world. Strategies are useful as guiding documents, but when it comes to the implementation of the goals and objectives set into them and translating national defense into measurable indicators, things get complicated. Decisions such as building and maintaining an "appropriate level" of defense forces, estimating the "real military strength" of a country against a potential

enemy, making financial decisions regarding the "appropriate level of budgetary allocations for defense" all depend on the clarification of one concept, namely what exactly is military power.

## 2. CHALLENGES IN DEFINING THE CONCEPT OF MILITARY POWER

A crucial issue in building a country's armed forces and deciding on its appropriate size/strength derives from the fact that there is only one situation in which a country's military power can be precisely

assessed, with all its inter-related components (from personnel and its morale to the number of available equipment and its maintenance, the level of technological sophistication, the quality of strategies, doctrines, operational concepts, the leadership, the political will to use the forces in a timely and appropriate manner, to name but a few). This situation refers to a less-than desirable occurrence, meaning the event of a military conflict, in which a country's military is used against an enemy. In this situation, the true size of a country's military strength is starkly revealed, but at the same time most countries and military planners do not desire such a harsh acid-test.

Excluding the situation or armed conflict, the best military planners and decision makers can do in peacetime is try to *estimate* the required and actual strength of a country's military. A first crucial step in this respect is the realization that no country can assess its military power in a vacuum, that even in the age of capabilities based planning and comprehensive approaches, Andy Marshall's words remain true: "estimating the military power... can only be done relative to that of another country, or a set of countries viewed as an alliance" [1].

The shift from the threat based planning towards capabilities based planning from 2001 onward (first in the US, then NATO and other countries)

marked a change from the traditional threat based approach, considering that focusing on a specific enemy in order to build a country's defense is obsolete. In the words of Secretary of Defense Donald Rumsfeld, "the capabilities-based model focuses more on how an adversary might fight rather than specifically whom the adversary might be or where a war might occur...the US States must identify the capabilities required to deter and defeat adversaries who will rely on surprise, deception, and asymmetric warfare to achieve their objectives" [2].

This approach was not without criticism, as other experts consider also the limitations of capabilities based planning, that seems to refer to a "nameless, faceless adversary who may be technologically advanced... but that adversary has no connections to any geography, culture, alliance structure or fighting methodology. That adversary has no objectives, no systemic vulnerabilities, and no preferred way of fighting. Instead, the enemy is a collection of weapons systems that we will fight with a (presumably) more advanced set of similar systems, in a symmetrical widget-on-widget battlefield on a flat, featureless Earth." [3]

The concept of capabilities based planning (as was initially understood) cannot be separated from the context it appeared in, namely the attacks on the Twin

Towers in New York in 9/11/2001 and the need for the US to shift from an approach to develop its military power still tributary to the Cold War philosophy to a world where the enemy could be a state or non-state actor. Since then, the concept of CBP has evolved and matured into the current concept, in which capabilities become less theoretical and reflexive and do not exclude the comparison with a distinct foe. Individual countries as potential foes (more often Russia, China, or North Korea) are once again mentioned in security and defense strategies of various countries [4] or alliances [5] and reputable military experts once again focus their analyses on cross-country comparisons of military power [6]. United States Department of Defense, the originator of the CBP approach, "is in the opening stages of "redesigning the force" around the challenges of Russia and China" [7].

The complex consideration regarding what really means military power have prompted military planners and experts to explore better complex methods of determining the level of military strength. Still, political decision makers often tend to favor simpler ways, and they often prefer using *quantitative indicators*. For instance, the use of 2% of GDP allocated for defense is often used lately as a substitute of indicator of military strength [8], especially by the Trump administration in its

attempt to pressure the European NATO allies to increase their military expenditures. Though convenient and easy to use, this type of indicator does not present an accurate picture of the real capabilities / military strength of a country and not even of the overall level of defense expenditures, as that depends on the economic strength and the size of the Gross Domestic Product of each individual country. Neither does the use of the 2% of GDP for defense indicator present an accurate picture of the overall military strength of an alliance, which is far from being the result of an arithmetic sum of the member's individual strength and capabilities. The level of expenditures on equipment as a share of total defense expenditure (another indicator favored by NATO) doesn't present either the entire picture of how effective a military force or an alliance really is. A specific country may spend a lot of money on a system that may serve its needs, but not be fully interoperable with other member's weapon systems (the example of Turkey's acquisition of the Russian S400 air defense systems is relevant). Overall, an alliance's military power is the result of more than the sum of military equipment and number of personnel, or the amount of money spent on defense by individual countries. The individual military power of the member countries is important, but also the shared strategic interests

and cohesion of the members, that underlines the political will to use the existing forces for the achievement of the alliance's objectives, and of the existence of modern, interoperable forces at an appropriate level of readiness (expressed and a measure of usability and sustainability).

Also, a country's military power is not exclusively dependent on its own military forces, as the geographical location, the availability of bases, logistic support, transportation, the network of allies are also an important factor. US's military power may not be quite the same without its bases in European and Asian countries, and without the support of its allies. Syria's military would never had been able to conquer back so much of the country's territory from the rebel forces without the decisive intervention of Russia's air force.

The different perceptions of what means the military power derive also from the *differences in the scope* of the concept: a nation's military power can be understood in the broad sense or a narrow sense.

The *narrow sense of military power* is easier to define, as it refers to country's own military forces, capacity and capabilities. This is the most common used approach in quantifying a country's military power, for example in the International Institute for Security Studies' annual assessment of the military capabilities and defense

economics of 171 countries worldwide, the Military Balance [9]. Usually, this type of analysis starts from the assessment of the required and existing "means" (personnel, equipment, weapons, communication systems etc.) required to achieve a military outcome. To this, military planners need to add the operational context in which the forces will likely be used, clear tasks, objectives and doctrines, slowly building up to the concept of military capabilities, defined as "the ability to achieve a desired effect in a specific operating environment" [10] or "the ability to achieve a specified wartime objective...includes force structure, modernization, readiness and sustainability" [11].

The *broad sense of military power* is rather difficult to define, as it is not an easy task to draw a clear line between the military power and the other instruments of power. For example, would the perceived military power of Romania be the same if the country was not a NATO member and did not enjoy the additional benefits derived from the status of a member in a military alliance? Most NATO countries could afford to downsize their armed forces, specialize in providing specific capabilities and make significant savings due to the fact that the military planners included the benefits of NATO's military power in their requirements assessments. The costs to the national

defense budgets would have been a lot bigger (perhaps unaffordable for some countries) if they had to design their armed forces in complete autarchy (for example including capabilities such as air interdiction). Due to this symbiotic relation between the national military power and the Alliance's military power, it is very difficult to accurately assess the "real" military power of a NATO member on its own, especially for countries that do not aspire to more autonomous posture, such as France.

Another difficulty in accurately defining a country's military power in the broader sense is related to the purpose of having military power in the first place. Usually, the goal of a country's armed forces is defined in the strategic documents as defending the country against armed foreign aggression. In other words, it also refers to the ability to produce a desired effect in relation to the behavior of another country, through coercive means (defeating the other country's armed forces in battle), but also through non-coercive means. These non-coercive means do not refer to other instruments of power (such as economic or diplomatic), but to the perception of military power projected by a country. This perception is closely linked to the concept of *deterrence* ("the practice of discouraging or restraining someone—in world politics, usually a nation-state—from taking

unwanted actions, such as an armed attack.") [12] and *dissuasion* (the process of making an aggression as unnecessary as it is costly, of convincing a potential attacker that the costs it will incur by launching an attack far outweigh the potential benefits). [13]

Deterrence does not mean that a country relies solely on perceptions and illusions of military power, as it requires clear policies, actions and allocation of resources to build sufficient forces in order to increase the costs and the risks for a potential foe in the event it would attack. Still, these actions will not be enough on their own, as their effects depend on the image perceived by the other countries. For instance, no military analyst can claim to accurately be able to estimate the real military power of North Korea, but the state is engaged in a sophisticated power game of changing perceptions and presenting itself as a military power to be reckoned with, through carefully timed and missile launches combined with communication campaigns.

Dissuasion, on the other hand, is the soft side of deterrence, as it also offers the "carrot" of presenting the benefits of engaging in cooperation with that country as opposed to the "stick" of deterrence (focusing on the potential costs for the aggressor state).

In this complicated picture of perception versus reality, it is

difficult to make a clear distinction between real forces that may produce real effects and the image/perception of the military power of a particular country.

Related to the issue of defining military power in the broader sense, of producing a desired effect in relation to the behavior of another country, *asymmetric warfare* (to use one of the many expressions that are trying to define the concept) poses a particular challenge. Asymmetric warfare, defined here as “as a way of fighting by a belligerent who rejects the rules of engagement and principles that underlie the strategic culture of its opponent, and uses methods which are unexpected, alien, and not acceptable by the adversary” [14], is not a new concept, as it has been around, in one form or another, since the beginning of mankind. The novelty in the modern world resides from the use of the advances in technology, psychology and the changes in the society (such as the rising popularity of social media) to achieve military objectives. Asymmetric warfare, unconventional warfare, new generation warfare – all refer to a combination of methods intended to facilitate the achievement of specific goals for the country using them. In today’s volatile and extremely complex security environment, it is an impossible challenge to clearly differentiate between military power

and the power generated through asymmetric measures. Asymmetric warfare is waged through a combination of inseparable military (such as intelligence military units, special operation forces or cyber units belonging to the ministry of defense) and non-military means (hackers, influencers, bribery, espionage etc.), whose effects cannot be easily separated. It can take part on its own (for example as an attempt to influence the electoral process in a target country) or as part of a military operation (the example of Russia’s campaign in Crimea is a textbook example).

Another factor that makes military power difficult to estimate relates to the *will to use it in the most appropriate way to deliver the optimum results*. The best weapon is useless in the hands of an unskilled warrior, and the effectiveness of hard power is also directly affected by the willingness of the decision makers to use it and on their proficiency. Right before the Second World War, United Kingdom had a clear policy of maintaining air force superiority and in the words of Winston Churchill regarding the German air menace “we estimate that we shall still have in Europe alone a margin of nearly 50 per cent” [15]. Still, the outcome during the first year of the war is well known in history, to the detriment of the UK, as it did not initially make good use of its air

superiority, by failing to resource it properly. Political willingness to use a country's military power to its true potential is a key component of a successful result, as it has been proven many times in history, from the Second World War, to Vietnam war and in modern times during NATO's operation Unified Protector in Libya, when sustainability issues (the ability to maintain the necessary level of military effort until the achievement of the set objectives) forced some participating countries to retire their forces soon after the beginning of the operation.

Finally, when trying to estimate the level of a country's military power, we cannot overlook the *issue of time and resources*. Armed forces cannot be developed on short term, even if a country's defense budget would be increased 200%. The best strategies and doctrines are useless until the appropriated resources are allocated, at the appropriate time. A strategy will not produce results in terms of military power if it is not followed through from one legislature to another, if priorities change often and the maximum time-frame for defense related decisions is 4 years (deriving from specifics of the 1 year budget cycle and three years estimations, but also of the electoral cycle).

Political decision makers are tempted to favor in terms of resource allocations those areas that produce results on short term, which are useful

to keep the support of their electoral base and have to decide towards what area of the government sector to allocate scarce resources. Developing an appropriate level of military power takes time, as acquiring expensive military equipment through multi-year acquisitions programs, training a professional staff, developing appropriate doctrines, and all the other components of a military capability usually take a medium time to achieve and the results are likely to be shown in the following legislature. This makes the change of building a country's military power a long term endeavor, based on clarity and consistency in determining what exactly is the required level of military power, given the current and future security environment, and the evolution towards the set goals.

### **3. CONCLUSIONS**

In order to achieve an appropriate level of military power, a country's top level decision makers have to be aware of the complex issues underlying this seemingly straight forward concept. The contemporary environment is increasingly complex and uncertain, adding to the traditional challenges faced by military experts and political decision makers the unique characteristics of the modern conflicts that are no longer fought exclusively on a physical battlefield.

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# CHANGE MANAGEMENT AND ORGANIZATIONAL CULTURE. GAPS TO BE BRIDGED IN BUREAUCRATIC ORGANIZATIONS

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*The paper aims to summarize the characteristics and functionality of bureaucratic systems, from the point of view of organizational culture, with emphasis on its influence on the efficiency and effectiveness of the organization. Also proposes a detailed analysis of the changing management and of the models which can be applied in order to change organization culture in particular.*

**Key words:** *organization, organizational culture, change management, bureaucracy, efficiency, effectiveness.*

## 1. INTRODUCTION

In recent years, organizations around the world are in fierce competition to win the market in the specific field of activity, all taking place at the highest speed level. Under these conditions, adapting to current requirements plays a particularly important role and can make the difference between success and failure.

The process of transformation of an organization, by adapting to the new demands, involves numerous mutations that target all aspects and areas of activity.

The first organizational structure that has been imposed since the beginning of the organizations, as a necessity to achieve goals, is the bureaucratic one, which is characterized by precisely defined tasks, hierarchy, career evolution defined by formal rules, no personal relationships, strict regulations and orders.

Therefore, the knowledge of the organizational structures, of their characteristics, of the principles underlying the functioning, of the internal and external environmental factors, and their influence on the organization's activity, constitute

essential conditions in achieving the final results in accordance with the expected ones.

The culture of the organization touches every element, and can be found in every element of his functioning, and special attention must be paid to this aspect, when organizational changes are done, because it is relatively simple to change a technological process but can be extremely difficult to change thinking and behavior of the employees, the values and norms that guide them.

From this point of view, knowledge of change management techniques and models and their application must be seen as a necessity for all organizations, consider that sooner or later any organization will have to go through a change, and adapting process.

## **2. ORGANIZATIONAL CULTURE IN BUREAUCRATIC SYSTEMS**

### **2.1. Organizations: introduction and theoretical elements**

People have grouped in different forms of organization, some simpler, others more complex, since the beginning of existence. The need for human organization and for the establishment of organizations arises from the imperative of human cooperation.

Organizations became important because they ensure the coordination of the efforts of different individuals to achieve goals that individually would be difficult to achieve or even impossible.

The basis of the appearance of organizations consists both in their main characteristic of achieving individual goals faster, more completely and more efficiently than through isolated action, and in their ability to respond to fundamental human needs.

Once they appeared, the organizations developed over the time, reaching today some very complex forms. Considering the aspects presented previously, regarding the appearance and existence of the organizations, the specialists in the field tried to find a definition of it.

Analyzing the definitions of various specialists in the field, it results that regardless of the clarity, the extension of the definition, with some omissions or additions, there are constantly several defining elements of the organization on which the consensus is unanimous, such as: 1) the existence of a sufficiently large number of individuals; 2) the artificial and conscious character of the creation of the organization; 3) the conscious, sustained and planned pursuit of precise and specific goals; 4) the division of activities; 5) the mission of optimizing the activity of the organization.

In order to better understand what an organization means, it is necessary to treat it from the perspective of the general theory of systems. The intention of the general theory of systems is to reveal properties, principles and laws that are characteristic of any system in general, regardless of their variety or the nature of the component elements.

Therefore, the system is a set of interacting elements that constitute an organized whole, with specific properties and functions, different from the elements that compose it, a distinct and relatively autonomous formation in relation to the environment, and which can be identified in any field. Social systems are usually organizations. Any organization is a system, without any social system being an organization itself.

From the point of view of functioning in time, any system is characterized by the capacity to modify the input elements. The fundamental problem of regulation is to find and apply those intervention actions that ensure the dynamic balance of the system. Breaking this balance leads to the degradation of the organization's system with severe consequences over the time.

The individual, the group and the manager/leader are standard elements of any organization. Considering the organization in the relations with the environment, a

different perspective is necessary, different than the one which results from the initial summation of the individuals, groups and leaders. In this new perspective, the organization must be analyzed in relation to the following variables: complexity, formalization, administrative intensity, centralization and size of the organization.

**Complexity** takes into account the degree of differentiation between the sub-units of the organization, resulting from specialization and expressed by grouping the basic activities and distributing them to individuals (groups) in the form of service tasks. The specialization derives from the action of three vectors, such as: the type of activity (which determines the functional differentiation), the type of tasks (which determines the differentiation on tasks) and the place of activity (which determines the spatial and geographical differentiation).

**Formalization** refers to its formal or informal predominant characteristics. A high level of formalization is given by the internal norms in order to determine the behavior within the organization. Usually, the larger an organization, the more formalized it is, in order to guarantee its survival. Besides the size, the goals and the nature of the activities carried out within the organizations also contribute to the increase of the formalization.

**The administrative intensity** has the role of ensuring the balance between the administrative activities (execution) and the management activities (decision and control). There are organizations with predominantly administrative structures or organizations with predominantly leadership structures.

**Centralization** considers the concentration of power towards the top of the hierarchy (centralized structures) or the concentration of power towards its lower hierarchical levels (decentralized structures). Concentrating power refers to the decision-making process and the coordination of its fulfillment.

**The size of the organization** refers to the number of its members, an extremely important aspect that can generate an organizational dilemma (to what level the organization can increase its number of members without diminishing its functionality). The optimum structure is determined by the goals of the organization, by the influences of the environment and also, by the specificity of the activity.

## **2.2. Features of bureaucratic organizations**

In the current language, the terms bureaucracy and bureaucratic designate an inefficient activity, characterized by dysfunctional phenomena, excessive formalism and concern for minor problems.

Etymologically, the term “bureaucracy” means the leadership of those who work in offices. It seems that this word first appeared in France in the eighteenth century. Nowadays it is used in two radical senses different: some understand bureaucracy as a machine that implements decisions of political factors, while others see it as a brake on functioning society.

In the theory of organizations, bureaucracy is a type of formal organization of people, which serves to solve optimally, rationally and efficiently administrative problems in various fields (economic, political or military), this being possible due to specific characteristics.

The one who consecrated the term scientifically was the German sociologist Max Weber, author of the famous “ideal bureaucratic model”. According to Weber, the principles underlying the model are, as follows:

- **bureaucratic authority** - the authority to lead is firmly established by laws and regulations, which also provide the coercive means available to leaders in order to impose their fulfillment;

- **strict specialization** - the activities carried out are standardized, each individual knows exactly what his rights and duties are, his position in the organization, the means of coercion, the criteria and conditions to use it;

- **principle of hierarchy** - according to which the bureaucratic organization operates from the principle that each position is controlled and supervised by a higher position, so that no position remains uncovered;

- the entire activity operates on the **principle of competence** given by specialized training - the management team has competence and authority, and they can use it in the management process of control, rewards and sanctions, as forms of imposing the organization's operating rules and regulations;

- **depersonalized relationships**, the individual is a neutral agent of action and there is a total separation between public and private life. Weber insisted particularly on this issue, stating that the official must have with the institution only an employee relationship. This kind of approach has very good results in developing professional bureaucracy. It was originally characteristic to public institutions, but gradually expanded into the private sector, as an efficient system which can concur to the efficiency of the organization's activity, used to the proper extent;

- the function of the organization is based on **administrative acts**, decisions, provisions and rules with a strictly formal character, and for any actions are used written documents, which allows the existence of a "bureaucratic memory".

Bureaucratic organizations may function very well in some domains, but they have some dysfunctional behaviors, which can affect the entire activity in a very serious manner, such as:

**1. avoidance of responsibility**

- from the multitude of techniques to avoid responsibilities the most commonly used are: passing the responsibility, ostrich policy (the bureaucrat avoids getting involved in solving a conflict, ignoring it, considering that he will solve it himself), the arrivalist's policy - the bureaucrat who must act to solve the problem adopts the same conduct of denying the existence of a problematic situation but, unlike the previous case, he is aware of the consequences, doing so in order to obtain good grades and promote in higher positions;

**2. dispersion of responsibility**

- appears in the situation of carrying out complex tasks, which involve a large volume of information and competence of several specialists, then such a committee is formed, the responsibility for solving the task and decision making rests with the whole group, coming impersonal;

**3. concentration of authority**

- the bureaucrat does not accept any suggestion from subordinates, considering himself the most competent in making decisions and removing those who endanger his authority;

4. **formalism** - the transformation of rules and norms in an organization from means of realization, into goals themselves; this tendency towards excessive conformity arises from the desire of the leader to protect and ensure the authority and privileges derived from this function.

5. **bureaucratic sabotage** - is achieved by depriving the boss from the essential information, or by offering him a very large amount of information, which disrupts the decision-making process.

Ensuring an efficient functionality of the organization requires deep knowledge by managers of all the variables that influence their activity. A special importance is represented by the factors that come from the external environment, as they significantly influence the activity of the organization and are influenced by it. An ideal situation for the manager of the organization would be for him to be able to channel all his efforts towards solving the primary objectives of the institution, without worrying about external interference's. Such an ideal situation, in which to act under the auspices of a closed system is rare.

The above consequences force us to look at the organization, regardless of its size and type, as a subject of environmental uncertainties and fluctuations. The

organization as a closed system will probably never exist because its components are influenced by different factors outside the system.

We can only speak of organizations with a low or high degree of permeability to environmental influences, but not of a closed system. The perspective of the organization as an open system determines us to take into account the disturbing factors of the external environment that influence the manager in trying to achieve the organizational objectives.

The relevant external environment consists of a long series of social and political factors, existing in the society, which the managers must take into account when making decisions. Among these external factors that influence the organizations and the activity of their members are to be retained:

- **economic factors** - represent the set of economic elements in the environment, such as: domestic and international market, purchasing power of the population, the financial potential of the economy, the economic development, etc.

- **technical and technological factors** - which form the external environment of the organization refer to the technological level of machines, equipment and installations which can be used, technologies provided to the organization through research undertaken by specialized

organizations, licenses purchased, level of research development, etc.

- **demographic factors** - the importance of human resources in achieving objectives is reflected in the increasing influence of demographic factors on the organization. The main demographic factors are: population number, population structure by age and gender, average life expectancy, etc.

- **socio-cultural factors** - represent the totality of social-cultural elements that influence the activity of the organization, considering mainly education, mentality, the relationship between urban and rural population, etc.

- **political factors** - in a broader sense refers to the actions taken by political parties, parliament and government, generally characterized in the initiation, adoption and application of the laws, that can affect the functionality of the organization.

The knowledge of the environmental characteristics is achieved through the organizational structure with the help of the informational subsystem, and through the methods and techniques of management forecasting.

### **2.3. Organizational culture models relevant for bureaucracy**

The preoccupations for identifying the culture of the organization, its place and role in

the failure or success that mark the evolution of the organization are diverse and include numerous studies on the subject. The simplest definition of organizational culture is given by the totality of the basic principles that unite the members of a community.

According to specialists in the field, the organizational culture includes the following elements:

- normal behavioral actions that occur in human interaction, such as rituals, ceremonies, frequently used language, etc;

- the rules that are shared by groups throughout the organization;

- the dominant values imposed by the organization;

- the philosophy that guides the organizational policy regarding the employees;

- rules for integration into the organization, which the newcomer must learn in order to become an accepted member;

- the spirit and climate shown in an organization through its physical appearance and the way its members interact with other people outside.

None of these components taken individually represent the culture of the organization. Taken together, however, they reflect and give meaning to the concept of organizational culture. The personality and image of each organization is given primarily by the people who work for it.

Each member of the organization brings its own ideas and values, about itself and others, bosses and subordinates, and spreads them within the organization. At the same time, the same member assimilates the existing habits, rules and restrictions of the organization. From this interdependency of individuals' beliefs, their ideals, behaviors and language, the culture of an organization is born.

Through its culture, the organization manifests itself in society, and may have an active participation in social life, or may exist within the limits of the mediocre or is simply thrown to the edge of interest.

Values and norms are the most important components of the organization's culture, and at the same time, those elements that give us the widest picture of the inter-organizational environment.

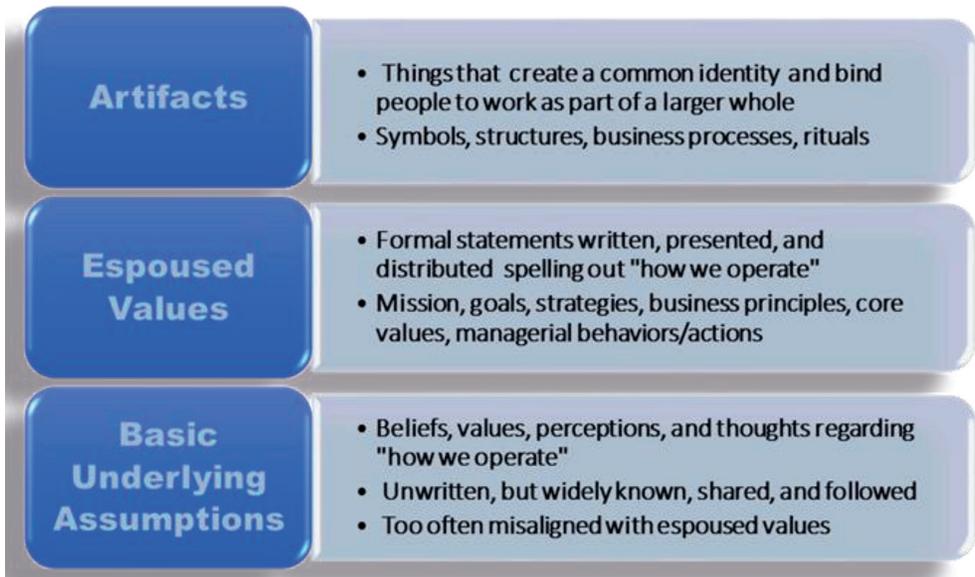
With a much more imperative character than in other organizations, the values and norms of bureaucratic organizations must be known and strictly respected by all members, as a condition for the successful fulfillment of the tasks and missions. The manager will react and act, according to the way the subordinates understand and comply with the restrictions imposed by them. Considering the manager

position, he has the responsibility to promote and cultivate the values and norms from the internal environment of the organization among all the employees.

We cannot speak about the organizational culture, as the internal environment in which the manager carries out his activity, without highlighting the component parts of it. At the level of each organization, two levels of the organization's culture can be distinguished, which differ in flexibility and visibility: the visible part and the invisible part.

The visible part includes: the artificial products, the actors, the heroes, and the perspectives offered to the individuals by the organization. The invisible part - which holds the primary role in building and promoting culture - is given by the basic concepts, values and norms promoted by the group that holds power within the organization.

To better understand organizational culture, it is necessarily to realize and be aware that it exists on many levels, which goes from visible to invisible. Edgar H. Schein identifies three levels of manifestation of the organization's culture, of which the first two, fundamental presumptions and values, are considered part of the organization's hidden culture and the last level, material culture, representing the visible, surface part of culture.



**Fig.no. 1.** The three level of culture, according to Edgar H. Schein  
Source: <https://www.humansynergistics.com>, last retrieved September 8 2020

The organization is a social invention designed to achieve certain goals through the efforts of its members, such as solving tasks/missions, by creating an optimal work environment. Organizational culture represents the personality of the organization, the way in which it works. The existing organizational culture in the systems it was created in time being influenced by history, by permanent relationships with society and its people.

Organizational culture is multidimensional, contains a multitude of elements at

different levels of understanding, accessibility and generality. Among the most important theoretical contributions in the research of organizational cultures belongs to Geert Hofstede who defined, in the end, 6 dimensions of social culture, as follows:

1. **Power distance** - extent to which members of a culture expect and accept that power is unequally distributed in society and in organizations; it is about the distribution of resources, which involves: great distance from power means the distribution of resources

that amplifies inequality and social distance, and short distance from power means the distribution of resources that reduces inequality and social distance. High power distance encourage bureaucracy development, encouraging respect for rank, hierarchy and authority.

2. **Uncertainty avoidance**- extent to which the members of a culture feel threatened by ambiguous or unknown situations; from this point of view, we can speak of two directions, and two types of institutions: tolerant organizations regarding the risks of uncertainty, accepting the uncertain by accepting the fact that there are things that cannot be controlled, and intolerant organizations, which doesn't recognize the uncertainty and want to maximize control they exercise in any field.

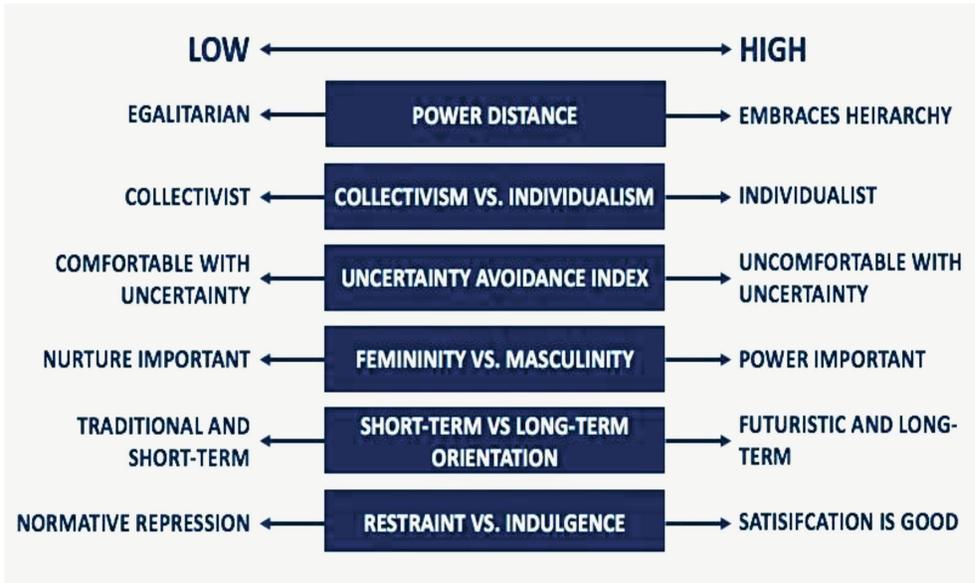
3. **Individualism/collectivism** - the value given to individualistic behaviors; institution where individualism predominates, the ties between members are reduced, there is a great freedom to choose the directions of action and each pursues especially its own goal; institution where collectivism predominates, individuals work together to make their decisions and actions.

4. **Masculinity/femininity**- refers to the division of social roles between genders; masculine institutions emphasize values such as material success, money, possession and indifference to others/toughness; femininity institutions emphasize values such as cooperation, care for others, quality of life.

5. **Long-Short term orientation**-short term refers to an organization orientated to the past and present, which values are national pride or respect to tradition; long-term refers to an organization orientated to future rewards, which adapting to the new challenges.

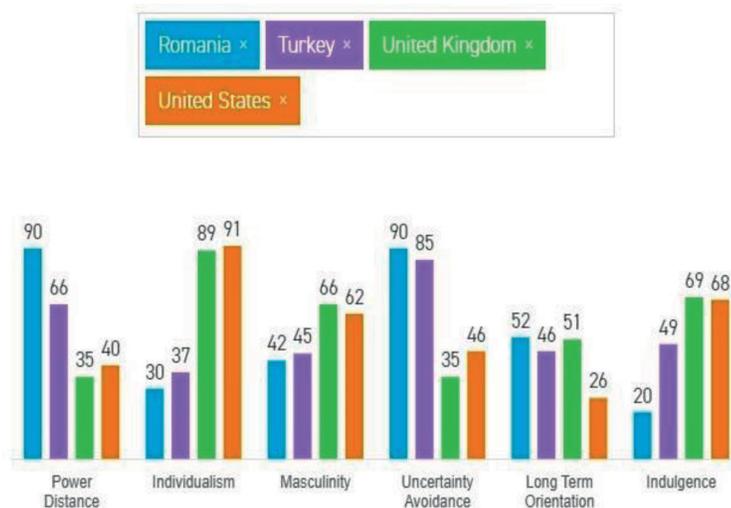
6. **Indulgence/Restraint**- Indulgent societies allow personal and human satisfaction, in the sense of having fun and enjoying life; restrained societies suppress the satisfaction of basic human needs and establish it through strict social norms.

For example, the description of the 6 dimensions of social culture is presented in Figure 2. Also, in Figure 3 is presented a comparison between 4 countries, considering this dimensions.



**Fig.no. 2.** Synthetic representation Hofstede's dimension of culture  
Source: <https://corporatefinanceinstitute.com>, last retrieved September 8 2020

**Fig. no. 3.** Values for the 6 dimensions, 4 country comparison.  
Source: <https://www.hofstede-insights.com>, last retrieved September 8 2020



### 3. CHANGING BUREAUCRATIC SYSTEMS BY CHANGING THE ORGANIZATIONAL CULTURE

#### 3.1. Theories of change management

The managers of the organizations must be aware that there are many aspects of the social environment over which they have little or no control. However, these factors have a major influence on their activity to achieve organizational goals.

The values and norms of the society where the organization is located are important particular elements of the cultural environment. Because these values and norms are relatively durable and stable, they can be seen as a significant and independent set of forces which can occur in the effectiveness of leadership.

The existence of a set of values and beliefs of the society affects the leadership in many aspects. Thus, the manager cannot decide the direction of the organization's objectives, without being aware of the acceptability of these objectives by the external environment/society. In other words, the environment must legitimize the results of the organization, otherwise the organization will not be supported by the environment in its efforts.

Considering these aspects, the interaction between the organization-

environment, and the manager-environment, can be synthesized in three types of environment: stable, unstable and turbulent.

- **stable environment** - this type of environment is characterized by changes at long time intervals. At the same time, in a stable environment, the changes are easy to predict and, as a result, the organization can easily adapt to the requirements. Environmental stability also ensures the stability of the organization.

- **unstable environment** - is characterized by frequent but generally predictable changes;

- **turbulent environment** - is characterized by frequent changes, accentuated and difficult to anticipate by the manager; under these conditions, the risk and uncertainty increase, amplifying the difficulties of adapting the organization.

The central issue in today's organizations is changing management. In all areas of social, political, economic and cultural life we are facing changes, and lately changes are more often than years ago.

From a point of view, the successful initiation of change and its management can have significant benefits, from the perspective of the organization's survival, economic viability and human satisfaction. From another point of view, the impossibility to anticipate change, the refusal to recognize the need for

change or the delayed reaction to it can generate organizational disasters, by losing control.

In support of this theory, Kotter and Heskett describe two levels of an organization's culture: an invisible and hard to change one that includes the values shared by all members of the organization, influencing collective behavior, and a second, visible and easier to change, which refers to the norms of behavior that are transmitted to the new members, norms that are in accordance with the value system accepted by all members of the organization.

Organizations, if they do not adapt to changes in the internal and external environment, if they do not adopt new directions of action, will register failures or even disappear. Managers must focus on change both as an opportunity and as a threat.

Changing culture in an organization is one of the most difficult processes to be undertaken. It is important that leaders be prepared and have a solid knowledge of change management.

Author John Kotter is a supporter of the theory according to which the culture of an organization should be left at the end of a transformation process. "Culture is not something you can easily handle. Culture changes should start only

after the employees' restructured actions take effect and after the new behavior that were implemented start to show benefits to a particular group and after the staff begin to understand the connection between the new actions and the improved performance." (Kotter, 1996).

The more the organizational culture is aligned with the company's mission and values, the greater are the chances of change.

Anyway, the first step in initiating any process of change is to diagnose, identify the reasons for change and the elements that require change. The correct diagnosis clarifies the problem, suggests what should be changed and what would be the ideal strategy for change, in order to meet as little resistance as possible.

Change is often met with resistance from those to whom it is addressed, and resistance occurs when people do not support changing efforts of the organization. Organizational culture is one of the most resistant elements, and need to be treated very carefully.

The communication between the company's management representatives and the employees regarding the intention to change and the elements targeted by the change, is one of the aspects that contribute to the diminution of

the change resistance, and should be taken into consideration as a primary element.

Once the process is completed, the changes must be evaluated to see if they have fulfilled their mission and if the result is considered appropriate, and will become part of the organizational system, despite the initial resistance.

### **3.2. Models of change management**

One of the analytical models of change belongs to Kurt Lewin. From his point of view, change is a modification of the forces that keep the behavior of the system stable.

More exactly, the stability of any system, at any moment of time, depends on the interaction between two sets of forces - those who tend to maintain the actual situation and those who want to change it. When both sets of forces are approximately equal, the system is in a state of "quasi-stationary equilibrium". To change this, is needed to strengthen one set or another of forces. Lewin suggests that altering the forces of stability, which support the actual state, generates less resistance to change than strengthening the forces of change, so he considers this strategy more effective. In his vision, the process of change has three steps:

**-unfreeze-**this step refers to the minimization of the forces that maintain the behavior of the system at its current level; this can be accomplished by entering in the system of some data/information that will show the discrepancies between the behavior desired by the employees and the existing one;

**-change-**it is about changing the behavior of the organization, by reaching another level in this plan; this step refers to the development of new behaviors, values and attitudes by changing organizational structures, processes and culture.

**-refreeze-**this stage refers to the stabilization of the new stage of the organization, by setting the newly introduced elements; it can be achieved through organizational culture, norms, policies and structures.

Models proposed by Lewin is represented with details in Figure 3.

The stages presented can be followed in most of the change processes, regardless of the nature of the organizations and the proposed changes, but in order to achieve their goal, they must be detailed in action plans, focusing the organization's resources on well-defined action.



**Fig. no. 4.** Lewin's change model

Source: <https://medium.com/@warren2lynch>, last retrieved September 7 2020

Analyzing the three stages of the change process proposed by Lewin, it can be seen that they have an extremely broad approach. Trying to better describe the process of change, some other theoretician came up with their own models, more comprehensive and detailed. One of them is John Kotter, professor at Harvard Business School and one of the well-known theorists in change management, which model is designed in 8 steps, as follows:

- **create a sense of urgency**-the desire for change does not appear suddenly because it requires considerable effort; first of all people must be convince that an effort for this change is indispensable and urgent; this can be achieved by creating a crisis that can destabilize the organization for the moment, but

inspires people to change, makes the goal to become real and relevant.

- **build a guiding coalition**-change is a collective effort, and cannot be achieved by the management team alone; the leader must be surrounded by a group of leaders and employees convinced of the need of change, who need to act and work as a team, and to believe in this, motivated and fully engaged in the process.

- **form a strategic vision**-the best way to get employees to work together to change an organization is through vision and strategy, which must be a motivating and credible picture of their future organization.

- **communication for buy in**-the communication of the vision must be done in simple terms, avoiding jargon and at the same time,

it must take into account that the message should reach as many people as possible, have to be direct, by using multiple dissemination channels (work sessions, discussions, meetings, messages etc.).

- **enable action by removing barriers**-this step is about adapting the organizational structures to the new context, implementing adequate training programs to facilitate the learning process of new skills, abilities, etc., confronting managers who oppose change.

- **generate short term wins**-change is a long process, and requires a long effort, so it is necessary to maintain the interest in order to avoid discouragement, by quickly communicating the successes achieved.

- **sustain acceleration**-establishing goals and objectives that can be obtained from the very first stages of implementing the change increases the morale and engagement of the people. However, the sense of urgency must be maintained by accelerating the process of change. This acceleration is based on new initiatives, new projects that can be launched as they become necessary.

- **institute change**-The culture of the organization represents a set of values, beliefs and norms of behavior that characterize each organization and that have a major

impact in terms of best practices. In the new context of change, the set of values, management systems, management style, and leadership must be reevaluated considering if they match and support change. Starting from this core, change affects processes, practices and working methods.

Also, must not neglect the connection between old values, old culture and new values, should be mentioned at any moment the successes achieved both in the past, and in the present, and how they have contributed to the preparation of current changes.

The model proposed by Kotter is simple, intuitive and easy to implement and to use it. It should be noted, however, that it refers to radical changes and not all organizations want to make such changes.

Organizations go through different stages throughout life, represented by certain characteristics that influence and are influenced by organizational culture. Starting from this idea, Edgar Schein designed a model that reflects the specific ways of change depending on the stage of the life cycle.

The mechanisms for changing the culture of the organizations in correlation with the stages in which the organization is presented in Fig. 5, and detailed below, as follows:

| <i>Organizational Stage</i> | <i>Change Mechanism</i>  |
|-----------------------------|--|
| Founding and early growth   | <ol style="list-style-type: none"> <li>1. Incremental change through general and specific evolution</li> <li>2. Insight</li> <li>3. Promotion of hybrids within the culture</li> </ol> |
| Midlife                     | <ol style="list-style-type: none"> <li>4. Systematic promotion from selected subcultures</li> <li>5. Technological seduction</li> <li>6. Infusion of outsiders</li> </ol>              |
| Maturity and decline        | <ol style="list-style-type: none"> <li>7. Scandal and explosion of myths</li> <li>8. Turnarounds</li> <li>9. Mergers and acquisitions</li> <li>10. Destruction and rebirth</li> </ol>  |

**Fig. no. 5.** Schein's change model

Source: Schein, Edgar H., *Organizational Culture and Leadership*, Jossey-Bass Inc, 1992, p.292

**- founding and early growth-** is the stage in which the organization was established and begins to function, and integrates into the environment in which it will operate in the coming years; at this stage the vision of the founders is extremely strong, and creates the main lines on which the organizational culture will develop later; one of the major objectives at this moment is to ensure the survival of the organization, and to develop a series of distinctive features that differentiate it from other organizations, and at the same time, that will give an advantage; at this time, the culture is in formation, but still has some influence, helping the organization to individualize in

relation to other organizations; at this stage, we cannot speak about a change in organizational culture, given that it is in the process of formation.

**- middle-**it is the stage in which the company has evolved and outlined its main characteristics, and new challenges and development opportunities appear; now, culture can be a factor of progress or regression; it is very possible that some of the values initially promoted not to be founded in the existing reality; in this case it is necessary to apply some certain mechanisms which will allow a remodelling of the culture or some of its components.

- maturity and decline-it is the stage in which the organization begins to face major problems, considering the maturity as the maximum level of efficiency reached; thus, major changes are required, and organizational culture will play a very important role; if the organization has evolved over a long period of time and has been successful, then it has also developed a strong culture, which in a stable environment can be an advantage, but at the same time, its change becomes difficult to achieve; therefore, the role of managers and models of organizational culture change become essential in the survival of the organization.

Organizational culture improves the stability of the organization and gives its members the understanding they need to discover the meaning of the events and activities that take place in the organization.

Many organizations consider having their own organizational culture as a strategic tool. Reality shows that many organizations have been successful for a long time if they have a strong organizational culture.

Change plays an important role in organizational culture, and modern cultures view change as necessary, beneficial, and without it organizations cannot progress. In the same time, managers should know the measures in which the way of

change is accepted and the points of view of the different opposing groups.

The values of an organization must be established by its leaders, taking into account the culture of the organization. However, culture controls the manager to a greater extent than the extent to which he controls culture.

#### 4. CONCLUSIONS

In the last half century, human society has undergone a surprising evolution, both in the technical and technological field, but especially in the field of organization and functioning of organizations, especially those which are producing goods and services.

The new sciences, such as management and organizational theory, have made a significant contribution to changing the vision of the entire process of carrying activities within the organization.

This evolution of the society has been materialized in the elaboration of new doctrines and concepts that take into account the current needs and requirements of humanity, by implementing modern management methods, and bureaucratic systems being considered obsolete and ineffective.

However, time has shown that for an organization to be efficient,

there is no fully applicable solution in any situation in terms of management and culture, but rather a mixture of different styles, in accordance with the environmental condition, no matter how this is represented.

There is a close connection between organization and nation, and different approaches is necessary in managerial practice, and the organizational structures, managerial styles, cultures organizational and change programs should be adapted to the dominant cultural attributes of the host nation.

The efficiency of a bureaucratic structure consists in their specific form of organization, in the sense that there is a mandatory set of rules to follow for any imagined situation, and personal interventions are not accepted. Everything works with a mathematical precision, the hierarchical levels being interconnected with each other through well-defined and delimited connections.

Nowadays, the bureaucratic system is met at the level of each organization, more or less developed, in a form or another, considering the field of activity and the culture of the host nation. From this point of view, there are multinational organizations that in order to achieve their goals have had to adapt to host nation “characteristic”, because the usual way of doing business in the home country didn’t work.

Organizational culture is particularly important, and acts as a catalyst for employees, allowing them to understand exactly the role and position within the organization, but must be understood and treated in close connection with the other elements that define the organization.

At the same time, the culture of the organization is the main element in supporting the adapting to the current requirements of society, and at the same time of developing of an organization, without which evolution cannot be possible.

The effects of changing the culture of the organization can be negative if the solutions found are inappropriate with the context, in which case the lack of interdependence stands out between the content and the process of change.

As a final conclusion, considering the elements presented, a powerful culture well defined and closely attached to the organization, as well as an attenuated bureaucracy, are elements that ensure guaranteed success of any organization.

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# APPROACHING THE TRANSFORMATION OF HUMAN RESOURCES MANAGEMENT IN MEDICAL STRUCTURES

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*In the field of national security, the decisional problem of the scientific approach consists in proposing strategies that would allow the transformation of human resources management (THRM) in civil and military medical structures, as well as the construction of a research model, built to study the impact of THRM on employees and the management of healthcare organizations. The existing relations between HRM and the management of medical institutions were highlighted, in terms of work climate, organizational structure and managerial efficiency, so the data obtained highlighted the discrepancies between organizations, as well as the difference in approach to medical activity. The results obtained have a favorable impact on the competitive environment in the field of healthcare by offering a portfolio of medical services and quality profile. The practical value is given by the study of the processes of THRM and the formulation of proposals regarding models and strategies for the THRM.*

**Key words:** *human resources, work climate, employee motivation, individual performance, employee attitude, workforce diversity, staff turnover, talent management.*

## 1. INTRODUCTION

From an administrative component in the management of the organization, in the last two decades human resource management (HRM) has become an important element of organizational change, also called New Age HRM. The theoretical and methodological basis used is focused

on bibliographic research in the field of HRM and on research conducted through qualitative and quantitative techniques.

From the concept of *hire and fire* that characterizes the activity of human resources managers working in the field of health have understood that employees are valuable assets of organizations, which can create

competitive advantages. For this reason, human resources are managed in a win-win manner, with the gain targeting both parties. In the current dynamics, the transformation of human resources is necessary not only to guarantee an added value to the basic activity, but also to offer the necessary business consultancy.

## **2. METHODOLOGY AND DETAILS OF SCIENTIFIC RESEARCH**

In order to develop strategies to transform HRM in health organizations, as well as to build a research model, it is necessary to study the sources of pressure associated with HRM and their origin, being relevant to perform an analysis on the impact on which these sources of pressure exert on the commitment of civilian or military employees. Another important aspect that needs to be studied is related to the differences that appear at the level of the individual consciousness of the employees in the organizations and of their managers, depending on the stage at which the transformation of the HRM is. At the same time, it is relevant to study the extent to which globalization has a major impact on the THRM in health organizations.

Given these aspects, the purpose of scientific research is to study the impact of transforming HRM on employees and the management of

health organizations. This scientific research aims to assess the impact that THRM has on employees and management of health, civilian or military organizations. HRM has an essential task in the field of healthcare and other service sectors, in which the patient faces challenges due to staff performance, depending on the experience and quality of performance. The choice of this context of scientific research is justified by several arguments.

A first reason is that HRM plays an active and vital role in the success of health sector reform and is concerned with both the development of individuals and the organizations in which they operate. Therefore, HRM deals not only with ensuring and developing the talent of individual workers, but also with implementing programs that increase communication and cooperation between individual workers to stimulate organizational development (Burlea-Șchiopoiu:2008,pp.118-124).

At the level of medical units, THRM requires the development of effective strategies for its improvement (Boselie and Thunnissen:2017). Another reason is the fact that at national level there are an insignificant number of scientific studies covering the subject of HRM regarding the quality of healthcare. The perpetuation of this situation could affect the development strategy

in the healthcare sector in our country, so that, without adequate studies in this field, the general performance of hospitals can be weakened.

In medical structures, the main responsibilities associated with HRM include job and staff analysis, workforce organization and use, measurement and evaluation of workforce performance, implementation of employee reward systems, professional development of workers, and job retention. Against this background, the challenges that health organizations and their staff need to address are related to the transformations that are needed to create the conditions for them to act internationally, to respond to international influences and to promote adaptation strategies.

A third reason is that THRM in the field of health in the international environment are characterized by complexity, volatility, continuous change and risk influenced by the national environment of organizations. As the international environment induces transformations in the national environment, they will influence HRM at the level of health organizations, all proceeding in a continuous cycle of change.

In the national and international context, disturbed by the COVID-19 pandemic and its socio-economic effects, the management of a healthcare organization needs to constantly cope with transformations

that underlie decisions regarding HRM. THRM is characterized by dynamism and flexibility, highlighting itself through motivation and stimulation but can be perceived by some people as a threat to the organization. THRM is characterized by stress, generating concern and irritation, against the background of uncertainty and feelings of fear of failure, which can be costly in time and money.

Starting from the considerations that substantiated the formulation of the purpose of the scientific research, it was possible to establish the research objectives, with the help of which the necessary information was identified. The first three objectives of scientific research were the following:

*O1: Identifying sources of pressure associated with THRM and assessing their impact on the commitment of employees in health organizations.*

*O2: Assessment of the differences that appear at the level of individual consciousness, depending on the stage of THRM in the field of health.*

*O3: Measuring the impact of globalization on THRM of health organizations.*

Redefining the role of HRM at the level of health organizations is increasingly necessary, amid the increasingly accelerated globalization of the medical services market and

the amplification of the international dimensions of HRM. Thus, it is necessary for HRM to have closer links with the strategic plans of the organization, in order to increase the reaction capacity in a global, highly competitive market. In this sense, managers need to act to provide quality services, by increasing productivity and involvement of all staff of the organization (Burlea Şchiopoiu and Idowu: 2016).

The formulation and implementation of the organization's objectives can be achieved by superior flexibility of the workforce and by training staff to work in teams. The factors that influence THRM in health organizations will be studied according to the impact on employees and on the management of health organizations. The impact of THRM on employees in health organizations can be studied through six latent variables, namely workforce diversity, employee attitude, individual performance, employee motivation, talent management and staff turnover.

Previous research has highlighted the need for a fourth objective:

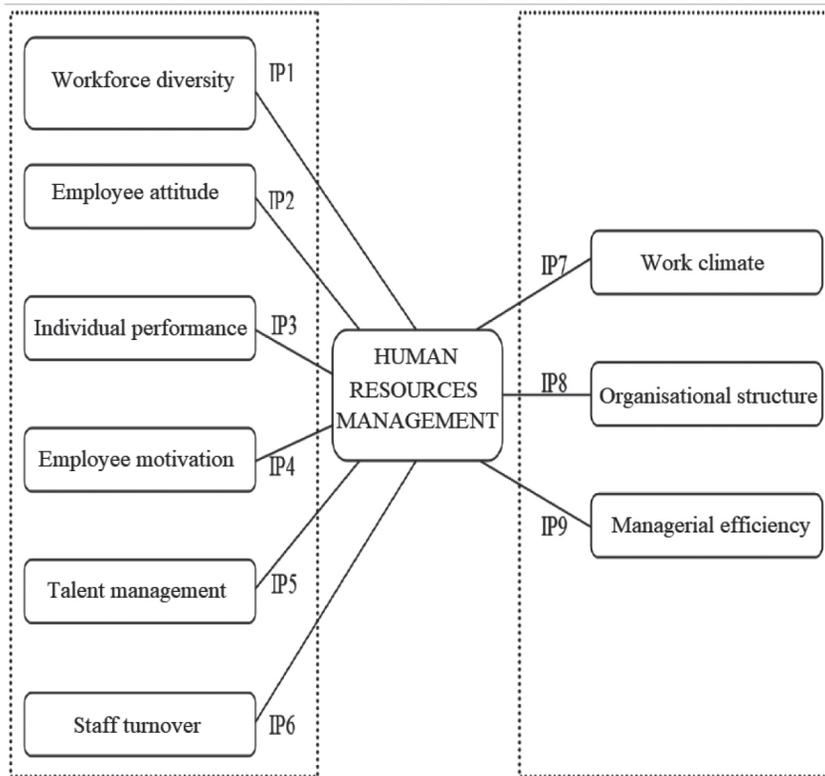
*O4: Determining the extent to which THRM influences the management of health organizations*

The impact of THRM on the management of health organizations can be studied through three variables of interest for the management team

of the health organization, namely the activity environment, organizational structure and economic factor.

In order to determine the impact of THRM on employees in health organizations, twelve manifest variables were established. The validity of these variables was also achieved at the level of the qualitative study, by observing the ease with which the interviewees managed to evaluate the variables. The latent variable is considered to be the cause, and the variables manifest a reflection of it. According to this method, the latent variables are those that determine each of the manifest variables.

The latent variables chosen were the diversity of the workforce, the attitude of the employees, the individual performance, the motivation of the employees, the talent management and the staff turnover. In addition to the variables related to the factors influencing HRM, the selection and operationalization of variables describing the impact of THRM on the management of health organizations was of particular importance in establishing the theoretical framework of research. These were the work climate, the organizational structure and the managerial efficiency.



**Fig. no. 1** Conceptual research model  
Source: Made by the author

The schematization of the obtained results was presented by a conceptual research model, presented in Fig.1, which explains the hypotheses formulated in this scientific research. HRM in civil and military health organizations appears in the graphical representation of the six variables and indicates the impact of THRM on employees, and the link to the three variables of interest to the management team indicates the impact of THRM on management of health organizations.

As can be seen from the diagram described in the conceptual research model, HRM exerts an influence on each of the six variables that describe the impact of THRM on employees in health organizations, but also on each of the three variables that describe the impact of THRM on the management of health organizations.

Through the specialized literature, numerous theoretical aspects have been highlighted that refer to HRM, being noted the major importance that HRM has in

influencing the management of the organization in the field of health. Thus, starting from the previous results, in order to define the research framework and build the tools for collecting the necessary information, the hypotheses of the scientific approach were formulated.

The issue of workforce diversity is a major concern of organizations. HRM is responsible for planning people within an organization and for policies and procedures related to equality and diversity issues. Workplace diversity is an issue for employees, focusing on the differences and similarities they bring to the organization (Rahman:2013).

Diversity issues have become a central part of HRM, with diversity management being essential for good HRM. Organizations have begun to realize that diversity is not just something to deal with, but a reality that needs to be relied upon to make the organization stronger and more competitive (Luthans:2011, p.34).

Managers have found that employees do not neglect their cultural values and lifestyle preferences when presenting themselves at work. The challenge is to make the organization more adapted to a diverse group of people, addressing different lifestyles, family needs and work styles. Diversity is much more than ethnicity, gender, or sexual orientation (Richard:2000).

Foster (2008) considers that for an effective management of diversity it is necessary to create a work environment or a culture that allows everyone to contribute with everything possible in the organization.

Rahman (2013) argues that equality and diversity policies refer to the key functions of HRM, which are recruitment and selection procedures, training and development policies, terms and conditions of employment. The focus on highly dedicated, satisfied and motivated employees can provide support for equality policies.

Considering the scientific research carried out, the following hypothesis is formulated:

*H1: There is a direct link between THRM in the field of health and the workforce diversity.*

Employees have attitudes or views on many aspects of their work, careers, and organizations. From the perspective of research and practice, in general the attitude of employees aims at job satisfaction. The most widely used definition of job satisfaction research is provided by Locke (1976), as a pleasant or positive emotional state, resulting from the appreciation of a job or work experiences.

Even if organizations cannot have a direct impact on the personality of employees, the use of sound selection methods and a

good match between employees and jobs will ensure that people are selected and placed in the most suitable jobs for them, which, in turn, it will contribute to increasing their satisfaction (Weiss and Cropanzano:1996, p.18).

HRM plays a significant role in building a good employee-employer relationship, which would create an impact on employee attitude changes and ultimately affect the organization's performance. Human resource practices are considered to be very effective in preserving valuable human capital.

Organizations have learned the importance of good relations with the workforce, those who do not realize the importance of its human resources cannot make progress. In the workplace in employee relations there is a strong association between HRM and the attitude and performance at work of employees. Human resource practices are the primary means by which firms can influence and shape the abilities, attitudes, and behavior of individuals to do their job and thus achieve organizational goals (Anthonisamy:2013).

Human resource functions are concerned with a variety of activities that significantly influence almost all areas of an organization. Human intellect, human energy and human inventiveness are what achieve excellence for the organization.

Organizations will have long-term relationships with happier employees, which is the best type of competitive advantage.

Employee welfare activities and reward and recognition programs are good enough and need to be continued, having a direct influence on employee satisfaction and therefore on employee attitude and performance. Remuneration compatible with the position held or with the level of education or related to the results obtained in the work performance, offers of commissions, thanks or bonuses have a reasonable impact on the attitudes of employees (Tinti et al.:2017).

Starting from the presented elements, the hypothesis is formulated:

*IP2: There is a direct link between THRM in the field of health and the attitude of employees.*

The individual performance of an employee, his new ideas, as well as the efforts to promote the organization in a positive way contribute to building the values of an organization and its success or failure is affected by its productivity. The quality of human potential plays an important role and is a key factor affecting the functioning of an organization, its prosperity, as well as its sustainable development (Bryson:2019). Practices in HRM, such as training and development or performance appraisal, encourage

employees to work better to increase organizational performance (Hassan:2016).

Training and development contribute positively to organizational growth. The training refers to the methods used to develop the skills of the employees needed to perform the job. Most organizations considered training and development as an important factor in human resource activity.

Extensive training programs are conducted by employees to improve employee performance to gain a strategic position relative to competitors. Training programs play a significant role in achieving organizational goals. The major goal of performance appraisal is to increase employee motivation and self-esteem (Ahmad and Schroeder:2003).

Considering the scientific research carried out, the following hypothesis is formulated:

*IP3: There is a direct link between THRM in the field of health and individual performance.*

Motivating employees through compensation is a human resources practice that provides monetary value to employees for the work performed. Compensation can be used to hire qualified people, to reward performance or to encourage loyalty to the organization by reducing staff turnover (Moldovan:2017). Employee migration has become a more

important aspect of organizational life, with many intending to change their current positions in the coming years (Hassan:2016).

A successful organization is aware of the importance of its staff and their positive motivation. Effective HRM is supported by motivation. The motivation process is supported by setting realistic goals for the organization and involving employees. A motivational program focuses on the optimal use of available workforce to meet the organization's objectives (Lorincova et al.:2019).

The occurrence of differences in employee motivation depends on the age of the employee. However, in this process, it is necessary to take into account the position of the employee. As for the source of motivation for managers, they represent a specific group of employees. Managers are motivated by financial motivating factors, as well as recognition and freedom in decision making.

Motivational factors for managers are often classified as impulsive (push) or pull (pull) factors. Impulsive factors include the need to increase family income, dissatisfaction with work in terms of wages, difficulties in finding a suitable job and the need for flexibility due to family duties and responsibilities. The pull factors include the need for independence, self-improvement and improving the current state and

reputation in society. Managers are motivated by rewards or recognition (Mikkelsen et al.:2017).

Starting from the presented elements, the following hypothesis is formulated:

*IP4: There is a direct link between THRM in the field of health and the motivation of employees.*

Talent management refers to the organization's ability to recruit, reward, organize and retain the most talented employees available on the job market. Studies recommend a healthy and stress-free work environment, creating career advancement opportunities, regular training, taking on innovative employee ideas, and transparent promotion policies for talent management in the organization (Kaleem:2019).

The strategic HRM is determined internally by the organizational, administrative or cultural heritage, ie by its unique configuration, respectively history, strategy, structure, culture and human capital (Gallardo-Gallardo et al.:2020).

Talent management research focuses on the experiences of key actors (managers, selection committee members, human resource managers and/or employees) in the effective implementation of talent management in the organization (Boselie and Thunnissen:2017).

Considering the scientific research carried out, the following hypothesis is formulated:

*IP5: There is a direct link between THRM in the field of health and talent management.*

Staff turnover reflects the rate of employees leaving the organization in relation to the average number of employees in the organization in a given period. The topic of the impact of HRM on staff turnover has been the subject of numerous scientific studies worldwide. At the organizational level, it is relevant to discover the non-managerial causes of staff turnover that could be avoided by specific measures of HRM (Daouk-Oyry et al.:2014).

In this sense, the following hypothesis is formulated:

*IP6: There is a direct link between THRM in the field of health and staff turnover.*

The work climate can be more easily changed by managers, supervisors and those responsible for formulating and implementing knowledge-based work strategies, as opposed to culture, which has deeper roots in the core values, norms and ideologies of organizations (Burlea-Șchiopoiu: 2007a). Thus, organizations can create work climates that show what employees want to see and experience based on the primary objectives of the work strategies pursued. The development of the desired climates can be seen as

strategic. Factors of HRM influence the work climate for services, there is a reciprocal cause-effect relationship with patient satisfaction (Bowen and Ostroff:2004).

Considering the scientific research carried out, the following hypothesis is formulated:

*IP7: There is a direct link between THRM in the field of health and the work climate.*

Organizational structure influences HRM differently. According to Bower (2003, p.22), employee involvement, ie the way employees behave, performance, satisfaction, motivation, passion for work and morale are all influenced by the way the organization is structured, which in turn influences the ability to achieve organizational goals. For example, in a highly centralized bureaucratic structure, employees cannot take the initiative due to the repetitive nature of tasks, which may discourage them from performing tasks and prevent them from achieving organizational goals (Henderson and Hoy:1983).

Organizational structures also influence human resource strategy and practices in a variety of ways, and implications are important for different organizational structures (Ahmed:2015).

In this sense, taking into account the diversity of organizational structures, the following hypothesis is formulated:

*IP8: There is a direct link between THRM in the field of health and the organizational structure.*

Managerial efficiency means for healthcare organizations the increase of the activity volume, the obtaining of positive financial results, the increase of the clients' addressability to the organization through a wide offer of medical services, as well as the general growth of the organization. Another important aspect of managerial efficiency is the reputation of the organization in the field of health, given both the composition of the team of specialists and their previous results, as well as the specific endowments. For an organization, reputation can be the best friend or the worst enemy, the reputational risk having direct links with human resources management (Țițirigă:2020).

The performance of healthcare organizations depends very much on finding people to work for them, to guide the selected employee and to provide for their needs (Jashari and Kutllovci:2020).

In this sense, the following hypothesis is formulated:

*IP9: There is a direct link between THRM in the field of health and managerial efficiency.*

**Table 1.** Scientific research plan

|  | Objectives of the scientific approach   | Research tools  | Target audience  | Sample                 | Techniques used in data analysis  |
|--|---|---|--|------------------------|---|
| <b>Step 1:</b><br>Investigating the specialized literature | - Identifying the factors that influence human resources management   | Evaluating the role and content of human resources management | -  | -                      | -   |
| <b>Step 2:</b><br>Qualitative research                     | - Applying the questions regarding the factors that influence the human resources management and noting the opinions formulated by the respondents<br>- Adapting what is stated in the context of human resources management at the level of health organizations<br>- Validation of the factors that influence the management of human resources | Recruitment guide + Interview guide                           | Adults working in public and private health organizations in urban and rural areas | 20 in-depth interviews | Techniques used in the interview:<br>- blind exploitation<br>- direct observation |
| <b>Step 3:</b><br>Quantitative research                    | - Assessing the impact of transforming human resources management on employees in health organizations<br>- Assessing the impact of the transformation of human resources management on the management of health organizations  | Questionnaire   |  | N=1276                 | - Factor analysis in SPSS version 26  |

Source: Made by the author

The establishment of the scientific research plan was made after the objectives were defined and the research hypotheses were stated. Table 1 presents the scientific research plan, which was structured in three stages.

In the first stage of the scientific research plan, the theoretical framework of the research was established, defining the concept of HRM. In this context, the research tools presented by the literature were examined, reaching an extensive and complete list of factors that can influence HRM.

In the second stage of the scientific research plan, a qualitative study was conducted. It included in-depth interviews with major individuals working in public and private organizations working in the field of health, in urban and rural areas.

Through this qualitative research, questions were applied regarding the factors that influence HRM and the opinions expressed by the respondents were noted. Specifically, we proceeded to adapt what is stated in the context of HRM at the level of health organizations,

followed by the validation of the factors that influence HRM.

In the third stage of the research plan, a quantitative study was designed. The proposed goal was to assess the impact of THRM on employees and on the management of healthcare organizations. The SPSS statistical program version 26 was used to perform the factor analysis.

The researched community is represented by adult individuals working in health organizations. The observation unit is represented in the research conducted by the person who provided the researcher with personal data and information and agreed to participate in the scientific research. The survey unit coincides in this research with the observation unit. The sampling method used in the quantitative study was simple random sampling.

The selection of participants in scientific research took into account two criteria, availability and accessibility. According to Table 2, these criteria were applied in both the qualitative and quantitative stages.

### 3. QUALITATIVE RESEARCH RESULTS

The qualitative research was conducted in the form of in-depth interviews, the participants in the qualitative research being selected from well-known people working in health organizations by creating and applying a recruitment guide to verify the correspondence of the invited persons with the research requirements. On this occasion, the consent of the participants to participate in the research was obtained, respecting the ethical aspects and obtaining their approval that some of the answers provided be summarized in the research.

Thus, between April 6, 2020 and April 15, 2020, 20 in-depth interviews were moderated online by the researcher, lasting about 45-50 minutes each, with adult individuals working in health organizations. During the interviews, the introduction of the topics proposed to be explored was made progressively, during the discussion. For this, an interview guide was developed and

**Table 2.** Technical details of scientific research

Source: Made by the author

| Methodological aspects   | Qualitative research           | Quantitative research       |
|--|--------------------------------|-----------------------------|
| duration<br>(in-depth interview / completion of the questionnaire) | 45-50 minutes                  | 20-25 minutes               |
| Collection period  | April 6, 2020 - April 15, 2020 | May 7, 2020 - July 31, 2020 |
| Collection method  | Online                         | Online                      |

applied, with the role of structuring the interviews and facilitating the note-taking process.

In the qualitative stage of scientific research, the aspects on which HRM is based in health organizations were explored. In this first step of the scientific approach was made the identification of the factors that influence HRM and which represent the main goal established for this stage.

In-depth interviews with recruited participants were moderated by the researcher using an interview guide that was structured in two parts, the first part of which is introductory. In this part of the interview guide the general framework of the in-depth interview is presented and the subject proposed for investigation is presented.

Each participant was informed by the researcher about the rules of the interview, such as the creativity and spontaneity of the answers, as well as the technical details of the in-depth interview. All participants were verbally explained that the interviews would be confidential and anonymous, but the ideas would be taken over for study.

The second part of the interview guide contains the questions addressed to the respondents, regarding the factors that influence HRM. The first twelve questions on the impact of THRM on employees in health organizations were asked of all interviewees.

In addition, for respondents who stated that they hold leadership positions, three questions were introduced regarding the impact of THRM on the management of healthcare organizations. For each question the respondent formulated a score from 1 to 5, where score 1 represents total disapproval and score 5 represents total acceptance of the idea formulated by the researcher. After receiving the answer to each question from the respondents, the researcher wrote down their opinions on the subject of the question.

The questionnaire is the tool used in quantitative scientific research to investigate the views of the sample of respondents. This questionnaire was created in order to meet the objectives proposed in the research, represented by assessing the impact of THRM on employees and management of health organizations.

The questionnaire was designed with closed-ended questions, the answers to which fall on an interval scale that allows the assessment of the connection and the power of association between them. According to the recommendations of Malhotra and Birks (2006, pp.331-343), the five-point Likert scale was used. The five values were gradually associated from 1 to 5 with the following answer options: Absolutely not timely; Not at all timely; Pretty timely; opportunities; Very timely, no need to standardize data. Categorical or nominal variables

were taken into account in the quantitative research tool.

The questionnaire was divided into two sections, in order to be able to test the hypotheses that were formulated during the research approach. The first section of the questionnaire includes demographic questions and the second section includes questions on the impact of THRM on employees and the management of healthcare organizations.

The demographic questions were addressed in order to identify the differences between all categories of respondents in terms of assessing the impact of THRM on them. In the case of respondents with management positions, the demographic questions were also addressed in order to assess the impact of THRM on the management of their organizations.

In assessing the diversity of the workforce, factors related to the improvement of the workplace and the recruitment and selection of staff were taken into account. Respondents expressed views on changing the structure of staff in the organization and the employment of other citizens in the organization. From the interviews with them, certain characteristics were highlighted through statements, according to which the diversity of the labor force was assessed.

Improving the workplace is considered appropriate by

respondents. Recruitment and selection of staff is considered quite timely by respondents. Most of the respondents discussed expressed an affinity for the idea of changing the structure of the organization and the employment of other citizens in the organization. The diversity of the workforce is accepted and viewed with interest by the respondents.

In the evaluation of the employees' attitude, factors related to the appreciation of competencies and the emotional connections were taken into account. Respondents expressed views on changing the employee's attitude towards another merit assessment and changing the job due to staff reorganizations. The interviews highlighted certain characteristics, according to which the attitude of the employees was evaluated.

The assessment of competencies is considered by the respondents to be very timely. The emotional connection is considered quite fortunate by the respondents. Most of the respondents discussed agreed with the idea of changing the employee's attitude towards another merit assessment and changing the job due to staff reorganizations. The attitude is considered important and treated with interest by the respondents.

In the evaluation of individual performance, factors related to individual development and

increasing the level of performance were taken into account. Respondents expressed views on the employee's greater involvement in work in relation to the same salary and on receiving different tasks for acquiring new knowledge. From the interviews with them, certain characteristics were highlighted by statements, according to which the individual performance was evaluated.

Individual development is considered by respondents to be quite timely. Increasing the level of performance is considered appropriate by respondents. Most of the respondents discussed expressed an affinity for the idea of greater employee involvement in relation to the same salary and for receiving different tasks for acquiring new knowledge. The individual performance is viewed with interest by the respondents.

In assessing employee motivation, factors related to rewarding performance and encouraging loyalty were discussed. The respondents expressed opinions regarding the salary increase in the organization and the application of the Romanian unitary salary law no. 153 of 2017 at the level of the organization. The interviews highlighted certain characteristics, according to which the motivation of the employees was evaluated.

Rewarding performance and encouraging loyalty are considered

appropriate by respondents. Most of the respondents we discussed agreed on the increase of salaries in the organization and the application of the law on unitary salary no. 153 of 2017 at the level of the organization. The motivation is considered important and treated with interest by the respondents.

Factors related to training and advancement opportunities were discussed in terms of talent management.

Respondents expressed views on conducting vocational training courses and exchanging international experience for vocational training. From the interviews with them, certain characteristics were highlighted through statements, according to which the topic of talent management was approached.

Vocational training is considered by respondents to be quite timely. Advancement opportunities are considered useful by respondents. Most of the respondents discussed expressed affinity for the idea of conducting vocational training courses and exchanging international experience for vocational training. Talent management is viewed with interest by respondents.

In terms of staff turnover, factors related to job dissatisfaction and career opportunity were discussed. Respondents expressed views on changing jobs for a higher salary to another organization in

the country and working abroad for a career. From the interviews with them, certain characteristics were highlighted through statements, according to which the staff turnover was analyzed.

Job dissatisfaction is accepted by respondents as quite common. The employment opportunity abroad is considered not at all opportune by the respondents, amid the COVID-19 pandemic. Most of the respondents interviewed expressed negative feelings about the idea of changing jobs for a higher salary at another organization in the country, as well as about employment abroad for a career. Staff turnover is tolerated by respondents.

In the evaluation of the work climate, the factor related to job satisfaction was taken into account. Respondents expressed views on changing the work climate on employee behavior. From the interviews with them, certain characteristics were highlighted through statements, according to which the work climate was evaluated.

Job satisfaction is considered by respondents to be quite timely. Respondents discussed expressed interest in the idea of changing the work climate on employee behavior. The work climate is important for respondents.

Regarding the organizational structure, the factor related to

managerial involvement was discussed. Respondents expressed views on reducing the number of staff compared to the number of patients in need of care. From the interviews with them, certain characteristics were highlighted through statements, according to which the organizational structure was evaluated.

Managerial involvement is considered by respondents to be quite timely. Respondents discussed strongly disagreed with the idea of reducing the number of staff compared to the number of patients in need of care. The organizational structure is very important for the respondents.

Regarding the managerial efficiency, the factor regarding the acquisition of services provided by third parties was discussed. Respondents expressed views on the outsourcing of support services to increase managerial efficiency. From the interviews with them, certain characteristics were highlighted through statements, according to which the managerial efficiency was evaluated.

The purchase of services provided by third parties is considered inappropriate by respondents. Respondents discussed expressed interest in the idea of outsourcing support services to increase managerial efficiency. Managerial efficiency is important for respondents.

Regarding the variables that characterized the two groups of questions, they were validated favorably by the qualitative research, not being necessary to eliminate or reformulate some of the questions. In this context, the obtained result confirmed and maintained the conceptual research model, presented in Fig.1, built with the nine latent variables, related to studying the impact of THRM on employees in health organizations, respectively the impact of THRM on management of health organizations.

#### **4. QUANTITATIVE RESEARCH RESULTS**

For the quantitative study, the respondents were invited to fill in a questionnaire addressed to the staff of the health organizations available by accessing a link, using social media channels. This questionnaire was programmed through a platform specialized in conducting quantitative research online, in compliance with the rules and legislation in force related to the protection of personal data (Colibaba:2001).

Within the quantitative research, carried out between May 7, 2020 and July 31, 2020, a number of 1276 completed questionnaires were registered. Data collection was performed for 20-25 minutes by answering the questions of a questionnaire.

The quantitative study aimed to assess the impact of THRM on employees and management of health organizations. In this sense, the computer application SPSS version 26 was used for factorial data analysis. The respondents to this quantitative research were represented by major individuals working in health and public organizations, public and private, in urban and rural areas. The profile of the respondents in terms of demographic characteristics/features is presented in Table 2. For the quantitative study the respondents were invited to complete a questionnaire addressed to the staff of the health organizations available by accessing a link, using social media channels.

The structure of the sample shows that the best representation is made up of people belonging to the medical staff (74%), respectively people working in public organizations (72%) and people working in organizations operating in urban areas (90%). In terms of the level of education of the respondents, it is noted that 74% of them have undergraduate and postgraduate studies. A number of 293 people also answered the questions addressed to the respondents with management positions.

The sample is very unbalanced from the point of view of gender, the proportion of men being almost seven times lower than that of

women in the quantitative study. The situation is in line with the proportion of the two genders in healthcare organizations, which are strongly feminized. Regarding the hierarchical level of the respondents, the share is balanced between the executive staff and the contract staff or with management positions.

The evaluation of the variables was performed by factor analysis, using the SPSS version 26 application to test the variables, as well as their correlation level. The testing will be done for each variable, in order to test the hypotheses of scientific research. Linear regressions were applied to the manifest variables by the Enter method in which they were independent variables and the demographic variables were dependent variables.

Testing the latent variable L1 - Diversity of the workforce is achieved by studying the variables manifest G1 - Changing the structure of staff in the organization and G3 - Hiring of other citizens in the organization. The Pearson correlation coefficient between the manifest variables is 0.074 and the sig coefficient is 0.008 ( $p < 0.01$ ).

From these data there is a very weak correlation of the manifest variables, respectively a very good accuracy of the results. No variables were removed. The results are statistically significant. The mean values of the manifest variables G1

and G3 are 3.50 and 2.89, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic variables.

Testing the latent variable L2 - Employees' attitude is achieved by studying the manifest variables G5 - Changing the employee's attitude towards another merit assessment and G8 - Changing the job due to staff reorganizations. The Pearson correlation coefficient between the manifest variables is 0.243 and the sig coefficient is 0.000 ( $p < 0.01$ ).

From these data there is a weak correlation of the manifest variables, respectively a very good accuracy of the results. No variables were removed. The results are statistically significant. The mean values of the manifest variables G5 and G8 are 4.23 and 2.91, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic variables.

Testing of the latent variable L3 - Individual performance is achieved by studying the variables manifest G4 - Greater involvement in the work of the employee in relation to the same salary and G6 - Receiving different tasks to acquire new knowledge. The Pearson correlation coefficient

between the manifest variables is 0.225 and the sig coefficient is 0.000 ( $p < 0.01$ ).

From these data there is a weak correlation of the manifest variables, respectively a very good accuracy of the results. No variables were removed. The results are statistically significant. The mean values of the manifest variables G4 and G6 are 2.96 and 3.76, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic variables.

Testing the latent variable L4 - Motivating employees is done by studying the manifest variables G2 - Increasing salaries in the organization and G7 - Applying the law on unit pay no. 153 of 2017 at the level of the organization. The Pearson correlation coefficient between the manifest variables is 0.195 and the sig coefficient is 0.000 ( $p < 0.01$ ).

From these data there is a weak correlation of the manifest variables, respectively a very good accuracy of the results. No variables were removed. The results are statistically significant. The mean values of the manifest variables G2 and G7 are 4.03 and 3.56, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic

variables. The summary of the results is expressed in Table 4.7.

Testing of the latent variable L5 - Talent management is performed by studying the manifest variables G11 - Conducting professional training courses and G12 - International exchange of experience for professional training. The Pearson correlation coefficient between the manifest variables is 0.188 and the sig coefficient is 0.000 ( $p < 0.01$ ).

From these data there is a weak correlation of the manifest variables, respectively a very good accuracy of the results. No variables were removed. The results are statistically significant. The mean values of the manifest variables G11 and G12 are 3.22 and 4.20, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic variables.

Testing the latent variable L6 - Staff turnover is achieved by studying the variables manifest G9 - Changing the job for a higher salary to another organization in the country and G10 - Hiring abroad for a career. The Pearson correlation coefficient between the manifest variables is 0.301 and the sig coefficient is 0.000 ( $p < 0.01$ ).

From these data there is a weak correlation of the manifest variables, respectively a very good accuracy of the results. No variables were

removed. The results are statistically significant. The mean values of the manifest variables G9 and G10 are 2.84 and 2.54, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic variables.

Testing latent variables L7 - Work climate, L8 - Organizational structure and L9 - Managerial efficiency by studying manifest variables S1 - Changing the work climate on employee behavior, S2 - Reducing the number of staff compared to the number of patients in need of care and S3 - Outsourcing services support for increasing managerial efficiency.

From these data there is a weak correlation of the manifest variables, respectively a good accuracy of the results. No variables were removed. The results are interpreted statistically. The average values of the three variables are 3.66, 1.64, and 2.75, respectively. To study the dependence of manifest variables, linear regressions were performed by the Enter method in which they were independent variables, the dependent variables being demographic variables. The variable d6 is constant, all respondents having a leadership function. SPSS displayed the message The dependent variable d6-professional status is constant and

has been deleted. Statistics cannot be computed and removed this demographic dependent variable.

For the testing of the latent variable L7 - Work climate, the variable variable S1 - Change of work climate on the employee's behavior was used, which has an average value of 3.66 and sig 0.000. By the Enter method, linear regressions were performed in which the manifest variable S1 was an independent variable and the dependent variables were the demographic variables.

Testing of the latent variable L8 - Organizational structure was performed by studying the variable manifest S2 - Reduction of the number of staff compared to the number of patients in need of care, which has an average value of 1.64 and sig 0.000. By the Enter method, linear regressions were performed in which the manifest variable S2 was an independent variable and the dependent variables were the demographic variables.

For the testing of the latent variable L9 - Managerial efficiency, the manifest variable S3 - Outsourcing of support services was used to increase the managerial efficiency, which has an average value of 2.75 and sig 0.000. By the Enter method, linear regressions were performed in which the manifest variable S3 was an independent variable and the dependent variables were the demographic variables.

## **5. INTERPRETATION OF SCIENTIFIC RESEARCH RESULTS**

Given that the purpose of scientific research is to study the impact of THRM on employees and management of health organizations, the conceptual research model, presented in Fig.1 was tested, on this occasion verifying the validity of research hypotheses. For this, the impact of THRM on employees and on the management of health organizations was used.

The results obtained from the application of the questionnaire were integrated in tabular format in the computer application SPSS version 26. The interpretation of the results allowed us to quantify the degree of validation of research hypotheses, both at general level and at the level of each category of respondents. From the analysis of the answers formulated by the respondents to the questions, complex evaluations of the answers were prepared through a factorial analysis of the variables that describe the impact of the transformation of HRM on the employees from the health organizations.

Verification of the validation of the IP1 hypothesis was made by analyzing the latent variable L1. The respondents had a predominantly positive attitude regarding the diversity of the workforce, considering the fact that along

with the medical staff in the health organizations, other categories of employees are active, such as auxiliary staff, health specialists, TESA staff, etc. Changing the staff structure in the organization is desired by most respondents.

From the qualitative research, opinions were obtained that indicated the need to increase the staff structure in order to carry out an efficient medical activity. A reduction in the staff structure affects the current activity of the organization, reinforced by the situation in the context of the COVID-19 pandemic, when the addressability of customers to medical services increased.

The employment of persons of other citizenship is tolerated by the respondents, the data obtained in the qualitative research also indicating the formulation of unfavorable answers. Against the background of the fear of losing their job, the respondents from the private and rural areas expressed themselves especially unfavorably, the persons of other citizenship represent a competitive factor, the salary being motivating.

Qualitative research has shown that a large number of foreign healthcare professionals could be attracted by the level of salaries at the level of European health organizations and living standards, with foreigners being steadfast and willing to work harder. Some respondents do not

agree with the employment of people of other nationalities due to language barriers, their great flexibility and full involvement in the execution of service tasks, but also the time given to their performance.

Because the factorial analysis of the manifest variables G1 and G3 showed that they are very poorly correlated, it means that the manifest variables approached different topics, but which, cumulatively, lead to the validation of the latent variable L1 by the average values obtained. Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can argue that the IP1 research hypothesis is validated.

Verification of the validation of the IP2 hypothesis was made by analyzing the latent variable L2. The respondents mostly presented positive answers regarding the attitude of the employees. The change of the employee's attitude towards another way of evaluating the merits was considered opportune and very opportune by the majority of the respondents of the questionnaire.

A very direct attitude in a positive sense had the respondents auxiliary health professionals and health specialists, those who work in private organizations, as well as

those who work in rural areas or those who have only high school education. The qualitative research indicated the dissatisfaction of some of these employees regarding the appreciation of merits.

The quantitative data obtained from the analysis of the answers captured by applying the questionnaire indicated antagonistic attitudes regarding the change of job due to staff reorganizations depending on the environment in which the organization operates and the form of its financing. The majority of respondents from rural areas and those from private organizations, as well as those from the category of contract staff expressed the option to change jobs in the event of staff reorganizations. The qualitative research revealed the idea that some respondents who do not want to change jobs have a stable family situation and a satisfactory income.

Mostly negative attitudes towards job change due to staff reorganizations were recorded among respondents with management positions, those with postgraduate studies and employees in public health organizations.

Because the factorial analysis of the manifest variables G5 and G8 showed that they are poorly correlated, it means that the manifest variables approached different topics, but which, cumulatively, lead to the validation of the latent variable

L2 by the average values obtained. From the analysis undertaken on each category of respondents of the questionnaire, from data obtained by quantitative techniques, from the explanations generated by the data obtained by qualitative techniques, as well as from the analysis performed in the SPSS computer application, we can argue that the IP2 research hypothesis is validated.

Verification of the validation of the IP3 hypothesis was made by analyzing the latent variable L3. Respondents had a high share of favorable responses in terms of individual performance. Quantitatively, data were obtained with a majority of favorable answers for all respondents in case of receiving different tasks at work in order to acquire new knowledge.

Qualitative techniques obtained relevant data that expressed the dissatisfaction of specialists with higher education and auxiliary staff with respect to the remuneration related to involvement in work, which they consider much lower than that of medical staff.

Regarding the reception of different tasks by employees in order to acquire new knowledge, the respondents expressed their desire to participate in professional training at work with the aim of developing a professional career. The respondents expressed their interest in participating in professional

training programs and in order to ascend on a hierarchical scale, an aspect highlighted in the context of the COVID-19 pandemic.

In the private sector, employees consider that they are not motivated to get more involved in work because salaries are not motivating. The analysis of the obtained data expressed the desire of the contract staff to get more involved in the work in order to be paid extra. Some people with executive positions were reluctant to get involved in work in order to obtain salary benefits, considering that they have enough responsibilities to cover the work schedule.

Data obtained from respondents indicate that involvement in work can lead to financial incentives and promotion to other positions. The reception of different tasks by employees with the aim of acquiring new knowledge is seen favorably by employees, allowing them to increase the level of professional training and their employment in other positions within the organization.

Because the factorial analysis of the manifest variables G4 and G6 showed that they are poorly correlated, it means that the manifest variables approached different topics, but which, cumulatively, lead to the validation of the latent variable L3 by the average values obtained. Considering the analysis undertaken on each category of respondents of

the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can claim that the IP3 research hypothesis is validated.

Verification of IP4 hypothesis validation was made through the analysis of the latent variable L4. Most respondents expressed positive opinions about employee motivation. Thus, for the organization in which an increase in salaries is active, it would be auspicious, as it would allow the employment of staff that work mainly in urban areas and would allow the additional attraction of customers.

The quantitative analysis of the data obtained by applying the questionnaire identifies a positive share of the answers formulated by most employees of private organizations. Most of the respondents consider favorable the application of the unitary salary law no. 153 of 2017 at the level of the organization in which it operates.

The data obtained through qualitative techniques from the respondents offered their positive reactions in case of application of the Law on unitary salary no. 153 of 2017 because it ensures increased social and family comfort, especially in the situation of the current COVID-19 pandemic. However, the managers of private health organizations do not

agree with this idea, considering that the salary levels imposed by the law would unbalance the businesses they run.

Because the factorial analysis of the manifest variables G2 and G7 showed that they are poorly correlated, it means that the manifest variables approached different topics, but which, cumulatively, lead to the validation of the latent variable L4 by the average values obtained. Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can argue that the IP4 research hypothesis is validated.

Verification of the IP5 hypothesis validation was made by analyzing the latent variable L5. The respondents mostly presented positive answers regarding the talent management, the most evident positive attitude being registered at the respondents from the category of health specialists.

The data obtained in the qualitative research showed that talent management is much more used in private organizations, which are dependent on the competitive environment. Against this background, the interest of the managers of these organizations in recruiting and hiring staff on criteria

of meritocracy and who can innovate in the organization is noticeable.

A large part of the respondents in the category of those with management positions expressed their disagreement with the conduct of professional training courses. A passive attitude was expressed by respondents with high school education and by those who are part of other categories of employees.

Even if the majority of respondents consider that the exchange of international experience for professional training is beneficial, in the case of employees with high school education there is a much higher level of skepticism. The analysis of the data obtained in the qualitative research showed that this fact is due to the easy classification of post-secondary, university and post-university graduates in the states of the European Union and the European Economic Area, unlike high school graduates.

Because the factorial analysis of the manifest variables G11 and G12 showed that they are poorly correlated, it means that the manifest variables approached different topics, but which, cumulatively, lead to the validation of the latent variable L5 by the average values obtained. Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the

analysis performed in the computer application SPSS, we can claim that the IP5 research hypothesis is validated.

Verification of the validation of hypothesis IP6 was made by analyzing the latent variable L6 - Staff turnover. Regarding the staff turnover, most of the respondents expressed unfavorable opinions about leaving their current jobs, not being interested in a higher salary at another organization in the country or abroad.

A different, slightly positive opinion was expressed by some respondents in the category of health professionals. The idea of changing jobs for a higher salary to another organization in the country is rejected by most respondents, going abroad to build a career is considered a possible option by a significant part of respondents in rural areas, private organizations and the category of health specialists.

The data obtained from the qualitative research highlighted the effects of the COVID-19 pandemic, the respondents invoking this reason that generates the refusal to leave the organization voluntarily to another job and the fact that they are not motivated by more attractive salaries or the idea of development, a professional career abroad, preferring to be permanent at current jobs. Staff turnover analysis is performed in an organization in order to estimate

the amount of future staff losses, as well as to be able to identify the reasons for voluntary departures. In this context, the low values of the weights of the respondents who want to change their job for salary or career indicate a high level of human resources management in organizations, directly interested in recording the lowest possible values of staff turnover.

Because the factorial analysis of the manifest variables G9 and G10 showed that they are poorly correlated, it means that the manifest variables approached similar topics, but which, cumulatively, lead to the validation of the latent variable L6 by the average values obtained. Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can claim that the IP6 research hypothesis is validated.

The scientific research also aimed to determine the extent to which THRM influences the management of health organizations. The results obtained from the application of the questionnaire were integrated in tabular format in the computer application SPSS version 26. The interpretation of the results allowed us to quantify the degree of validation of research hypotheses, both at general level and at the level

of each category of respondents. From the analysis of the answers formulated by the respondents to the questions, complex evaluations of the answers were drawn up through a factorial analysis of the variables that describe the impact of THRM on the management of health organizations.

Verification of the validation of the IP7 hypothesis was made by analyzing the latent variable L7. The results obtained in quantitative research indicated that the change of the work climate on the employee's behavior is perceived as positive in the case of most respondents, except for those with post-high school studies, who showed a very high level of neutral responses.

Given that these respondents have leadership positions, this marginal attitude highlighted in respondents with post-secondary education can be explained by the fact that the positions held by these people in the organizations in which they work do not give them the opportunity to know and analysis of the impact of work climate change on employee behavior. The data obtained from the qualitative research showed that the employee's attitude is directly influenced by the work climate. Job satisfaction is very important for the employee.

From the factorial analysis of the manifest variable S1 it emerged the validation of the latent variable L7 through the average values obtained.

Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can claim that the IP7 research hypothesis is validated.

Verification of the IP8 hypothesis validation was made by analyzing the latent variable L8. Quantitative research on the organizational structure showed that most respondents expressed very strong negative responses to the opportunity to reduce the number of staff compared to the number of patients in need of care.

The data obtained from the qualitative research indicated the need to maintain the organizational structure during this period, the COVID-19 pandemic requiring to the maximum the functional capacities of the organizations in the health field.

During the application of the questionnaire, the pressure on the staff of health organizations was often very high, being required to the maximum after during the state of emergency the operational capacities were limited, hardly coping with many cases in certain areas of the country. The answers formulated by the respondents, people with management positions, indicated a firm desire of them to maintain the organizational structures in

the future, even to the requests for additional staff coming from the employees.

The factorial analysis of the manifest variable S2 showed the validation of the latent variable L8 through the average values obtained. Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can claim that the IP8 research hypothesis is validated.

Verification of the IP9 hypothesis validation was made by analyzing the latent variable L9. The quantitative research carried out indicated that managerial efficiency is a desideratum only for private organizations in the field of health, respondents, people with management positions, from these entities considering in a very large proportion that the outsourcing of support services increases the organization's performance.

Data from qualitative research have shown that rural respondents do not agree with the outsourcing of support services due to long response times and risk management. At the same time, an outsourcing of support services in the organization is not agreed by other respondents against the background of current economic instability. In the public system, managers fear that people may lose

their jobs, so an approach such as outsourcing support services could become a cause of union conflict.

The factorial analysis of the manifest variable S3 showed the validation of the latent variable L9 through the average values obtained. Considering the analysis undertaken on each category of respondents of the questionnaire, the explanations generated by the data obtained by qualitative techniques, as well as the analysis performed in the computer application SPSS, we can argue that the IP9 research hypothesis is validated.

Given that all research hypotheses have been validated, the testing of the conceptual research model of the impact of THRM on the management of health organizations has been successfully completed.

Regarding the variables subject to analysis in the quantitative research, they were validated favorably, and it was not necessary to eliminate or reformulate some of the questions in the questionnaire. In this context, the result obtained confirmed and maintained the conceptual model, thus allowing the construction of the research model of the impact of THRM on employees and management of health organizations. Based on this conceptual model, a research model was built with nine latent variables and fifteen manifest variables, related to studying the impact of THRM on employees and

management of health organizations, the research model being presented in Fig.2.

The research hypotheses were validated by the respondents, the corroboration of the questionnaire, interrogation and observation techniques leading to the formulation of well-founded conclusions. It should be noted that the respondents did not experience feelings of frustration or restraint during the scientific research, which is why the sample can be used in the future, during further research developments.

At the beginning of the scientific research, four research objectives and nine research hypotheses were defined, subsequent to them. Along with the nine research hypotheses, these scientific objectives were validated, thus demonstrating that THRM is directly related to human resources and the management of health organizations, having a direct impact on them.

During the scientific research, the sources of pressure associated with THRM were identified and their impact on the commitment of employees in health organizations was assessed. At the same time, the differences that appear at the level of individual consciousness were evaluated, depending on the stage of THRM in health and the extent to which globalization has an impact on THRM in health organizations was assessed, THRM influences the management of health organizations.

The evaluation of the fulfillment of the four research objectives by applying qualitative techniques and the questioning of a sample of 1276 respondents leads us to the conclusion that the research hypotheses and research objectives were correctly formulated and met, respectively, the results of scientific research will be developed in the future. Thus, a research model was presented, presented in Fig.2, built on a conceptual model that was validated in scientific research in two stages, qualitative and quantitative.

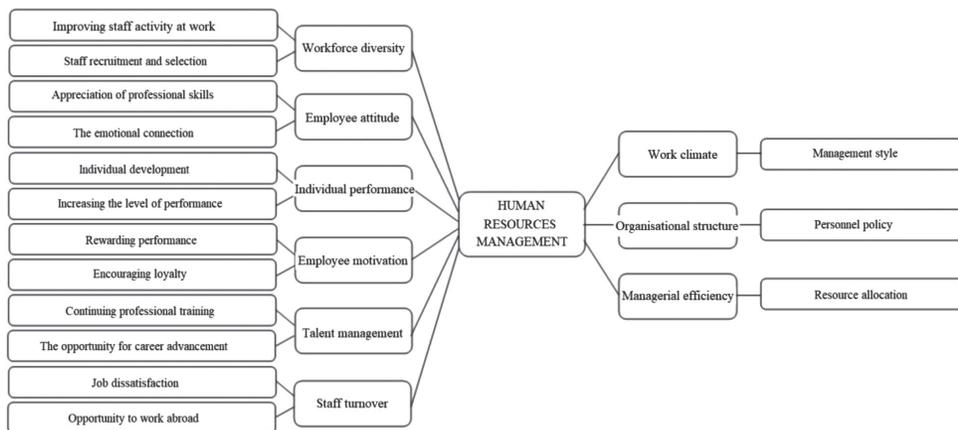
The research model of the impact of THRM on employees and management of health organizations can be successfully implemented in both private and public organizations, the influence manifested by shareholders being represented in terms of managerial interest. At the same time, the elements related to health employees are effectively and efficiently addressed through this model, without making differences or exclusions of gender, social position, professional status or activity environment.

In this context, this research model addresses the issue of health with rigor, without the need for adaptations as in the case of the models described in the first chapter of the paper. Contextually, those models introduce some variables that do not agree with the socio-professional situation of employees

in these organizations and do not cover the elements of management analysis that contribute to achieving performance and profitability objectives. It should be noted that the influence of stakeholders is represented in both sets of input variables, both at the level of staff and management of the organization.

Against this background, the research model of the impact of THRM on employees and management of health organizations aims to obtain an organizational framework in which resistance to organizational change is minimal, while maintaining or increasing performance and profitability parameters. The central aspect considered by this research model is represented by the employee-employer relationship through the prism of HRM. The adaptation of a single HRM model may be incomplete, insufficient and even inefficient to cover the issue of THRM in health organizations.

In order to effectively apply a HRM and making a comparative approach with other similar research on the models that contributed to the development of HRM, the conceptual model built, tested and validated in this research is a managerial tool. This research model of the impact of THRM on employees and the management of healthcare organizations joins other HRM models and can be used successfully in these organizations.



**Fig. no. 2** Conceptual research model

Source: Made by the author

## 6. ANALYSIS AND STRATEGIES IN HUMAN RESOURCES MANAGEMENT IN THE FIELD OF HEALTH, NATIONAL SECURITY ISSUES

Being a matter of national security, the elaboration of strategies in the field of human resources in health and the coordination of their application are own attributes of the Ministry of Health, the Romanian health information system remaining extremely centralized and the administrative regulation and financial control being concentrated at national level. The policies and strategies for HRM at public health organizations are carried out at the level of the primary authorizing officer, with the approval of the regulatory body. In the primary healthcare, there are around 11000 family doctors who have concluded

contracts with the National Health Insurance House, these having at least 2000 insured persons registered in their own lists. The National Institute of Statistics reported that in 2017 in Romania there were 367 public hospitals and 209 private hospitals (Lozan et al.:2019).

The deficit in certain specialties of medical staff is due to the faulty application of HRM policies and strategies at territorial and central level, not justifying the blocking of certain positions and not requiring decision makers to unblock them and organize employment competitions. The effects of these deficiencies had special consequences during the COVID-19 pandemic, which were due to the minimal staffing of staff schemes and the frequent illnesses of medical staff, often requiring relocations and thus defending the psychomotor overload of staff.

Because there are various areas of activity in which different sets of policies are used, there needs to be an interaction between the organization and the environment so that policies are implemented in favor of the organization. Thus, if one strategy is applied favorably in one organization does not mean that it will fit in another, this situation being due to different external environment, availability of resources, technology, management style and work practices. Therefore, it is recommended that good practices be chosen in HRM and not best practices (Johnson:2013).

In healthcare organizations, it is preferable to use coaching as a form of development, in order to achieve a personal or professional goal, through which to exchange information between two people, one of them providing guidance, such as, for example, the case of two doctors with the same specialty.

Transforming HRM into healthcare organizations can be approached in a wide variety of ways, one of which is talent recruitment, with the organization's performance depending on how talent management works. Transposed to the strategic and tactical needs of healthcare organizations, Competitive Human Resources Intelligence provides us with data and information about these people with exceptional qualities, desired by several competing organizations.

Competitive Intelligence is designed and coordinated to monitor competitors, as employers or healthcare providers, wherever and however they may be, in a specific framework of action. Competitors are those persons, organizations or entities that an organization considers to be rival to its own interests and objectives and with which it is in competition (Nate:2013). Competitive intelligence in the field of human resources involves determining what competitors will do before acting.

From a strategic point of view, being able to predict a competitor's plans, it will be possible to build its own strategy to counteract its plans, which will involve several tactical methods at the level of information collection. The sources of information that contribute to the consolidation of Competitive Intelligence are annual reports, scientific papers, opinion leaders, interviews with specialists, public and proprietary databases, press releases, other sources, including analysts, etc.

Medical staff is a critical component of the healthcare system and must be requested periodically because it is a valuable resource that can facilitate the flow of competitive information. Competitive Intelligence needs to focus on the infrastructure, technology and specialties of competing organizations, as well as on unique factors that could make a

difference. These aspects refer to the conditions that the talents targeted to be recruited will have at their disposal for the provision of the best medical assistance, as well as to the performance and competence of the medical staff employed in the organization.

Competitive intelligence in the field of human resources is the indispensable ingredient of the procurement and retention strategy in healthcare organizations, being preferable to always be used with talent management. The clear and deep perception of the need to transform the management of human resources by the managers of the organization is indispensable to the process of organizational change (Burlea-Şchiopoiu: 2007b, p.24)

The implementation of modern information technologies, including Business Intelligence, leads to lower personnel costs, with a significant impact on the financial results of the organization. The development of technologies used in the field of human resources has contributed to THRM, which has gained a decision-making role (Bondarouk and Brewster:2016).

The massive computerization of human resources activities generates clear effects on the functions of HRM, namely in staff recruitment, training and employee development, performance management and payroll and attendance records. Business

Intelligence applications are widely used in the processes of employee evaluation, account management and performance reporting, as well as in identifying vacancies or proposals to terminate employment contracts. All these contribute to strategic decision making and to the achievement of the organization's objectives (Etukudo:2019).

In general, THRM produces tensions that cannot be avoided and differences of opinion, which in modern organizations are resolved, but sometimes in organizations with a rigid culture can produce conflicts. To save energy and time, managers seek to co-opt representatives agreed by members of the organization by skillfully handling organized opposition attempts, by fragmenting critical elements, and by enveloping them with qualified data and information in a cooperative setting.

The pace or speed of the process of THRM needs to be adapted to the specific characteristics of the organization's environment (external and internal). The so-called strategic continuum depicts a scale of transformation intensity, with two extremes: fast pace and slow pace. 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.

Regarding the processes of THRM in health organizations, the results of scientific research allowed an analysis of the force field, which involved identifying, as in a balance, the elements and forces that support the transformation and the elements and forces that restrict it and act to maintain its current state. The rejection of the change was generated by the fear of the respondents that they will not be able to adapt to the new requirements, as well as by other reasons generated by the fear of the unknown. The forces favorable to THRM in health organizations are more intense, with the support of decision makers from the state leadership and direct observations and interviews demonstrated the attachment of employees to the organizations in which they operate.

The study of influence factors, internal and external and the analysis of the force field have shown that the transformation processes started or under preparation at the level of health organizations will be successful, at the level of staff registering attitudes that contribute to the implementation of these transformation processes. External factors are favorable and even impose changes, amid the need to integrate our country into international bodies and combat the effects of the COVID-19 pandemic.

The most convenient strategy for senior managers is the coercive one because through it they only give 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 useless.

A bargaining strategy could only work in the case of public organizations, given that their employees can join trade unions. In other healthcare organizations this strategy is unusable as the hierarchy is not based on negotiation. In contrast, the educational strategy targets all categories of staff in healthcare organizations.

Participatory strategies are welcome in healthcare organizations, allowing their employees to manifest themselves in support of transformation through knowledge gained. The results of the scientific research carried out indicated that participatory strategies are optimal in health organizations. At the time of the transformation, the resistance can be reduced by approaching the processes from top to bottom, the awkward employees, possibly from the middle management, being able to be immediately replaced with other people with favorable opinions.

## 7. CONCLUSIONS & ACKNOWLEDGMENT

One of the main implications of this study is that human resources professionals will play a vital role in addressing all identified factors. Solutions to health problems are not just medical. Human resources experts understand the importance of developing a culture that allows an organization to meet the challenges and how communities of practice can be formed around common goals and interests, and the importance of aligning them with the organization's health goals and interests.

The need to transform HRM was studied by establishing four research objectives, based on which we proceeded to formulate, test and validate nine research hypotheses on the factors involved in the relationship of HRM with employees and management of organizations in health. The distinct dimensions of these two relationships are scientifically supported by the construction and validation of an innovative research model, described by nine latent variables, whose purpose is to identify the impact of THRM on employees and management of health organizations.

At the same time, the research model developed highlighted the existing relationships between HRM and the management of health organizations, in terms of work

climate, organizational structure and managerial efficiency. The data obtained from scientific research highlighted the discrepancies between organizations with private and public capital, between those operating in urban and rural areas, as well as the difference in approach to medical activity in the private and state system.

*Following these conclusions, the research model proves useful to managers of health structures from national security organizations and human resources managers in order to improve management practices and policies, as well as to identify the causes that cause problems in organizations, including in terms of employee relations.*

This research model therefore helps managers to balance the forces acting on the organization both internally and externally, in order to optimize the level of performance of employees or management of organizations. In addition, the results obtained from scientific research have a favorable impact on the competitive environment in the field of health by offering a portfolio of medical or quality products and services.

A major limitation of this scientific research is the fact that qualitative and quantitative studies were conducted in the COVID-19 pandemic, respectively during April-July 2020. The results of scientific

research were validated at the level of employee-employer relationship and the relationship between employee and business, in the second case there is a limitation induced by the exclusive participation of people with management positions in this study.

Against this background, it is necessary a further development of this scientific research and in conditions of sanitary, social and economic normality, in order to be able to develop the ideas and themes proposed by the researcher. An additional element of study could be introduced by capturing stakeholders in scientific research and extending this qualitative and quantitative research to other competitive markets.

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# THEORETICAL AND PRACTICAL ASPECTS OF STUDENTS' MOTIVATION IN THE MILITARY EDUCATION SETTING

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*Recognized by international experience one of the most important factors in the success of the country's armed forces is a motivated and educated human resource. Consequently, in the contemporary stage the world's developed countries' armed forces pay great attention to the education, training and career development of the personnel.*

*The article describes close relationship between military education, educational process and the motivation of the military servicemen. It is noteworthy that in the armed forces there is no uniform approach to motivate military personnel, the motivation process is more oriented towards the challenge of internal interest by methods of 'punishment and encouragement', focusing on the educational process in the field of military education, and the external impulses and motivation of students.*

*In the theoretical aspect not only the theory of contemporary motivation and demands – Richard Ryan and Edward Des 'the theory of self – determination, Victor Vroom's theory of expectations and Abraham Maslow's theory of expectations and requirements, but also substantiates the advantages, values and importance from the scope of practical aspects of military education. Students' motivation sources and types are based on the results of the survey conducted by the Georgian National Defence Academy students. In this article the possibility of implementation of the proposed theories in the field of military education is reinforced and stated by examples and practical research results of well-known authors. Various forms and methods of student motivation are discussed, the role and abilities of teachers and instructors in students' motivation. It focuses on the theory of self-determination that expresses the importance of motivating students among different people with different status and thus closely related to the educational process. The theory focuses on three basic universal requirements such as autonomy, competency and relatedness. The article presents the summary and recommendations of values, importance and advantages of using theories of motivation and demands in the field of military education by students, teachers and instructors.*

**Key words:** motivation, theories of motivation and needs.

## **1. INTRODUCTION**

Nowadays the well-designed strategy, structure and equipment is not enough for the efficiency of the armed forces, yet highly motivated, educated human resources with high combat capabilities make it effective. Combat readiness in military service can be reached with motivated personnel (Strategy for development of military personnel management systems in Georgia 2014). The practice in military service shows that the commander and the subordinates are successful in their military career if they are aware of the essence of motivation. Military institutions, as well as in civilian institutions are focused on motivating students and providing high quality of education. 'knowing more about how students are motivated, and what you can do to structure a class that positively affects students' motivation, can make significant difference in student engagement and learning' (Svinicki, et al., 2014 p. 139). In the learning process, students can reveal maximum effort and interest if they are properly motivated and have real incentives.

Learning process has also been studied through the concept of intrinsic and extrinsic motivation. Intrinsically motivated student is one whose maintenance and involvement in the class activity happens as consequence of the task itself because it is interesting and

creates satisfaction. The extrinsically motivated students is one who performs a task or activity because students are interested in the option of the other person (Edvalda, et al., 2013). 'Students can perform extrinsically motivated action with resistance, resentment, and disinterest or alternatively, with an attitude of willingness that reflects an inner acceptance the value or utility of a task' (Ryan, et al., 2000).

While assessing students' motivation it is desirable to find out the source of motivation. It comes from the inner state of the student and needs external impacts or stimulation. This process should be carried out in the family, at school, within training or through media. This is an environment where adults are situated, and see, and consider current events behave and reacting appropriately. From this point of view, it can be said that the level and type of motivation is determined by the environment.

People have not only different amount of motivation but also different kinds of motivation. They are different not only in level of motivation but also in the orientation of that. Orientation of motivation relates to the underlying goals and attitude that give rise to action (Ryan, et al., 2000). Military educational setting is the place where student's inner state or interest can be supported by classroom or battlefield training. Also external incentives are

widely used to support students to be successful in everyday life. Therefore, students in a military educational setting can be motivated by different things: getting education, being employed, financial perspective, military career, improving physical condition etc. Thus, if one is able to understand the nature of the behaviour of young people and consequent impact of it, it is possible to obtain the desired results.

This article argues that **in the military educational setting there is no one common approach how to motivate students**. However, Maslow's Theory of Needs, Ryan and Deci's Self-Determination Theory and Vroom's Theory of expectancy provide a sound basis for motivating military students. To support the argument, the first chapter defines the concept of motivation and describes some theories of motivation and needs. The second chapter discusses practical application of the theories of motivation and needs in military educational settings. Final part of this article is conclusion.

## **2. DEFINITION OF MOTIVATION AND THEORIES OF MOTIVATION AND NEEDS**

The following chapter provides a definition of motivation and an overview of some theories of motivation and needs. The essence of theories such as Self-Determination

Theory (STD), Maslow's Theory of Needs, and Expectancy Theory are outlined.

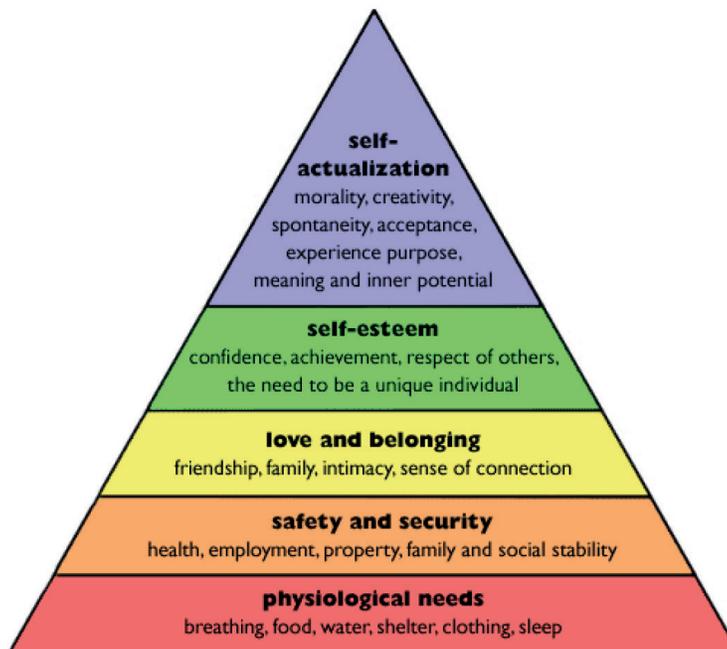
To start with, it needs to be considered what is meant by "motivation". Different authors provide several definitions how this term could be understood. For example, Ryan and Deci define it as follows: 'To be motivated means to be moved to do something. A person who feels no impetus or inspiration to act is thus characterized as unmotivated, whereas someone who is energized or activated toward an end is considered motivated' (Ryan, et al., 2000). Brown has described it as: 'Motivated behavior is generated by physiological or psychological needs and wishes. Needs activate and direct a person to his goal to get a sense of satisfaction. The purpose of this action to satisfy a person's needs' (Brown, 2007 p. 5). Another definition of motivation, which is connected to education is the following: 'Students' motivations is considered a galvanizing energy in the teaching and learning process that permeates all levels of education, both in relation to the amount of time student spend studying as well as their academic performance and achievements of immediate satisfaction in their lives' (Ryan, et al., 2015). Motivation in learning can be related to many factors: the internal needs and drives of the student, the interaction between the individual and their experience, the learning which

students have already done, and/or the aims they set for themselves (Rogers, et al., 2010 p. 110).

Giorgi Shubladze and his colleagues divide motivation theories into two categories: content and procedural theories. The content theories of motivation are based on the internal needs that force humans to behave a certain way. Significant representative of the content theories is Abraham Maslow (Shubladze, et al., 2011 p. 153).

The Theory of Needs consists of five hierarchic classes from basic to most complex: (starting from the most basic) Physiology, Safety,

Love/Belonging, Self-esteem, Self-actualization. Physiological needs are breathing, food, water, sex, sleep, homeostasis, excretion. Safety needs mean security of body, employment, physical security, resources, morality, the family, health, property safe environment. Need for belonging means friendship, family, sexual intimacy. Esteem needs are self-esteem, confidence, achievement, respect of others, respect by others and finally self-actualization - morality, creativity, spontaneity, problem-solving, lack of prejudice, acceptance of facts (see figure 1).



**Fig. no. 1.** Maslow's hierarchy of needs (Maslow, 1943)

The basic requirements are built upon the first step in the pyramid. According to this theory, the needs on the basic level of the pyramid must be satisfied before people start struggling for the satisfaction of needs of upper level of the hierarchy. In case of reaching the satisfaction of needs on each level, it terminates functioning and the higher level of this hierarchy becomes motivator of the behaviour (Shubludze, et al., 2011 p. 157)

As for the procedural theories, their basis is the behaviour based on perception of expectations and the possible results of selected behaviour. The Expectancy Theories of motivation belong to Procedural theories. Vroom's theory of expectancy (1964) describes the interaction between the effort and the outcome. He suggested that motivation, expectancy, instrumentality and valence are related to one another by the equation.  $\text{Motivation} = \text{Expectancy} \times \text{Instrumentality} \times$

Valence` (Expectancy Theory of Motivation, 2011).

Jones and colleagues (2006) explain the theory in terms of three key words: expectancy, instrumentality and valence. Expectancy is the perception of how much effort a person needs to devote to achieve a certain level of performance. Instrumentality is a person's perception of the degree to which certain level of productivity is achieved. Valence is how desirable each result is that can be received by the person (Jones, et al., 2006 p. 217). The essence of the expectancy theory is that `To be motivated, people must value the reward, think they can perform, and have reasonable assurance that their performance will lead to reward` (Dubrin, 2007 p. 292). In the educational context this theory means that students typically direct their behaviour toward activities that `they value and in which they have some expectancy of success` (Svinicki, et al., 2014 p. 143). Figure 2 illustrates the expectancy theory of motivation.

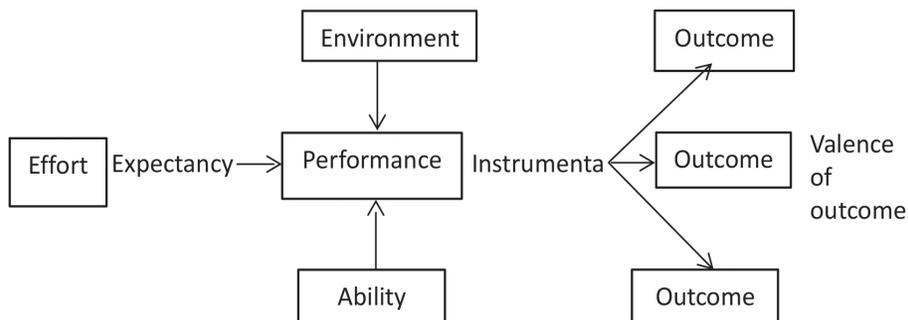


Fig. no. 2. The Expectancy Theory of Motivation (Dubrin, 2007 p. 239)

Figure 2 shows that if the execution process stops, the result will not be got. It should be noted that each result has its own value and one outcome can manage and influence other results. The environmental factor is very important. The environment may be family, school, military institution, friends and others that help in the process of performing behaviour. As previously mentioned, students typically direct their behaviour toward activities that they value and which they have some expectancy of success. Teachers can be benefit from knowing that they need to foster both. Students need to feel that there is a realistic possibility of success and that the outcome valuable to them (Svinicki, et al., 2014 p. 144).

When it comes to motivation theories, it is important to refer to psychologists Edward L. Deci and R. Ryan and their Self-Determination Theory (STD). 'SDT is concerned with supporting natural or intrinsic tendencies to behave in effective and healthy ways' (Ryan, et al., 2000). Ryan and Deci (2000) explain the theory in terms of internally and externally motivated behaviour and the key psychological needs: competence, autonomy and relatedness.

To make the critical distinction between behaviours that are volitional and accompanied by the experience of freedom and

autonomy—those that emanate from one's sense of self—and those that are accompanied by the experience of pressure and control and are not representative of one's self. Intrinsically motivated behaviors, which are performed out of interest and satisfy the innate psychological needs for competence and autonomy, are the prototype of self-determined behavior. Extrinsically motivated behaviors—those that are executed because they are instrumental to some separable consequence—can vary in the extent to which they represent self-determination. Internalization and integration are the processes through which extrinsically motivated behaviors become more self-determined' (Ryan, et al., 2000).

Self-Determination theory is focused on the psychological level, and it differentiates types of motivation along a continuum from controlled to autonomous. The theory examines how social, biological, and cultural conditions either enhance or undermine the inherent human capabilities for psychological wellness, engagement and growth, both in general and endeavours and specific domains. Self-Determination theory is particularly based on three universal and psychological needs such as: autonomy, competency and relatedness. 'Autonomy is a form of functioning associated with feeling volitional, congruent and integrated. Autonomy considered as this

sense of voluntariness is, therefore not the same as independence as people can be either autonomously or heteronomously dependent, independent, or interdependent depending on the context and behaviours entailed' (Ryan, et al., 2017).

According to Ryan and Deci, it is important to know the type of human's motivation is it intrinsic or extrinsic. Intrinsic motivation is focused on the issue of autonomy versus control rather than that of competency. It begins with the repeated demonstration that extrinsic rewards can undermine intrinsic motivation (Ryan, et al., 2000).

Intrinsic motivation has arisen as significant phenomena for teacher as natural wellspring of learning and achievement that can be systematically catalysed or undermined by teacher and parent practices (Ryan, et al., 2000). According to one definition, intrinsic motivation is hypothesized to have strong, direct effect on individual self-management. Hypothesized effects occur through increased self-management and its effects. Simultaneously the intrinsic reward that are at the heart of intrinsic motivation have another sequences of effects for retention (figure 3).

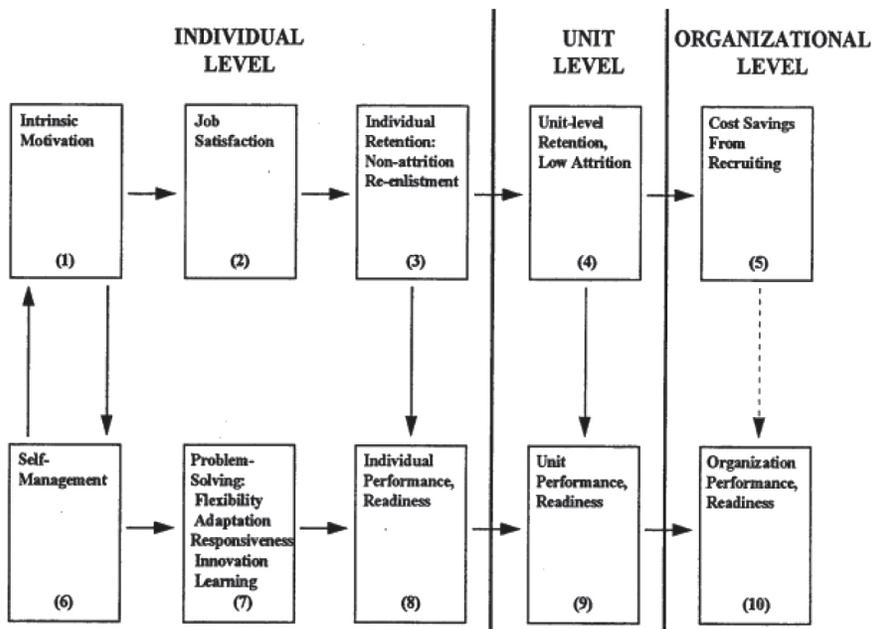


Fig. no. 3: Potential effect of intrinsic motivation in the military (Thomas, 1996)

Further, retention effects are shown to unite with self-management effects to increase performance and readiness. The models clarify the intimate relationship between intrinsic task motivation and self-management. Figure: 3 shows important potential benefits of intrinsic motivation, along with a model of self-management process. Also how intrinsic motivation generates through self-management a set of problems solving behaviors (Thomas, 1996).

Another classification of motivation theories is that of economic or rational motivation. This theory views humans as rational actors who try to maximize self-interest and outcomes yielding the highest economic returns. From the educational point of view the theory refers that 'students select a college major promising a good income (business) rather than something they are interested and passionate about' (Merriam, 2014 p. 149).

### **3. ANALYSIS OF THEORIES OF APPLICATION AND NEEDS IN GEORGIAN MILITARY EDUCATIONAL SETTINGS**

In this chapter practical examples of the needs and motivation theories are discussed, as well as results of empirical research, analysis

of theories of application and needs in National Defence Academy of Georgia in 2018, which are analysed with regard to student learning motivation. Practical applications of the motivational theories outlined in the previous chapter are offered for military educational settings.

#### **3.1. Studying the needs and motives of students' motivation.**

Getting a bad result during the peace time education can be a result of lack of knowledge about motivation. For this reason, studying students' motivation gives a good chance to inquire how to support and increase motivation and find practical use for the theories of motivation and needs.

As mentioned above, firstly, it is important to study and evaluate the students' needs and motives, to find out the source of their motivation and after that, commanders, instructors and teachers should apply their effort how to promote student motivation. In terms of evaluation of Georgian military students' motivation to enrol in the military academy the survey done with 434 Bachelor students in February in 2018 at the National Defence Academy of Georgia serves as a basis. The results are depicted in Table 1.

| <b>Table 1. What motivates you to enter military institution</b> |   |                |
|--|---|----------------|
| <b>N</b>   | <b>Answers</b>  | <b>Results</b> |
| 1  | My own will to contribute to the country's protection and development | 198            |
| 2  | Enthusiasm  | 97             |
| 3  | For being employed and career development                             | 95             |
| 4  | In reference to family members or other people recommendations        | 18             |
| 5  | Serving in the military is prestigious                                | 12             |
| 6  | Because of high salary  | 12             |
| 7  | By chance   | 2              |
| <b>Total</b>   |   | <b>434</b>     |

The questionnaire gathers data and helps to outline the reason respondents provided why they join the Academy. According to the results of the survey, it should be mentioned that despite the unemployment and social problems existing in the country the rate of students' financial motivation is not high.

The highest among the possible reasons for joining the Academy is the wish to contribute to their countries' development and protection, and to serve with enthusiasm. It echoes the sense of satisfaction of serving one's country for themselves, their families, a sense of accomplishment in contributing to their country's safety and development. These motives are mostly coming from student's intrinsic motivation and related to their interests and need such as relatedness. This motivation also can

be seen in SDT intrinsic motivation and refers to doing an activity for the inherent satisfaction of the activity itself (Ryan, et al., 2000).

Secondly, the study highlights the motivation for studying in the military educational setting because it provides a good opportunity for a successful career. The students are guaranteed upon completion of their studies to be employed and have an opportunity to develop their military carrier. Economic or rational motivation theory emphasise the motivation deriving from an interest in their future career. Involving people in training or learning process gives a better chance of promotion, or students are motivated to get good grades to avoid the consequences of not doing so (Merrian, 2014 p. 149).

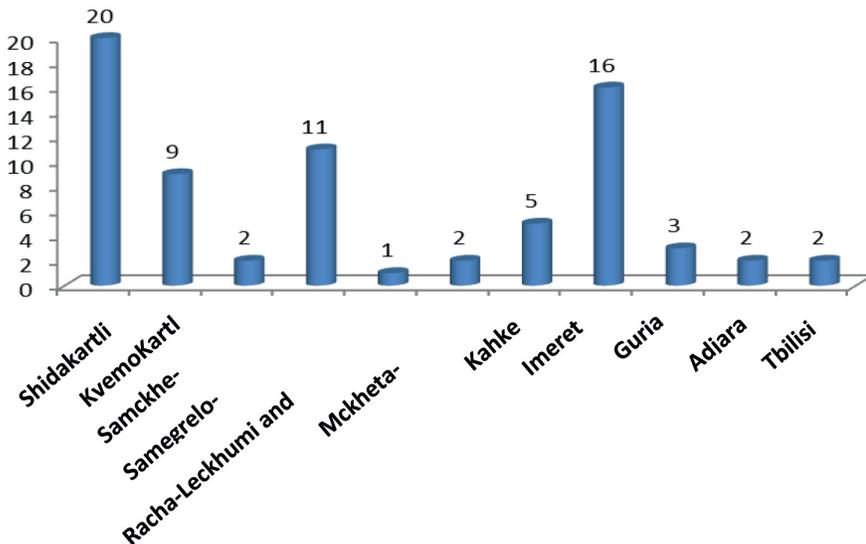
It should be noted that in Georgia Armed Force offers high

quality civilian education programs, where students of military specialties have an opportunity to gain Bachelor and Master's degrees free of charge, which facilitates the development of a military career in the armed forces as well as easy integration and employment in civilian life and using education and experience after leaving the armed forces (Georgia, 2018). These benefits greatly inspire students and motivate them seems to be more in line with economic and rational motivation.

Based on references of family members or other people, learning motive can be explained by influence of external impulses. In this case the age of the young people should be taken into consideration as they

possibly can't analyse the future problems properly, they do not have firm position choosing the university and they rely on the references of adults or reliable people and get them as external impulses of motivation. The survey shows that the tendency of students to learn in military settings is more satisfied with their needs. Requests to satisfaction are related to their internal and external motivation, where teachers, instructors and leaders have the responsibility for lectures and trainings all the time.

In assessing students' motivation for enrolment, an overview of regions is given by the statics of enrolled students in 2017 at National Defence Academy of Georgia in Figure 4.



**Fig. no. 4:** Students enrolled in 2017 at National Defence Academy of Georgia and their motivation by their region origin, Source: Report (Tchitchinadze, 2018)

Figure 4 shows that most students who enrol are from conflict regions. Conflicts in the regions of Abkhazia and South Ossetia left many problems in their wake such as homelessness, unemployment and poverty. Thus the enrolment in the military institution can be associated with those problems. As figure 5 reveals, the willingness to study in the military institutions is very high among IDP (internally displaced people) youth. This result above illustrates the desire of studying in the military institution among the youth. They demonstrate a great need of security and protection of their own homeland.

To draw parallel to the Maslow's theory of needs, it is possible to find commonalities between the first and the second stage of the theory (physiological, and safety and security) and the results of these survey, such as the physiological and safety needs of students. The motivation to study in the military Academy is related to the physiological needs of Maslow's theory. In Georgia young people who have an opportunity to get food, water, accommodation, clothing, education, scholarship and other social benefits are the best motivation for joining to military educational setting and satisfying their needs (Georgia, 2018).

As the results of the survey indicate, students' motivation is

much more relevant to Maslow's theory. These stages indicate the condition of the students' needs and shows that they need help to change their uncomfortable condition and insufficiency. In this process commanders, instructors and teachers should try to find out which level the students' needs are and work on increasing their motivation. It is possible that students' needs will not be fully satisfied according to the theory during the studying process, but to maintain and increase motivation the satisfaction process must be constant and meets the students' needs.

### **3.2. Expectancy Theory of Motivation**

There are many ways that demanding theory help students to motivate them when they get it. In the military education setting student expectation is to understand with how much effort a certain level can be achieved. A person's expectation level determines his belief that a high level of effort can reflect a high level of production (Jones, et al., 2006 p. 217). 'Learning takes place when an individual feels a need, put forth and afford to meet that need, and expectants satisfaction with the result of this' (Rogers, et al., 2010 p. 99). It would be easy to imagine that students' motivation would not be high if they knew that despite

their thorough preparation the final grade would be unsatisfactory (Jones, et al., 2006 p. 217). The opposite would also be true. One of the good examples of it is students' scholarship system at the Georgian National Academy which is connected to the studying and the amount of the scholarship. In the academy, successful students (in case of passing exams with a certain results) get the highest scholarship, according to the rating the next 10% of students get lower scholarship, and the rest 90 % gets twice lower scholarship (Order Ministry of Defense of Georgia 2017). This principle of scholarship distribution is focused on students' motivation and is linked to their expectation. They should be expected to get higher grades and scholarship if they learn stronger. With these principles publicly available, students are well aware of the "cost" and the expected outcome. Another practical example is the process of choosing students' military specialty and the desired military unit to serve, which is also closely connected with the graduation results. However, value of an intrinsically motivated result is higher than that of extrinsically motivated one. Results of the Vansteenkiste, Simons, Lens, Soenens, et al. (2004) study indicated that intrinsic goal framing led to better performance and persistence than did either the extrinsic goal

framing condition (Vansteenkiste, 2006). To sum up, the expectation theory is one of the best ways to help motivate students. The teacher and instructor play a key role in this process to ensure that students need to feel there is a reasonable possibility to achieve success. In addition, they should ensure to motivate internally, proceed from the need of students.

### **3.3. Using Self-determination theory in the military educational setting**

Self-determination Theory offers several ways how to support students learning motivation. Using the self-determination theory in the military education environment is more likely to benefit students, since the theory relates to human needs regardless of age and different levels of study. In SDT's main focus is on intrinsic motivation, self-regulation and well-being (Ryan, et al., 2000). Knowledge of self-determination theory also changes the attitude of the instructor and the teacher in the teaching process. Theoretical knowledge can change the belief of the teacher and the instructor and they can conduct the process of learning in a number of positive and successful ways. As was mentioned in the first chapter, the SDT is based on three universal psychological needs: autonomy, competency and relatedness.

Much SDT work in educational contexts has shown how teacher and parent approaches to motivation can be either controlling or autonomy-supportive (Niemic & Ryan, 2009; Ryan & Deci, 2000b, 2013, 2016). More controlling motivational climates for learning foster external regulation, and the result is more superficial and less transferable learning. In fact, controlled motivation has been shown to predict not only more impoverished learning but also greater behavioral problems and risk of disengagement or dropout. By contrast school climates that support autonomy foster more self-motivation, persistence, and quality of learning. Structure, as a scaffolding and support for competence, is shown in many SDT studies to complement autonomy support. In fact, classroom climates supporting autonomy, providing high structure, and conveying relatedness and inclusion foster personal well-being and feelings of connection to one's school and community' (Ryan, et al., 2017).

Increasing students' autonomy in the military educational settings teachers and instructors may be involved in many practical tasks, since they have the opportunity to find out what they are learning in the process of learning and their prosperity.

General George Paton's words can be considered as one of the

examples of autonomous behaviour ``Never tell people how to do think. Tell them what to do and they will surprise you with their ingenuity`` (Vego, 2009 pp. x-19). These words indicate that if a person has the sense of autonomy, they accomplish the task more effectively. Because of it best known that autonomy is the yearning to direct humans own lives, or in other words to control time, team task and technique (Merrian, 2014 p. 147). Also providing parameters and guidance and some choice within that framework, seems most effective (Svinicki, et al., 2014 p. 141). In the context of a military education, the teacher should give incentives to students to link the learning task with student interest. Teachers can increase the autonomy of students if they give more freedom of action and are more self-directive. For instance, if the teacher gives time to work independently, it will improve their perspective, and will give them a positive feedback over time, this behavior will help the autonomy of the student to ensure that it is interested in challenging interest and involvement in the classroom activity. Therefore, it is possible to say that the student who is given a choice (to do things in their own way) is more motivated.

Competency refers to human's basic need to feel mastery and efficiency. People need to feel able to operate effectively with their

important life contexts (Ryan, et al., 2017) In the military educational settings, the teacher and the instructor can provide an effective and exciting class that will help students get involved in class activities and on the other hand their competence. The topic that is supposed to be available for students is non-military skills or knowledge, but if the teacher and the instructor explain his relevance or why it is used for his military career, it will help them to be more competent. According to the Vansteenkiste and his colleagues `When instructors provide students with a rationale for a learning activity that will help the students understand the value of the learning for themselves, if instructor helps students the long term relevance to themselves, the students are likely more engaged with the learning activities and to perform better in demonstrating their competence` (Vansteenkiste, 2006).

Relatedness is the feeling and belonging with others. It concerns feeling socially connected. Humans feel relatedness most typically when they feel cared for by others. At the same time, relatedness is also about belonging and feeling significant among others (Ryan, et al., 2017). The relatedness in the context of the military educational settings can be enhanced by an instructor or a teacher by performing a supporting role. During a specific lesson when the student is involved in a difficult

task, the teacher should give guidance to teamwork, foster cooperation with other students to overcome difficulties.

#### **4. CONCLUSIONS**

Taking into consideration that military educational setting encompasses teaching and learning motivation to human resource which is one of the key issues for achieving higher education level.

Student's motivation to learn can be reached many different ways, among them using the Maslow's Needs, Ryan and Deci's Self-Determination Theory and Vroom's Theory of Expectancy. Knowledge how students are motivated and what their needs are, plays an important role, how to teach effectively. The teacher and the instructor should take into consideration wide variety of needs of students. They should provide learning process that the student's needs are satisfied to become a motivator of their behaviour, besides involve them class activity with interest that achieve a high academic outcome.

Having awareness of source, type and level of motivation of students in the learning process helps determine the teacher's, instructors or commanders to correct external motives and impulses correctly, but the stimulation and intensification of internal

motivation by the implementation of self-determination theory is vital importance. The practical examples given above concerning support autonomy, competency and relatedness indicate that intrinsic motivation is very important in the context of military settings for the student, but the external motives are also a vital factor for the motivation of each student to raise motivation. Self-determination theory that distinguishes internal and external motivation is focused on human activities on what it is doing with interest and pleasure, and external motivation points to doing something because it leads to a specific outcome (Ryan, et al., 2017). Hence the self-determination theory understanding and the correct implementation will bring success in military settings. This implies the engagement of the instructor and the teacher in the learning process, which increases the three basic need of intrinsic motivation of the students.

The teacher should offer the student an opportunity to work autonomously, to give students a chance to talk about various events that are related to military issues, which provide students with greater competence. The teacher should always take care to create an interactive group of people with thoughts and discussions that will eventually lead to the desired results.

They also need to help students in order to increase their level of relatedness. This fosters a climate of trust and appeals to both intrinsically and extrinsically motivated students. One of the important roles of teachers and instructors may be the learning process which is related to the expectations of the students to explain to them that the courses are attended by this is a relevant valuable for their future careers.

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# A SURVEY OF PERSONAL PHYSICAL SECURITY AWARENESS IN STUDENTS IN SELECTED UNIVERSITIES IN KENYA 1990-2019

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*The end of the Cold War brought with it changes in the international security, with an escalation in intra-state conflicts, characterized with violence perpetuated by discernable and not so discrete foes. This challenge broadens dimensions of security to include human, social, economic, political, and environmental aspects which provide referent objects which are securitized. In line with securitization, a response to the asymmetric wars configured in terrorism whose preference is to attack “soft targets” such as people on holiday, revelers, shoppers, worshippers, and of particular concern to this study, university students. Unlike critical infrastructures which are well guarded by armed personnel, universities are core soft targets made of intellectuals and their trainees, who have bare military training and any inkling on how to respond in case of a terrorist attack. This makes such institutions susceptible as they hold tens of thousands of persons at any given time, making them a strategic attraction and target for terrorist aimed at causing maximum damage and fear among civilian populations. Granted the high risk area that universities are, the study aimed to establish the level of physical security awareness and subsequent preparedness to deal with such issues among students in selected universities in Kenya. Findings showed 89.4% of the respondents considered physical security as a personal responsibility. Only a paltry 7.5 % of respondents had received some form of personal security training yet extant literature suggests that security awareness training is proportional to improved security awareness. The universities surveyed had emergency response instructions in the students’ handbooks detailing how to respond to emergencies such as fire, which is in consistency with international best practices. Students covered in this survey had practical ideas of what can be done to improve their physical security. We conclude that learning to live with the threat can be enhanced through training and conduct of drills to acquaint students with martial arts and self-defense skills. Students as a corporate body are an agency with capacity to be tapped by university management in planning and execution of physical security best practices.*

**Key words:** terrorism, soft targets, securitization, personal safety, training, agency.

## **1. INTRODUCTION**

Unlike critical infrastructures, universities which are core soft targets made of intellectuals and their trainees, who have bare military training and any inkling on how to respond in case of an attack. May be now owing to the steady rise in attacks on universities they are adjusting but have learnt it the hard way. Bradford (2013), indicated that the attacks on educational institutions had increased from 41 incidences in the 1980s to 48 in the 1990s and finally to 57 between 2000 and 2010. This denotes a 39% increase in the number of terror attacks targeting educational institutions from the 1980s to 2010.

Kenyan society has been on the receiving end of acts of global terror. In April 2015 a projection made by Otiso in 2009 that Kenya would become a partner in global terror came for fulfilment, when the gruesome murder and heart -rendering Garissa University terrorist attack sent shock waves across the region following the heinous killing of 148 students. Within an interval of ten days, after the Garissa University terror attack, a stampede at Nairobi University's Kikuyu Campus happened. Students jumped from the five-storey Kimberly and three-storey Hall 1 Hostels, 141 were injured and one fatality was reported. The pandemonium was prompted by an electric fault in the

hostels' main supply station caused several "gunshot-like" explosions that were mistaken by the students to be another terror attack. The students further indicated that they had been informed to be vigilant through a campus memo but were never taken through a security brief on what to do or not do in case of an emergency. In a press statement, the institution that supplies power in the state, one Kenya Power Company admitted that an overloaded underground cable caused the explosion (*Reuters*, 12 April 2015). Interviewed by Reuters, Thomas Mukoya a student admitted that he felt 100% unsafe on campus.

This incident points to a lack of self-efficacy of the university students required to respond to such incidents. His fears represented many other students on Kenyan campuses. Further effects of terror fear stalking students in higher learning became apparent a year after. On 25 March 2016 several students at Kenyatta University were injured after what they thought was a terror attack in the institution caused a rampage. Initial reports indicated that the in Post Modern Library which is a five-storey building, many students studying for Continuous Assessment Tests (CATs) due the following week, there was pandemonium caused by a duel between students. Later it was clarified that screams and shouts ensued forcing students to scamper for their safety as there were fears

that the noise followed a blast from a terror attack. It was reported that some students jumped from the third floor of the Post Modern Library for their personal safety. At least 38 students sustained minor injuries. Indeed the students have not been spared of the menace but have borne the brunt of these attacks. Obstinate terror attacks on universities call for concern on why these are a strategic target for the terrorists and the extent to which these institutions are prepared to deal with this imminent threat on university communities. It is therefore urgent that we understand how the students and their institutions are prepared to deal with this magnitude of security and safety threat.

## **2. CONFLICTS, SOFT TARGETS AND UNIVERSITIES IN CONTEXT**

With the end of the Cold War in the 1990s, the understanding of security shifted from traditional state-centric orientation to the more encompassing human security spectrum. According to the Copenhagen School of Security Studies (CSSS) 1983, security ought to be seen in a 'wider' and 'deeper' sense. The CSSS argues 'security is not a preserve of the military alone, but finds its way into political, economic, societal and environmental sectors. Perpendicularly, security covers various antecedent objects

other than the state to encompass people, social groups, and humanity as a whole'. With the current conflict environment dominated mainly by asymmetric wars, the predominant security concern of this century has been terrorism. The UNDP in its 1994 report became a leading advocate of human security. UNDP horizontally expanded security to include economic, food, environmental, health, personal, community and political threats (UNDP Human Development Report 1994). Though several criticisms have been leveled against human security as being fluid and unfocused we observe that it introduces newness that remains relevant in the 21<sup>st</sup> century security arena. The Iranian Revolution of 1979 set forth the mostly Muslim in origin third wave of terrorism that is still ongoing. Shughart observes that the current wave is "inspired by the Pan-Islamic dreams of uniting fundamentalist Muslim states, freed from western cultural contamination under Caliphate hegemony and Sharia law". It is in the last wave terrorists' proclivity attack on "soft targets" among them universities and shopping malls dominated by unnamed civilian populations. Otiso is succinct that "Kenya became a major partner in the Global War on Terror (GWOT) in the aftermath of September 11, 2001" (Otiso, 2009). It bears to mention attacks on tourists on holiday, places of worship, shopping malls and

institutions of higher education. Such attacks inspire a different level of fear and convey a different ideological and political message, gaining popularity among perpetrators for they have high pay-off in heavy casualties, a wider publicity and fear mongering, considered quite invaluable for the terrorists whose main objective is to instill fear. Some non-military targets, such as government, diplomatic facilities and key infrastructure such as power generating facilities and communication facilities have some basic personal physical security training and are vigilant (Asal *et al*, 2009). In the ensuing developments, a new form of terrorism has developed that has demonstrated its ability and preference for “soft targets” under which Kenyan universities are studied. This is not to suggest that terrorism is new but it has deep-seated roots in human history.

Although there has been a noteworthy increase in the number of terror-related attacks on schools and institutions of higher education worldwide, most efforts at addressing this situation have been aimed at increasing the physical strength of these institutions. The shift in targeting calls for basic personal physical refuge skills to be inculcated in the university students who were the subject of this research. In the Kenyan education system, there is no prospect of students to be imparted with the basic services that would help save lives. Kenya has

borne the brunt of terrorist attacks in the last two decades. The focus of the attacks has been on civilians who have experienced untoward suffering. University students in particular constitute ‘soft targets’ in the country. However, there is no study that has addressed the capability of university students to counter such attacks. In the recent past, the general targeting criteria of most terrorist organization has shifted from “hard” well protected military and government installations and locations to “soft” targets that are vulnerable and have a high social impact and which draw a lot of media coverage and compassion.

### **3. METHODS**

The study adopted a descriptive design to analyze the personal physical security awareness and safety of students in selected universities in Kenya. Purposive sampling was used to select Egerton, Kabarak and Kenyatta Universities. These represent both public and private universities as well as taking care of urban and rural settings in order to take care of the different locations. Simple random sampling technique on the 284 respondents in the study out of the 300 questionnaires distributed. Semi-structured interviews, focus group discussions, and participant observation techniques of data collection were employed. These quantitative and qualitative approaches

were used to triangulate data and narratives explain personal physical security awareness among university students in the selected universities. Extant secondary sources were used to corroborate empirical data.

#### 4. RESULTS

##### 4.1. Enrolment of Students in Kenyan Public Universities 2007-2013

The choice of universities as targets for terror attacks has been increasing over the years. Attacks on educational institutions had increased from 41 incidences in the 1980s to 48 in the 1990s and finally to 57 between 2000 and 2010 (Bradford 2013). The choice of university is because of the high number concentrated in one place in case of heinous acts of terror. Institutions of higher education are areas of high population concentration at any given time which to the terrorist eye is considered a strategic target to cause fear, harm and panic. Table 1 shows student numbers in Kenyan public universities.

**Table 1.** Enrolment of Students in Kenyan Public Universities 2016-2018  
Source: Statista 2019

| Year | Enrolment |
|------|-----------|
| 2016 | 537, 689  |
| 2017 | 522,059   |
| 2018 | 519,500   |
| 2019 | 509,400   |

With populations of half a million concentrated in a single place at any given time universities remain strategic targets. On average there are at least 20,000 students in a given semester and in peak times such as examination periods, campus become an easy target because of its high concentration of people.

There were more male (69.6%) than female (30.4 %) respondents in the sample as presented in Table 2.

**Table 2.** Gender of Respondents  
Source: Survey Data 2019

|        | Frequency | Percent (%) |
|--------|-----------|-------------|
| Male   | 198       | 69.6        |
| Female | 86        | 30.4        |
| Total  | 284       | 100.0       |

Slightly more than half (57.3%) of the respondents were in their third-year of study. This can be explained by the changing perceptions of university students, notably as student progress in their studies they appreciate the importance of understanding and connecting learning to themselves and learning for life rather than for a short period of time for the purpose of passing the examinations. Eklund-Myrskog (1998), indicated that students approaching the end of their under graduate studies are likely to use a qualitative and analytical approach to learning - better relating to the nature or standard of education and its relevance to current situations; whereas students in the beginning of

their studies apply a qualitative and surface approach to learning. The literature suggests that the first-year of study is full of emerging concerns such as the transition from high school to university, familiarization and socialization with new people and a new environment, first-year students have a tendency to view education and learning as secondary to the social issues, which many considered more pressing amidst newly acquired freedom.

An interesting finding was that of a lack of awareness is replicated in how the students casually interact with their campus environment; further reinforcing the need for training that could reverse the of a culture of security of keen interest rampant in the student body as represented in Table 3.

**Table 3.** Year of Study of the Respondents  
**Source:** Survey Data 2019

| Year of Study | Frequency  | Percent (%) |
|---------------|------------|-------------|
| First         | 48         | 16.5        |
| Second        | 50         | 17.2        |
| Third         | 157        | 57.3        |
| Fourth        | 30         | 9.0         |
| <b>Total</b>  | <b>284</b> | <b>100</b>  |

**Source:** Survey Data 2019

Only 16.5% and 17.2% of the respondents were in their first and second year of study respectively.

Theoretically we relate that to first-and second-years students' superficial interest in their studies as seen above and their preoccupation with the external stimuli of their new environment in campus, these cohorts are the best bet for training on the personal physical security awareness training through classical training (Kendra, 2019) which tremendously influences behaviorism. On the contrary students who are about to complete their university education value high-quality assessment and good grades (Bryson & Hand 2007). With this in mind, this renders valid the observation that only a few respondents participating in this study were in the first-and second-year of study. Fourth-year students had the lowest response rate among the respondents at 9%; lower than either the first-or second-year students. This statistic can be explained by the fact that the fourth-year students were more forward looking to their imminent transition to life beyond university and consequently were not enthusiastic in participating in a study that was primarily concerned in the environment from which they were at the exit point.

With this low rate of awareness, the study sought to explore the interventions to enhance the capability of students to respond to such threats. Clearly from the responses elicited students were more troubled about the physical security measures - or the lack

of them - that their institutions had in place and their apparent effectiveness. Their understanding seemed to be informed of the securitization of the fight against terror that was prevalent in the period before and after the launch of *Operation Linda Nchi* in October 2011. This military intervention by Kenya into Somalia to secure her borders from the Al Shabab insurgents was followed by an upsurge in measures employed to control access to all public places such as malls and places of worship. 30% of the respondents proposed installation of biometric systems at their university campuses that suggests that the students perceive the current manual screening as ineffective and potentially a compromised way to control entry into universities of persons with bad intentions.

In this inquiry on level of awareness of physical security among university students, respondents were asked to state whether they had received training on personal physical security awareness. This training would have been targeted in trainees' ability to detect, deter, report and respond to security threats. To this end various security awareness indicators were evaluated namely awareness of the location of the fire alarm in the halls of residence, the willingness to report unattended luggage and the regard of personal physical security as an individual responsibility.

#### 4.2. Physical Security as a Personal Responsibility

Physical security has been perceived to be a personal responsibility and as such the students were asked whether they consider physical security as their responsibility. 89.4% of the respondents consider physical security as a personal responsibility as shown in Table 4.

**Table 4.** Proportion of Students Who View Individual Physical Security as Personal Responsibility  
Source: Survey Data 2019

|       | Frequency | Percent (%) |
|-------|-----------|-------------|
| Yes   | 245       | 89.4        |
| No    | 39        | 10.6        |
| Total | 263       | 100.0       |

Source: Survey Data 2019

Yet another nerve-wracking finding in this study was that only a paltry 2% of the respondents proposed personal physical security training awareness as a way of enhancing their preparedness in case of attacks. This is disturbing taking into account the Garissa University terrorist attack of 2 April 2015, which left 148 students dead and 79 injured as students could barely respond by camouflaging for personal safety. An interrogation of this finding perhaps could be explained in the fact that university students' security

perception is shaped primarily by the prevailing securitization efforts in the mainstream media, which is not grounded in professional discourse. It further serves to explain the universal security indifference among university students in Kenya and their inability to understand how training that improves their personal physical security awareness could “harden” them and their institutions against attacks. It is ostensible from the same statistic that the students do not realize their level of response ability to an attack to be critical to their own survival in case of an attack; in contrast though they seem to be reliant on the security efforts that their institutions’ put in place to safeguard them. Evidently students believe that their personal physical security is domiciled in the mandate of their institutions.

Patton (2019) director of security and operations for the University of Regina (Canada), avers that even though campus security teams are adopting new security tools and systems, students also need to do their part to help keep themselves and their college mates safe. He elaborates further that during students’ security orientation, they are always advised to lock up the door to their room of residence, not to walk alone at odd hours, to learn where the emergency escape routes are and that they have a level of responsibility in keeping themselves safe. The

challenge of engaging students on security according to Patton is that “they are busy young people, with a lot going on in their lives so they do not engage the same way you would do with a working professional.” We argue that recently have embarked on that collectively the hardened security in the universities ought to be complemented with an empowered student population that will not lie helpless in case of attack, a few terrorists with IEDs are frightening but lessons from survivors of the 2015 Garissa University terrorist attack confirms that basic survival soldierly skills come are central and could save lives.

### **4.3. Personal physical security awareness training**

The respondents were also asked if they had attended any personal physical security awareness training, responses elicited are captured in Table 5.

**Table 5.** Respondents with Personal Physical Security Awareness Training  
Source: Survey Data 2019

|       | Frequency | Percent |
|-------|-----------|---------|
| Yes   | 29        | 7.5     |
| No    | 255       | 92.5    |
| Total | 284       | 100.0   |

Personal physical security awareness training is often used by the military and law enforcement

personnel. Literally situational awareness is a frame of mind in which the individual is relaxed yet aware of the surroundings and also aware of whom or what could be of help if a security situation arose and what is likely to pose a threat. It is a continuous process of scanning your immediate environment and analyzing all its aspects in terms of what threat or opportunity they pose. The students were surveyed about aspects of their campus environment and their responses used to gauge their general situational awareness towards conditions/situations that may be a source of threats or opportunities. One of the predictable outcomes of personal physical security awareness training is the development and improvement of the situational awareness of the student. The outcome from the measure of these indicators is also useful in the assessment of the level of security indifference prevalent among the university student body. Students who are indifferent of their personal physical security are unlikely to take notice of and/or remember the location of firefighting equipment in the halls of residence nor are they likely to take notice of unattended luggage let alone report the same to the security agencies.

This study sought to establish how the students had acquired physical training and the responses are presented in Table 6:

**Table 6.** Proportion of Voluntary Trainees  
Source: Survey Data 2019

|       | Frequency | Percent (%) |
|-------|-----------|-------------|
| Yes   | 24        | 78.9        |
| No    | 5         | 21.1        |
| Total | 29        | 100.0       |

Out of the 29% who had received training in personal physical security as seen in Table 8, 78.9% (24) indicated that they actively sought to be trained out of their own volition while 21.1% (5) attended the training by chance. This indicates that out of the proportion of students who had any personal physical security training 7.5% (29) of all the respondents, a majority at 78.9% had actively sought to improve their personal physical security awareness by pursuing training. This represents a very small percentage of the respondents - 0.084% and supports the argument that not only do the students lack awareness on the need for improving their personal physical security, only a minority actually attempt to pursue such training.

A majority of university students lack in personal physical security awareness training. From qualitative questions it was established that the few students who had received physical training had done so in martial arts such as

Karate and Tae-Kwondo. Experts are of the opinion that such warlike hardening arts have potential to impart personal physical security awareness. Ron Amram (2018) of Combat Arts Institute of Australia avers that martial arts training improves the recipients' intuition and ability to recognize potentially dangerous situations quicker in addition to being an important self-defense tool. Further martial arts training is effective in ensuring a well-rounded individual in terms of security awareness. Martial arts exert probable in the application of training in combat sport as a tool of alleviating the personal physical security awareness of university students; even though from the results above the current level of voluntary participation is wanted. This gap exposes the university students who are stalked by fear of imminent and almost real threats while on campus. With the training we went on to inquire if the students were aware of the location of tools to use in case of an unfortunate incident of a fire emergency.

#### **4.4. Awareness of the Location of the Fire Alarm**

For an empowered physically aware person the study further asked the students were aware of where the fire alarm was located. The responses are captured in Table 7.

**Table 7.** Awareness of the Location of the Fire Alarm

Source: Survey Data 2019

|       | Frequency | Percent |
|-------|-----------|---------|
| Yes   | 134       | 47.0    |
| No    | 150       | 53.0    |
| Total | 284       | 100.0   |

The universities surveyed in this study had fire response instructions in their students' handbook that guides them on how to respond in case of a fire incident. These instructions are consistent with the accepted international best practices. Egerton University's student handbook instructs them to know the location of at least two emergency exits from their halls of residence, classroom and/or offices. Additionally, universities advise that students get acquainted with the fire emergency plans posted on the notice boards and to practice taking the evacuation route. The university has provided the students with an emergency number to call in case of a fire; the able-bodied students are encouraged to remain calm and assist their disabled colleagues (Egerton University; Fire and Security, 2015). Randal writing on the Campus Fire Safety based in Columbus Ohio underlines the importance of ability to use exits as a critical capability in enhancing one's survival in case of a fire incident while corridors are kept clear of flammable materials to prevent rapid-fire spread.

The degree to which these best practices are implemented in the universities under study remains low and therefore we concluded that the students are exposed. It is therefore clear that fire is one of the major potential threats to the personal physical security of university students and the awareness thereof can be used as a good indicator of the general personal physical security awareness of the university students. It was apparent that the various university administrations had provided necessary information that is required for the students for them to be able to react to fire emergencies. The data collected though, indicated that 47% of the respondents were aware of the location of the fire alarm in their halls of residence. With the affirmation

from FEMA, that most campus fires can be prevented by awareness training and education, it is safe to deduce that Kenyan university students’ personal physical security awareness can be improved through continued education and training and to all freshmen during orientation. We finally tested the hypothesis on how training relates to awareness.

**4.5. Association between security awareness training and level of awareness on security**

To test the hypothesis on the association between security awareness training and level of awareness on security chi-square test was conducted and results are captured in Table 8.

**Table 8.** Chi Square Test of Association Results  
Source: Survey Data 2019

| Variable                     | Categories | Trained (yes) n (%) | Untrained (no) n (%) | Total | x <sup>2</sup> | Df | p-value |
|------------------------------|------------|---------------------|----------------------|-------|----------------|----|---------|
| Location of Fire alarm       | Yes        | 16 (80%)            | 105 (44.5%)          | 111   | 9.963          | 1  | 0.002   |
|                              | No         | 4 (20%)             | 137 (56.5%)          | 141   |                |    |         |
| Reporting unattended Luggage | Yes        | 15 (78.9%)          | 187 (77.6%)          | 202   | 0.19           | 1  | 0.891   |
|                              | No         | 4 (21.1%)           | 54 (22.4%)           | 58    |                |    |         |
| Personal awareness           | Yes        | 17 (89.5%)          | 214(89.2%)           | 231   | 0.002          | 1  | 0.967   |
|                              | No         | 2 (10.5%)           | 26 (10.8%)           | 28    |                |    |         |

Our analysis was done using the concept of Extended Parallel Process Model (EPPM) Theory by Kim Witte (1994). The EPPM model defines four key factors to anticipate the likely outcome of communications which involve a fear appeal; that is: self-efficacy, response-efficacy, susceptibility and severity. The EPPM model portends two conceivable outcomes; the first being Danger Control that is, when an individual anticipates that the severity and susceptibility are high and also recognizes that they are competent to take mitigation action then they are likely to act to control the danger. Secondly, Fear Control, the model predicts that if a person perceives their ability to manage a risk as low, even if the severity and susceptibility is perceived as high, then they are likely to take steps to control their fear instead. This change is maladaptive or counter-productive behavior.

This theory helps to explain the fear control adaptive behavior that the students might be using to adopt to their university environments because even though the threat posed by terrorist attacks targeting such institutions is apparent, the students lack the requisite skills to make them self-efficient in responding to such threats. The theory also helps to indicate the need to provide personal physical security training to these students so as to increase their ability

to respond to such threats. With the right information, the students can be more resilient and can be able to take risks that can save their lives or that of fellow students in case of a terror attack in their campus. Theoretically, this is consistent with the EPPM theory that the students can be able to develop danger control as a result of security efficacy achieved through training and education on personal physical security awareness. Their ability to detect, deter, respond and report a terror related security threat is a desired outcome of such training which we therefore recommend.

#### **4.6. Way Forward for Secure University Campuses in Kenya**

The greatest personal physical security concern expressed by the students is the installation of biometric security system at the entrances of all universities, as was voiced by 30% of all the students who took part in the survey. According to Trader (2018), biometrics are unique traits or behavioral characteristics that can be captured and used for individual identification through different biometric modalities such as fingerprint, finger vein, palm vein, iris, facial, or voice recognition. Biometric identification in its infancy has had applications in mainly law enforcement and government agencies as an accurate and secure way of controlling access to high security installations. The advantages

of such systems and their potential of improving the physical security of the university students cannot be over emphasized. Biometric systems are capable of indicating when and where a security breach has occurred and in the identification of the perpetrators. These systems are however limited in their ability to preempt an insider threat which indicates that its preventive capabilities can be limited. Interestingly 12% of the respondents in this study revealed that an increased presence of armed security personnel could help alleviate their personal physical security concerns in the university.

Yet “the weakest link in the security chain is the human element.” Mitnick contends that in the people-process-technology triad, the weakest link is are the people of that organization. He explains that the negligence of security practices by employees of that organization is mostly responsible for the end-point security lapses. It is with this recognition that this study seeks to indicate that, the “hardening” of the human element in the security chain in universities will offer the greatest dividends as far as ensuring the personal physical security of university students is concerned. If humans impact security and are the weakest link in a security circuit it follows that integrity should be upheld by those charged with ensuring security on campus.

## 5. CONCLUSIONS

The agenda of this research was to establish the level of physical security awareness among students in selected universities in Kenya which are a clear soft target for terror activities. The study established that currently, there is no specific tailor-made training being offered to enhance the students’ preparedness to adequately respond to this imminent threat. The universities surveyed had fire response instructions in the students’ handbooks detailing how to respond to emergencies such as fire, which portrays consistency with the accepted international best practices. Students covered in this survey are aware of their environment, they possess pragmatic ideas of what can be done to improve their physical security in their universities. Our findings revealed that security awareness training is proportional to improved security awareness. We argue that learning to live with the threat can be enhanced through training and conduct of drills for students to acquire martial arts and self-defense skills. Students as a corporate are an agency with potential capacity to be tapped by university management in planning and execution of physical security awareness and best practices in the elusive security realm of the 21<sup>st</sup> century.

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# DEVELOPMENT OF PERFORMANCE APPRAISAL MODEL FOR LOGISTIC STAFF PERSONNEL WITH THE KEY PERFORMANCE INDICATOR (KPI) AND ANALYTICAL HIERARCHY PROCESS (AHP)

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*Nowadays, the performance appraisal system that exists within the TNI is still general and not specific, meaning that the performance appraisal of TNI officers does not represent in detail the specific criteria of the performance appraisal of TNI staff officers, so the assessment system still requires development criteria. This study aims to develop a model of performance appraisal evaluation instruments for logistics staff officers in the TNI environment. This study uses the Key Performance Indicator (KPI) and Analytical Hierarchy Process (AHP) approach. Based on the results of the research, it was found that the development of the TNI logistics staff performance appraisal model consists of 3 (three) criteria, namely logistical activities (A), logistics function (F), and logistical principles (L). Furthermore, logistics activities (A) consist of 5 KPIs (A1-A5), the logistics function criteria (F) consist of 5 KPIs (F1-F5), the logistics principle criteria (L) consist of 7 KPIs (L1-L7). Based on the calculation of the criteria values that have been carried out by referring to the Key performance indicators, it is found that the criteria that have the largest total are the logistic principle criteria with a weight value of 0.413; logistic function criteria is in the second position with a weight value of 0.327; Logistic activity criteria is in the third position with a weight value of 0.260. Furthermore, based on the total result value, the highest score is obtained, namely the Responsive sub-criteria with a weight value of 0.113; while the lowest value is the Survive Ability sub-criteria with a weight value of 0.028. This research is expected to be a model of performance appraisal evaluation and to make an important contribution to TNI organizations in particular and to function for unit organizations in general.*

**Key words:** Performance Appraisal; Key Performance Indicator (KPI); Analytical Hierarchy Process (AHP); Logistics.

## 1. INTRODUCTION

Continuous performance appraisal will lead to the achievement of better and better quality HR performance (Mutmainah, et al., 2017). For those with good and quality performance as a consequence, they will receive awards in the form of appointments, promotions, benefits, and education (Javidmehr & Ebrahimpour, 2015). Nowadays, the performance appraisal system that exists within the TNI is still general and not specific, meaning that the performance appraisal of TNI officers does not represent in detail the specific criteria of the performance appraisal of TNI staff officers, so the assessment system still requires development criteria.

Based on these conditions, this study aims to develop a model of performance appraisal evaluation instruments for logistics staff officers in the TNI environment. This study uses the Key Performance Indicator (KPI) and Analytical Hierarchy Process (AHP) approach. The KPI method is used to formulate new assessment parameters within the scope of TNI logistics, while the AHP method is used to provide weights and identify priority parameters in the performance appraisal of Logistics Staff Officers.

This research is expected to be a model of performance appraisal

evaluation and to make an important contribution to TNI organizations in particular and to function for unit organizations in general. This research is limited to performance appraisal within the TNI logistics staff and office personnel.

There are several previous studies as references, namely Research on preliminary study offerings to identify key performance indicators (KPIs) for classroom facilities based on general indicators (Yusoff, et al., 2017). Research on a top-down framework in which 15 Key Performance Indicators (KPIs) are developed that represent the success rate of a simulation project from multiple perspectives (Jahangirian, et al., 2017). The impact assessment of the KPI system for the growth of shareholder welfare and satisfaction of the interests of other stakeholders (Strelnik, et al., 2015). The formulation of consensus-based Key Performance Indicators (KPI) for academic departments at universities (Rajkaran & Mammen, 2014). Evaluation and performance improvement needed to achieve competitiveness in dry port services from multimodal transportation (Bentaleb, et al., 2015). Java WEB servlet based KPI and AHP system (Ardiansyah, et al., 2017). KPI and AHP are used to investigate the academic staff performance evaluation index and evaluate

teacher performance (Karmaker, et al., 2018). KPI and AHP are used to analyze the deficiencies of the sales performance evaluation system in the company, as well as the market environment and the needs of the company's development strategy (Chen & Xia, 2020). KPI and AHP for information technology impact-based performance measurement (Irhamni, et al., 2017). KPI and AHP to provide an evaluation to logistics companies (Gozacan & Lafci, 2020). KPI and AHP are used to measure priority performance against strategic objectives (Vachnadze, 2016)

This research consists of several parts. Section 2 describes the theoretical study used. Development of the Logistics Staff Officer performance appraisal model, research methods in research, research flow diagrams. Section 3 describes the results and discussion of the research on the development of a performance appraisal model for logistics staff officers. Section 4 describes the conclusions and suggestions for further research development.

## **2. MATERIAL/METHODS**

### **2.1. Performance Appraisal**

Performance appraisal is the process of evaluating how well employees are doing their job

compared to a set of standards and then communicating that information to employees. Performance appraisal is also called employee rating, employee evaluation, job review, performance evaluation, and outcome appraisal. Four main factors affect how individuals work, namely: (1) The number of products manufactured, (2) The quality of products manufactured, (3) Timeliness in manufacturing a product, (4) Attendance at work (Mathis & Jackson, 2006). Performance appraisal serves as a management information system for organizations. Performance appraisal provides feedback to employees about their performance, therefore it can be used in general as a means of evaluating, analyzing, and making effective use of the abilities and knowledge of employees at all levels of the organization.

Performance appraisal can be defined as an evaluation process in which a manager or leader evaluates, compares, and provides feedback on employee performance (Kateřina, et al., 2013). In another view, performance appraisal is a systematic evaluation of an individual regarding his performance on the job and his development potential (Toppo & Prusty, 2012). Performance appraisals allow organizations to look back and evaluate past activities

by looking ahead and preparing for future performance. Meanwhile, the goals at the lower level are motivating and compensating. Each individual can evaluate personal performance and compensate. At the same time, performance measurement can motivate individuals for the future. In larger and more complex organizations, the steps are also expected to roll from the bottom to the top of the organization, down from the top to the bottom, and to facilitate comparisons of performance across organizational and functional units. (Meyer, 2002).

## 2.2. Logistics

Logistics is the management of the flow of goods between the point of origin and the point of consumption in order to meet some requirements. Resources managed in logistics can include physical items, such as food, materials, animals, equipment, and fluids, as well as abstract items, such as time, information, particles, and energy. The logistics of physical items usually involves the integration of information flows, material handling, production, packaging, inventory, transportation, warehousing, and often security. Logistic complexity can be modeled, analyzed, visualized, and optimized by specialized simulation software.

The minimization of resource use is a common motivation in import and export logistics (Li, 2014). Logistics is the process of planning and executing the movement and continuity of operations forces in the implementation of military strategy and operations. The art of logistics is how to integrate strategic, operational, and tactical support efforts within the theater while scheduling the mobilization and deployment of units, personnel, and supplies to support the work concept of a geographic combat commander.

## 2.3. Key Performance Indicator (KPI)

KPI is a measurement tool or tool in the form of financial or non-financial metrics that serve as navigation for companies to measure and determine the progress of predetermined goals or strategies. KPI can be a reflection of a measure of the company's target and the progress of achieving the goals in production. KPIs are used as business intelligence to assess the current state of a business and determine action for that situation (Velimirovića, et al., 2011). KPIs are important navigational tools used by managers to understand whether their company is on the path to success or its path to success. KPIs are financial or non-financial metrics

that are used to help an organization determine and measure progress against organizational goals (Stan, et al., 2012).

In the end, KPI determination must be done in accordance with the needs of the organization to achieve the best results. Good KPIs do not have to apply many measurements, only the main ones that support organizational goals. Several requirements in making KPIs: 1) Always related to goals or targets; 2) Measurable; 3) Having comparisons from the previous period; 4) Time-bound.

#### 2.4. Analytical Hierarchy Process (AHP)

The AHP model describes a complex multi-factor or multi-criteria problem into a hierarchy; according to Saaty, the hierarchy is defined as a representation of a complex problem in a multi-level structure, where the first level is the

goal, followed by the factor, criteria, sub-criteria level and so on down to the last level of the alternative with a complex hierarchy of problems can be broken down into groups which are then arranged into a hierarchy as the problem will appear more systematically structured (Saaty & Vassag, 2006). In determining the weight of each criterion in AHP, it can be described as follows:

7 pillars are used and must be considered in AHP modeling (Saaty, 2003),-1) The ratio scale is the ratio of two values (a/b) where the values a and b are together with a type (unit); 2) Pairwise comparison; 3) Conditions for the sensitivity of eigenvectors; 4) Homogeneity and clusterization; 5) Synthesis; 6) Maintain and reverse the weighting order and the order in the hierarchy affected by the addition or change of criteria or alternatives; 7) Group considerations.

The scale of the comparison can be explained as follows:

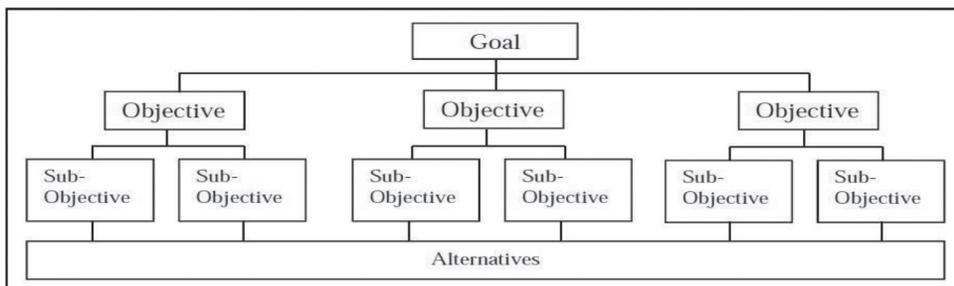


Fig. no. 1 Structure of AHP. (Saaty, 1990)

**Table 1** AHP Rating Scale  
(Saaty & Vassag, 2006)

| Scale of Interest | Definition                  | Explanation   |
|-------------------|-----------------------------|---|
| 1                 | Equal Importance            | Two activities are contributing equally to a goal                 |
| 3                 | Moderate Importance         | One activity is slightly more important than the other            |
| 5                 | Strong Importance           | One activity is more important than the other                     |
| 7                 | Very Strong Importance      | One activity is very important compared to other activities       |
| 9                 | Extreme Importance          | One activity is very, very important compared to other activities |
| 2, 4, 6, 8        | Intermediate Values         |   |
| Reciprocal        | Used for Inverse comparison |   |

## 2.5. Method and Steps

The place or location in the research is focused on the work unit that represents the performance condition, especially the logistics unit which as a whole plays a role in the evaluation process of staff officers performance appraisal policies. Each Main Command Office involved in the field of logistics was selected by expert sources as research informants purposively according to their needs. The process of determining policies,

strategies, and efforts, still refers to the principles of achieving goals and objectives facing the rationale. There are several stages of research consisting of:

- Identification of Criteria using KPIs.

Identification or responses in the form of criteria with an evaluation aspect approach. In identifying the criteria, a literature study from previous research was used and a questionnaire in the form of interviews with six selected experts was used.

- Weighting criteria using AHP.

At this stage, the weighting of criteria uses the Analytical Hierarchy Process (AHP) method. Weighted Key Performance Indicator (KPI), the KPI that has been compiled and is then made into a questionnaire given to expert sources to be allocate a weight. The results are processed using the Analytical Hierarchy Process (AHP) to determine the level of importance. The calculation can be done manually, namely by using Microsoft Excel.

### 3. RESULTS

#### 3.1. Identification criteria

Based on the results of research studies, both in the

form of literature studies and brainstorming and in-depth interviews with expert sources, aspects of military logistics management can be divided into 3 major aspects, namely: 1) main activity aspects of the logistics system; 2) aspects of the logistics function; 3) logistic principles. Each aspect has sub-aspects that can be taken into consideration in evaluating the performance of TNI logistics staff officers. It can be concluded that the performance appraisal of logistics staff officers is closely related to the functions and responsibilities of these officers in military logistics management activities. These criteria and sub-criteria are described in Table 2.

**Table 2** Criteria and sub-criteria of logistic performance assessment

| ASPECT                  | CRITERIA             | INDICATOR  | CODE |
|-------------------------|----------------------|--|------|
| LOGISTIC ACTIVITIES (A) | Customer service     | Ability to select, procure, store, or distribute products to meet customer needs | A1   |
|                         | Product Selection    | Ability to select products used in support of operating tasks                    | A2   |
|                         | Quantification       | Ability to estimate the quantity and cost of the product required                | A3   |
|                         | Procurement          | Quantification and quantity procurement process                                  | A4   |
|                         | Inventory Management | Storage and distribution process   | A5   |

| ASPECT                        |  | CRITERIA            | INDICATOR   | CODE |
|-------------------------------|--|---------------------|---|------|
| LOGISTIC<br>FUNCTION<br>(F)   |  | Supply System       | Acquiring, managing, receiving, storing, and releasing materials needed by operations forces                                      | F1   |
|                               |  | Maintenance         | Actions were taken to keep equipment in repairable condition, to return it to service, or to update and upgrade its capabilities. | F2   |
|                               |  | Transportation      | Movement of units, personnel, equipment, and supplies from point of origin to the final destination                               | F3   |
|                               |  | General Engineering | Provision of construction, damage repair, and facility operation and maintenance or necessary logistics improvements              | F4   |
|                               |  | Health services     | Health services including evacuation, hospitalization, medical logistics  | F5   |
| LOGISTIC<br>PRINCIPLES<br>(L) |  | Responsive          | Provide appropriate support when and where it is needed   | L1   |
|                               |  | Simplicity          | Minimal complexity in logistics operations  | L2   |
|                               |  | Flexibility         | Ability to improvise and adapt structures and procedures  | L3   |
|                               |  | Economy             | Amount of resources required  | L4   |
|                               |  | Achievement         | Guarantee that minimum supplies and basic services are required   | L5   |
|                               |  | Continuity          | Ability to maintain and duration of operational activities  | L6   |
|                               |  | Survive Ability     | Logistical capabilities in dealing with task forces   | L7   |

Based on Table 2, implementation of the key performance indicator (KPI) development model for the activities

of TNI logistics officers can identify 17 performance indicators that can describe the performance conditions of logistics staff within the TNI in an

integrated and structured manner. The achievement of each performance criterion using the initial criteria with the results of the logistical activity criteria (A) consisting of 5 KPIs (A1-A5), the logistics function criteria (F) consisting of 5 KPIs (F1-F5), the logistical principle criteria (L) consists of 7 KPIs (L1-L7).

### 3.2. Weighting Criteria

The weighting of the KPI criteria and sub-criteria is carried out to determine the importance of the KPI from each perspective. The steps that are taken in weighting the criteria, are among others:

For each criterion and sub-criteria, it is necessary to make pairwise comparisons. The relative comparison values are then processed to determine the weight of each criterion. Both qualitative

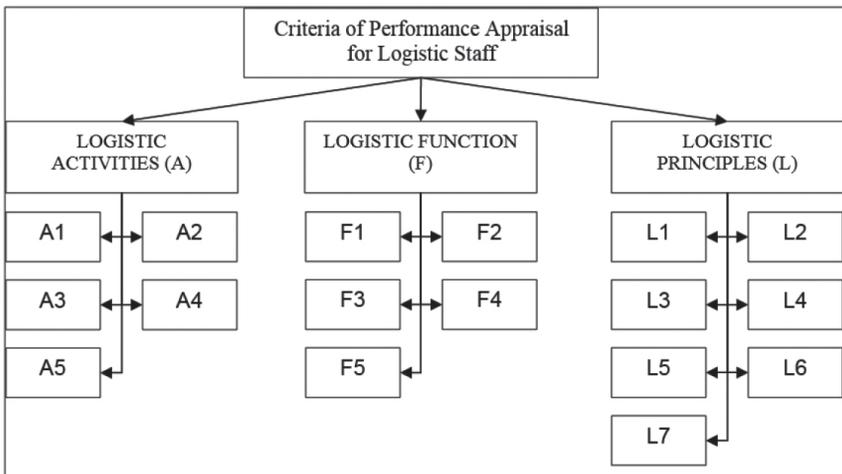
criteria, as well as quantitative criteria, can be compared according to predetermined ratings to produce weights and priorities. Weights or priorities are calculated by matrix manipulation or by solving mathematical equations.

**Table 3.** Pairwise Comparison Matrix of Logistics Staff Performance Appraisal Criteria

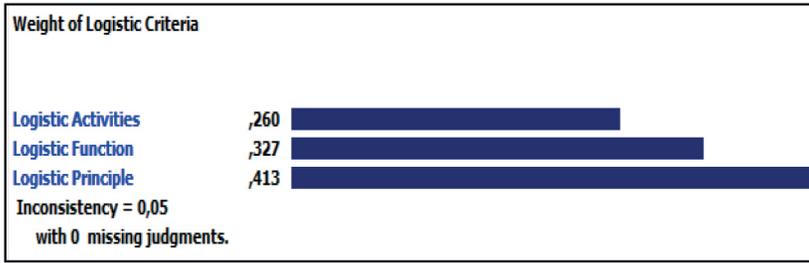
|   |   |   |     |
|---|---|---|-----|
|   | A | F | L   |
| A | 1 | 1 | 1/2 |
| F | 1 | 1 | 1   |
| L | 2 | 1 | 1   |

**Table 4.** Matrix Value of Logistics Staff Performance Appraisal Criteria

| Criteria  | A | F | L   | weight |
|-----------|---|---|-----|--------|
| A         | 1 | 1 | 1/2 | 0,261  |
| F         | 1 | 1 | 1   | 0,328  |
| L         | 2 | 1 | 1   | 0,411  |
| CR= 0,046 |   |   |     | 1,000  |



**Fig. no. 2.** Logistics Staff Performance Appraisal Hierarchy Structure



**Fig. no. 3.** Matrix Normalization of Logistics Staff Performance Assessment Criteria

Based on the calculation of the criteria value that has been carried out by referring to the Key performance indicator, the final value is obtained by multiplying each value on the criterion by the average or eigenvalue of the criteria as follows. The logistics staff performance appraisal consists of 3 (three) criteria. Table 4 and

Fig. no. 3 explains that the criteria that have the largest total are the logistic principle criteria with a value of 0.413; logistic function criteria is in the second position with a value of 0.327; logistic activity criteria is in the third position with a value of 0.260.

**Table 5.** Pairwise Comparison of Matrix Sub Criteria for Logistic Aspects

|    | A1  | A2  | A3  | A4 | A5  |
|----|-----|-----|-----|----|-----|
| A1 | 1   | 2   | 1   | 2  | 2   |
| A2 | 1/2 | 1   | 1/2 | 2  | 1/2 |
| A3 | 1/2 | 1/2 | 1   | 3  | 1/2 |
| A5 | 1/2 | 1/2 | 1/3 | 1  | 1   |
| A5 | 1/2 | 2   | 2   | 1  | 1   |

**Table 6.** Value Matrix for Logistic Aspect Sub Criteria

| Criteria | A1    | A2  | A3  | A4 | A5  | weight |
|----------|-------|-----|-----|----|-----|--------|
| A1       | 1     | 2   | 1   | 2  | 2   | 0,299  |
| A2       | 1/2   | 1   | 1/2 | 2  | 1/2 | 0,152  |
| A3       | 1/2   | 1/2 | 1   | 3  | 1/2 | 0,178  |
| A5       | 1/2   | 1/2 | 1/3 | 1  | 1   | 0,126  |
| A5       | 1/2   | 2   | 2   | 1  | 1   | 0,245  |
| CR=      | 0,010 |     |     |    |     | 1,000  |



Fig. no. 4. Normalization Matrix of Sub Criteria for Logistic Aspects

Table 6 and Fig. no. 4 explain that the criteria for the logistics aspect consisted of 5 (five) sub-criteria. Based on the calculation of the value that has been done, it is found that the sub-criteria that have the greatest total is customer service with a weight value of 0.277; quantification sub-criteria is in the

second position with a weight value of 0.235; inventory management sub-criteria is in the third position with a weight value of 0.230; product selection sub-criteria is in the fourth position with a weight value of 0.139; procurement sub-criteria is in the fifth position with a weight value of 0.118.

Table 7. Pairwise Comparison of Matrix Sub Criteria for Logistic Functions

|    | F1  | F2 | F3  | F4  | F5  |
|----|-----|----|-----|-----|-----|
| F1 | 1   | 2  | 1/2 | 1/2 | 1/3 |
| F2 | 1/2 | 1  | 1/3 | 1/2 | 1/3 |
| F3 | 2   | 2  | 1   | 3   | 1   |
| F4 | 2   | 2  | 1/3 | 1   | 1/2 |
| F5 | 3   | 3  | 1   | 2   | 1   |

Table 8. Value Matrix for Logistic Function Sub Criteria

| Criteria | F1    | F2 | F3  | F4  | F5  | weight |
|----------|-------|----|-----|-----|-----|--------|
| A1       | 1     | 2  | 1/2 | 1/2 | 1/3 | 0,130  |
| A2       | 1/2   | 1  | 1/3 | 1/2 | 1/3 | 0,088  |
| A3       | 2     | 2  | 1   | 3   | 1   | 0,299  |
| A5       | 2     | 2  | 1/3 | 1   | 1/2 | 0,168  |
| A5       | 3     | 3  | 1   | 2   | 1   | 0,314  |
| CR=      | 0,018 |    |     |     |     | 1,000  |

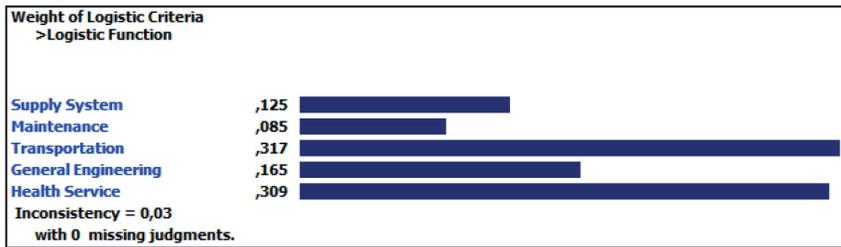


Fig. no. 5. Normalization Matrix of Sub Criteria for Logistic Function

Table 8 and Fig. no. 5 explains that the logistics function criteria consist of 5 (five) sub-criteria. Based on the calculation of the values that has been done, it is found that the sub-criteria that have the greatest total is customer service with a weight value of 0.277; quantification sub-criteria is in the second position with

a weight value of 0.235; inventory management sub-criteria is in the third position with a weight value of 0.230; product selection subcriteria is in the fourth position with a weight value of 0.139; procurement sub-criteria is in the fifth position with a weight value of 0.118.

Table 9. Pairwise Comparison Matrix of Logistics Principle Sub Criteria

|    | L1  | L2  | L3  | L4  | L5  | L6  | L7 |
|----|-----|-----|-----|-----|-----|-----|----|
| L1 | 1   | 1   | 3   | 3   | 4   | 3   | 3  |
| L2 | 1   | 1   | 3   | 2   | 3   | 3   | 3  |
| L3 | 1/3 | 1/3 | 1   | 1   | 1/2 | 2   | 1  |
| L4 | 1/3 | 1/2 | 1   | 1   | 1/2 | 4   | 2  |
| L5 | 1/4 | 1/3 | 2   | 2   | 1   | 2   | 2  |
| L6 | 1/3 | 1/3 | 1/2 | 1/4 | 1/2 | 1   | 2  |
| L7 | 1/3 | 1/3 | 1   | 1/2 | 1/2 | 1/2 | 1  |

Table 10. Value Matrix for Logistic Principle Sub Criteria

| Criteria   | L1  | L2  | L3  | L4  | L5  | L6  | L7 | Weight |
|------------|-----|-----|-----|-----|-----|-----|----|--------|
| L1         | 1   | 1   | 3   | 3   | 4   | 3   | 3  | 0,274  |
| L2         | 1   | 1   | 3   | 2   | 3   | 3   | 3  | 0,245  |
| L3         | 1/3 | 1/3 | 1   | 1   | 1/2 | 2   | 1  | 0,089  |
| L4         | 1/3 | 1/2 | 1   | 1   | 1/2 | 4   | 2  | 0,123  |
| L5         | 1/4 | 1/3 | 2   | 2   | 1   | 2   | 2  | 0,130  |
| L6         | 1/3 | 1/3 | 1/2 | 1/4 | 1/2 | 1   | 2  | 0,072  |
| L7         | 1/3 | 1/3 | 1   | 1/2 | 1/2 | 1/2 | 1  | 0,067  |
| CR = 0,048 |     |     |     |     |     |     |    | 1,000  |

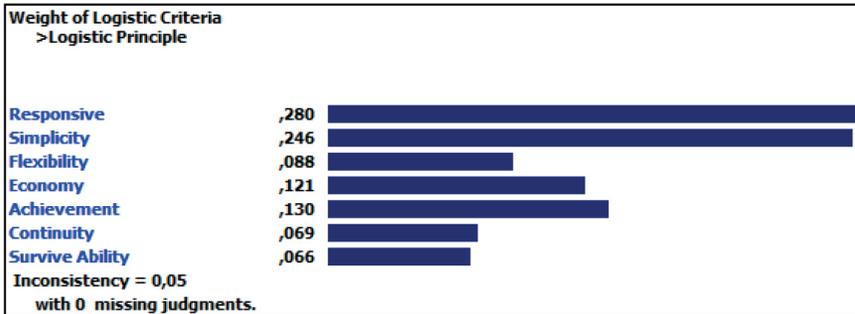


Fig. no. 6. Normalization Matrix of Sub Criteria for Logistic Principle

Table 10 and Fig. no. 6 explain that the criteria for the logistical principle consisted of 7 (seven) sub-criteria. Based on the calculation of the value that has been done, it is found that the sub-criteria that has the greatest total is responsive with a weight value of 0.280; the simplicity sub-criteria is in the second position with a weight value of 0.246; sub-criteria achievement in the third position with a weight value of 0.130;

the economy sub-criteria is in the fourth position with a weight value of 0.121; flexibility sub-criteria is in the fifth position with a weight value of 0.088; continuity sub-criteria is in the sixth position with a weight value of 0.069; the survive ability sub-criteria is in the seventh position with a weight value of 0.066.

After calculating the weight of the criteria and sub-criteria, a weight table can be created below.

Table 11. Weights of Criteria and Sub criteria for Logistics Staff Performance Appraisal

| Criteria            | Weight | Sub-criteria         | Local Weight | Total Weight |
|---------------------|--------|----------------------|--------------|--------------|
| LOGISTIC ACTIVITIES | 0,261  | Customer service     | 0,299        | 0,078        |
|                     |        | Product Selection    | 0,152        | 0,040        |
|                     |        | Quantification       | 0,178        | 0,046        |
|                     |        | Procurement          | 0,126        | 0,033        |
|                     |        | Inventory Management | 0,245        | 0,064        |
| LOGISTIC FUNCTION   | 0,328  | Supply System        | 0,130        | 0,043        |
|                     |        | Maintenance          | 0,088        | 0,029        |
|                     |        | Transportation       | 0,299        | 0,098        |
|                     |        | General Engineering  | 0,168        | 0,055        |
|                     |        | Health services      | 0,314        | 0,103        |

| Criteria            | Weight | Sub-criteria    | Local Weight | Total Weight |
|---------------------|--------|-----------------|--------------|--------------|
| LOGISTIC PRINCIPLES | 0,411  | Responsive      | 0,274        | 0,113        |
|                     |        | Simplicity      | 0,245        | 0,101        |
|                     |        | Flexibility     | 0,089        | 0,036        |
|                     |        | Economy         | 0,123        | 0,051        |
|                     |        | Achievement     | 0,130        | 0,053        |
|                     |        | Continuity      | 0,072        | 0,030        |
|                     |        | Survive Ability | 0,067        | 0,028        |

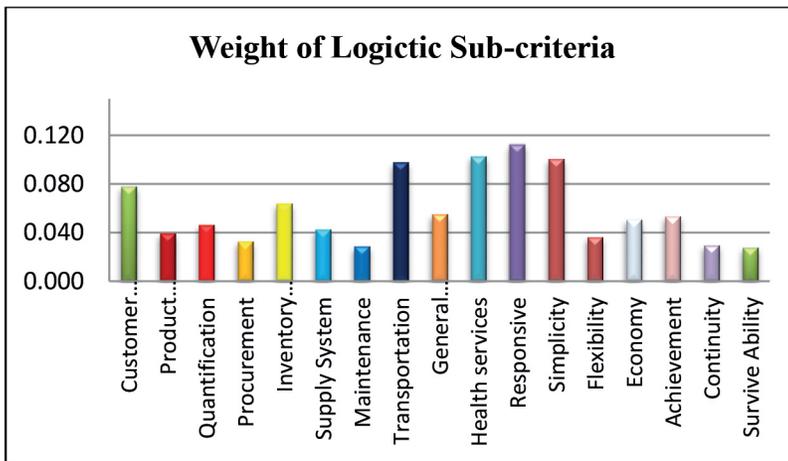


Fig. no. 7. Histogram Weight Criteria and Sub criteria for Logistics Staff Performance Appraisal

After getting the weight of each criterion and sub-criteria, the total weight is selected. Based on Table 11 and Fig. no. 7, after each criterion and sub-criteria is calculated for each intensity based on the total result value, the highest value is obtained, namely the responsive sub-criterion with a weighting value of 0.113; while the lowest value is the survive ability sub-criteria with a weight value of 0.028.

#### 4. CONCLUSIONS

The performance appraisal system in the Logistics environment is still general and not specific so it is necessary to develop a performance appraisal evaluation instrument for logistics staff officers in the TNI environment. Based on the results of the research, it was found that the development of the TNI logistics

staff performance appraisal model consists of 3 (three) criteria, namely logistical activities (A), logistics function (F), and logistical principles (L). Furthermore, logistics activities (A) consist of 5 KPIs (A1-A5), the logistics function criteria (F) consist of 5 KPIs (F1-F5), the logistics principle criteria (L) consist of 7 KPIs (L1-L7).

Based on the calculation of the criteria values that have been carried out by referring to the Key performance indicators, it is found that the criteria that have the largest total are the logistic principle criteria with a weight value of 0.413; logistic function criteria is in the second position with a weight value of 0.327; logistic activity criteria is in the third position with a weight value of 0.260. Furthermore, based on the total result value, the highest score is obtained, namely the responsive sub-criteria with a weight value of 0.113; while the lowest value is the survive ability sub-criteria with a weight value of 0.028.

In the system, each criterion is given a weighted value based on the level of influence of its importance which is then compared. Suggestions that can be conveyed are that it is expected to be used as an evaluation material and can be developed in further research and given an assessment with a Likert scale with predetermined indicators.

## ACKNOWLEDGEMENT

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# REFLECTIONS ON COMMUNICATION AND REDUNDANCY IN MILITARY INFORMATION SYSTEMS

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*“The word is half of the one who says it and half of the one who listens to it”*

(Michel de Montaigne in *Essais*)

*A military organization, with a modern information system, can develop rapidly, can shape the operational environment and obtain quality intelligence products by calling for a rigorously prepared and integrated internal and external communication in its operations. The current framework imposed by the enormous speed and the huge volume of information conveyed, unprecedented in the history of humanity, requires a good knowledge of this social process, often neglected, but which ensures many advantages, and few disadvantages, if we were to overlook the existence of redundancy. There are various hybrid threats to our nation's and our allies' security, that use different types of communication in the most innovative, surprising and effective way. The aim of the current scientific research is to analyze and develop the functions and role of communication in military information systems and to draw attention to the undesirable effects of redundancy in the decision-making process.*

**Key words:** *internal military communication, external military communication, strategic communication, directed informational redundancy, military information system.*

## 1. INTRODUCTION

It cannot be disputed that “we live in an age of background noise, bits and decibels, of sophistication of communication technique, so we survive in a boom and information

booms. And yet, feedback is not encouraging: the more is spoken, the less is listened to.”(Rotaru, 2004, p. 10).

From the above the main scientific research objects of this article are distinguished:

communication and redundancy, with the mention that both are treated in correlation with military information systems.

The concept of *communication* emerged in the scientific literature in the 20th century, giving it the meaning of “*transmitting, receiving oral, written or other messages through which a human person or group receives information on any area of the surrounding reality*” (Arădăvoaice, 1997, p. 24), as seen in Fig.1.



**Fig. no. 1** Reduced scheme of the communication processes

Source: Nicolaescu & Simileanu, 2005, p.14

The military information system is “*a set of equipment, methods and procedures and, if necessary, personnel, organized to complete the functions of information processing*” (Glosarul NATO de termeni și definiții. AAP-06, Ediția 2019, f.a., p. 67) in the military environment. Communication supports the military information system, but can cause significant dysfunction when there are certain types of informational redundancy.

## 2. INTERNAL MILITARY COMMUNICATION

Internal military communication is a basic process of military information systems, in which information is disseminated in two senses between chiefs/commanders and subordinates (vertical) but also between military personnel who do not have subordinate relations (horizontal).

The most relevant functions of internal military communication in military information systems are personnel motivation, maintenance of the information system, and development of human resources.

### 2.1. Maintenance of the Military Information System

The military information system shall ensure the command of the military organization with the necessary information for its proper functioning in times of peace or crisis and obtaining the information supremacy in the event of conflict. The ability to move information into the military information system is ensured by communication.

A stored information that has not been transmitted on time to the decision-makers means only time and resources wasted unnecessarily.

## 2.2. Personnel motivation

When they have a choice, people almost always turn to what is easier, more rewarding. "Acts of conduct never occur "for free", there is always an energy device and a constellation of meanings that explain why certain psychic manifestations occur", these represent motivation.

The information influences not only the level of knowledge of the beneficiary but also, more often, his affective part. People act in one way or another in relation to their interests, what they want to achieve and how information is communicated.

The motivational function of internal military communication is to induce people to act towards obtaining "*the advantages that the group will have and therefore the individual concerned???* as a result of success or negative effects in the event of failure"(Arădăvoaice, 1997, p. 37).

## 2.3. Development of Human Resources (Teaching Communication)

Military information systems through internal military communication shall inform the military on the battlespace situation, the requirements of the mission, the

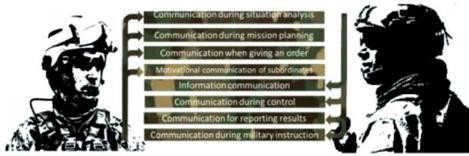
courses of action, possible results, reactions to failure, and lessons learned from the operations.

The military information system is indispensable not only in operations but also in the military educational-instructive system.

Knowledge in the military environment is transmitted through military education and troop training. The latter is the component of the development of the human resource that ensures the combat capability of the military forces by preparing them to use the military equipment that they possess. What is learned in military educational institutions is practiced through training.

The vast majority of military groups are daily being involved in training or education programs. "*The transmission of knowledge, the formation of skills and habits constitutes on the whole the result of great efforts that implies actions prepared, triggered, led, controlled, regulated and evaluated through the intercession of an intense process of intercommunication.*" (Arădăvoaice, 1997, p. 205)

As regards the communication situations specific to the military environment (see Fig. 2) these are various and require continuous adaptation of the communication process by modulating the tone, volume, style and message for the success of the action.

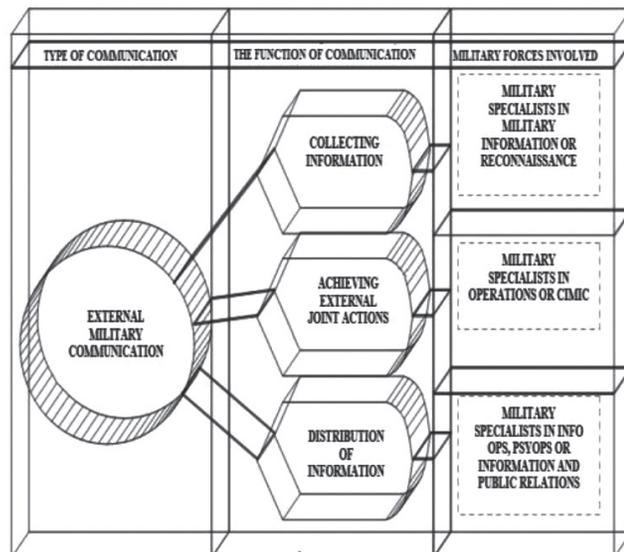


**Fig. no. 2.** Communication situations specific to the military environment

It is estimated that “60% of management problems are generated by poor communication” (Arădăvoaice, 2002, p. 38). Good internal military communication should follow a set of rules: *quantity rule, quality rule, relationship rule, meaning rule, style rule and responsiveness rule* (Arădăvoaice, 2002, p. 38).

### 3. EXTERNAL MILITARY COMMUNICATION

External military communication means the transmission of messages to the external environment of the military organization in a controlled manner and the receipt of information (messages) with or without the intention of the sender. The functions of external military communication are those illustrated in Fig. 3.



**Fig. no. 3** The functions of external military communication and military means of achieving them

### 3.1. The collecting information function

The collecting of information through external military communication is carried out with military specialists in SIGINT, IMINT, OSINT, HUMINT or more recently, E-HUMINT actions.

“Communication is an important part of the activity of HUMINT operators, whether it is real or virtual (on-line).” (Ivanov, 2013, p. 138) The E-HUMINT information gatherer obtains information from the online environment, from people who are active in the virtual environment by maintaining blogs, being part of online social networks (Facebook, Twitter, Instagram), and so on.

Gradually more and more information products will be based on E-HUMINT because communication through social networks can have a major influence on important events: political elections, “colored” revolutions, the implementation of strategic infrastructure projects, and more.

### 3.2. Achieving External Joint Actions Function

In most cases, in the event of a crisis or when the military structure does not have the necessary resources to manage the situation, it must communicate with other public authorities, civil society institutions or other military bodies.

Joint actions with the external environment of the military organization require the sharing of information held about the situation through carefully planned external military communication with respect for the security of classified information, and the need to disseminate information linked to the need to know.

In most cases, the implementation of external joint actions is a specific objective of military personnel in the field of CIMIC (civil-military cooperation/collaboration) or military operations.

### 3.3. The Distribution of Information Function

Civil society, other military and civilian organizations must understand the military actions of our troops, support or at least not affect their development. Since the success of a military operation often depends on the support of the civilian population, especially if the fight goes to the urban environment, communication ensures this objective and becomes a key element for the success of victory.

Depending on the context in which the military organization finds itself, we distinguish three types of communications with its external environment: peacetime communication, crisis communication, conflict communication. Regardless of the type of communication, from the above listed, we are talking about strategic communication. Strategic communication, as defined in NATO doctrine, of September 2009 (see *PO (2009) 0141*, NATO StratCom Policy, 29 Sep 09) is “the coordinated and appropriate use of NATO communications activities and capabilities (*Public Diplomacy, Public Affairs, Military Public Affairs, Information Operations and Psychological Operations*) in support of Alliance policies, operations and activities, and in order to advance NATO’s aims” (*FAQ | StratCom*, f.a.).

The concept of strategic communication began as an attempt to combat the problems faced by NATO forces in military operations in Afghanistan when they needed to gain the support of Afghan populations. (Reding et al., f.a., p. 26) This concept is an important part of NATO’s comprehensive approach strategy, involving civil-military collaboration, counter-insurgency, peace operations, stability and crisis management.(Library, f.a.)

The purpose of operationalizing strategic communication is to shape the operational environment by inoculating a convenient behavior wanted by the military organization among the target audience. Through this process, clear and timely information is transmitted to the target audience about military actions that helps allied troops,

ruin the opponent’s strategic communication and create conflicts between the opponent and the target audience.

Comprehensively viewed strategic communication is a form of propaganda since contact with the civilian population must not be limited to simply informing them.

#### 4. INFORMATION REDUNDANCY IN MILITARY INFORMATION SYSTEMS

Informational redundancy is the second main concept of this scientific article and is defined as excess, the use of more information than is absolutely necessary or the dissemination of information without additional content to the existing knowledge. This term belongs to the American engineer Harry Nyquist

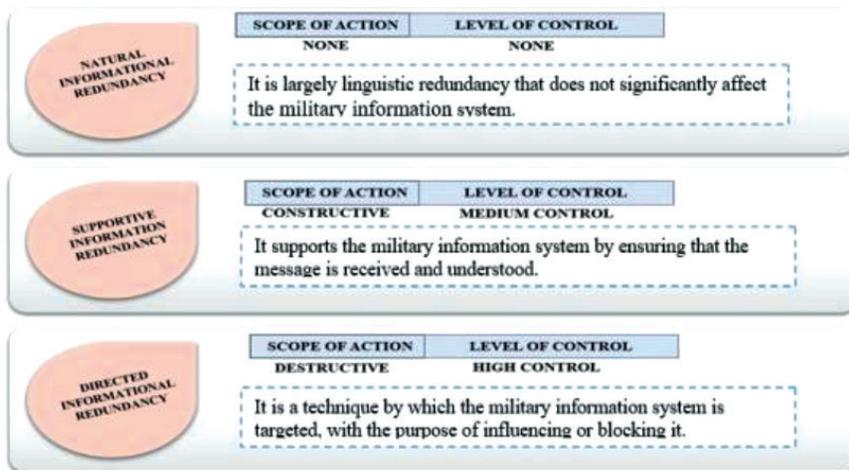


Fig. no. 4. Taxonomy of information redundancy according to the purpose and the degree of control exercised by the sender of information

who in 1920 used it to describe “*<<useless>> sinusoidal signal component*” (Lesenciuc, 2017, p. 26).

Depending on the purpose pursued and the degree of control exercised by the sender of information, the information redundancy is classified according to 5.

#### 4.1. Natural Informational Redundancy

Natural informational redundancy is largely linguistic redundancy, relative surplus of “*signs contained by a message in the communication process, the use of duplicate words, unnecessary or unknown meaning*” (Dumitru, 2010, p. 121).

A well-known form of it is tautology (unnecessary repetition of the same information in other words) or pleonasm.

Natural informational redundancy is a hard-to-detect deficiency. Both chiefs/commanders and subordinates suffocate their interlocutors with insignificant information because they do not know how to communicate effectively.

#### 4.2. Supportive Information Redundancy

It bears the general nature of informational redundancy with the indication that it supports the

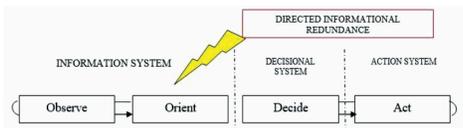
transmission and understanding of the message between the interlocutors, especially when there are disturbances in the information circuit.

There are also situations when, although the aim is to support the military information system, the result is the exact opposite. Here is representative the habit of some military chiefs to claim from subordinates “*an endless stream of data, in reality of derisory utility to them, but devouring time for all involved. This wrong practice runs counter to the principle of rational autonomy of the executors*” (Arădăvoaice, 1997, p. 259).

#### 4.3. Directed Informational Redundancy

Directed informational redundancy is the informational redundancy planned and executed by a hostile force which by affecting the military information system seeks to achieve information supremacy in opposition to another military force.

In John Boyd’s OODA (Observe, Orient, Decide and Act) loop explaining the decision-making process, the observation and orientation phases are within the scope of the military information system (see 6). Directed informational redundancy causes inconvenience in these initial phases, thus affecting the entire decision-making process.



**Fig. no. 5.** Intervention of directed informational redundancy directed in the OODA decision-making cycle

Directed informational redundancy influences the military information system as follows:

- Inhibits critical thinking by biasing its staff;
- Hide or distract from essential information;
- Being a chronophage technique makes the relation information-reality asynchronous, the actual facts unfold faster than the information processed about them;
- Doesn't allow a high standard check of the collected information due to the fact the information flow is overloaded.

It is well known that the message of influence by which disinformation is carried out also implies *“informational oversaturation, (bombarding with new information, so as not to fix the old ones)”* (Gâdiuță & Sava, 1998, pp. 195–196). The mass-media and the internet, in particular, are the environments in which this technique is most often used. In this direction, some authors note that *“the hybrid war between Russia and Ukraine, which resulted in the annexation of Crimea to Russia and*

*continues with large operations in the eastern regions of Ukraine - Donetsk and Luhansk, proves to us that the Internet can be an effective weapon of psychological warfare, of massive manipulation of both the peaceful population and the military forces”* (Dumbrăveanu, f.a.), whose effects can be increased by appealing to directed informational redundancy.

I conclude this topic with a brief assessment of a well-known military strategist: *“Napoleon said that all the rhetoric contains only one figure worthy of interest: repetition. The stated thing, through repetition, ends up imprinting itself in thoughts, to the extent that it is accepted as a proven truth.”*(Le Bon, f.a., p. 64)

## 5. CONCLUSIONS

From the military leader to the last military on the right flank of formation everyone must be aware of the value of communication. Communication is equally decisive both within the military organization and at times when the military is forced to cooperate inter institutionally with other social entities, from the average citizen to the various international military organizations.

Communication is probably the most effective way for a state to project and defend its strategic objectives, especially using its armed forces specialists.

Depending on the chosen communication channel, the message can break through all possible barriers: spatial, temporal, psychological, and so on.

Thus I analyzed valuable aspects of communication and information redundancy importance for the military information system, and I proposed new scientific research horizons with a new operational concept, that of directed information redundancy.

Directed informational redundancy raises new questions, which may be the beginning for new scientific research in the field:

- How do we realize, in due course, that there is a directed informational redundancy?

- How do we fight directed information redundancy?

- Who is the one who overloads the information flow and what he pursues through these actions?

The military organization needs to pay more attention to communication and information redundancy, especially in the context of the emergence of hybrid threats.

Last but not least, we must prepare for new horizons in communication, “*in addition to type man/nature communication (biotechnology) and human/society (audiovisual-advertising), a new man/his double formula (artificial intelligence)*” (Rotaru, 2004, pp.

13–14) will occupy a leading role in social processes in both the civilian and military environments.

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# MANAGEMENT AND RELIABILITY ASSURANCE OF A MILITARY FIELD NETWORK FUNCTIONING. ELECTROMAGNETIC FIELD CALCULATIONS

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*In given paper there has been considered a management and a reliability assurance of a military field network functioning. The calculation method of electromagnetic field strength of radiated antennas in the site of a field network site of military radio communication of high frequency and super high frequency with low and mean power up to 1 kW has been offered. The offered method of EMF calculation in limited site is based on the solution of electrodynamics' tasks of thinly wire structures at known distribution functions of current radiators, which are determined based on approximate solutions. This method can be applied for the radio technical means radiating in both one frequency and various ranges. These formulas help to calculate a compact displacement of radio stations and antennas system in the site of a military field communication network with taking account of an electromagnetic compatibility of radio devices.*

**Key words:** *electromagnetic field strength, electromagnetic compatibility, radio station, military field communication network, frequency range*

## 1. INTRODUCTION

The investigation of a map of an electromagnetic field (EMF) strength is especially important for taking account of electromagnetic compatibility (EMC) during local and compact displacement and a reliability assurance of radioelectronic stations (RES)

functioning. These RES function in the site of a field network site of military radio communication of high frequency (HF) and super high frequency (SHF) with low and mean power up to 1 kW [Bayramov, et al. 2020; Imanov & Bayramov, 2020]. It will be recalled, that HF range includes electromagnetic waves (EW) with the frequency in the

range of (30÷300) MHz and with the wavelength in the range of (1÷10) m. SHF range includes EW with the frequency in the range of (3÷30) MHz and with the wavelength in the range of (10÷100) m.

There are many scientific works devoted a problem of EMC in the site with local and compact placed various radiated devices and antennas. There are some of them referred in [Agreement, 2013; Buzov, et al. 2000; The control, 2006; Efanov, et al. 2012; Zhezhelenko et al., 2013].

There have been considered tasks of analysis and EMC assurance of compact groups of RES. Mobile radio technical objects (military field radio communication site, military wheeled locomotion techniques, track-type vehicle, combat trucks, etc.) are such objects. One of the distinctive characteristics of considered groups is a very compact displacement of many antennas of various types, purposes, and ranges on the limited site. It is clear, that in these conditions the problem of EMC assurance is became more actually.

The offered method of EMF calculation in limited site is based on the solution of electrodynamics's tasks of thinly wire structures at known distribution functions of current radiators, which are determined based on approximate solutions. Given method is applied

for radio technical means radiating both in single and various ranges [Aronov et al., 2016; Buzov, et al., 2000]. EMF of radio technical means can differ by the intensity, the polarization, the frequency, the dependence on soil parameters, etc.

The method had been calculated for directed in horizontal plane of irradiative in HF and SHF ranges in-phase, rhombic and log-periodic antennas. The EMF structure near the antenna is very complex and is depended on many factors: the type of antenna, working frequency, radiation power, polarization of EMF, the electrophysical parameters of soil, the relief of terrain, plant cover, the character of antennas placement. It is impossible to take account of all these factors, therefore for simplification of calculations the plane terrain has taken without re-radiated objects. During calculations, EMF is determined for certain values of electrophysical parameters of soil: dielectric conductivity  $\epsilon$  and conductivity  $\delta$ . In the real conditions EMF near of antenna is depended on local values of soil which can change in wide range [Buzov, 2000; The control, 2006].

In given paper, the calculation method of EMF of antennas in a site of military field radio communication has been offered. The aim of paper is a forecast of EMF levels when displacement of radio communication means in military field site.

## 2. EMF OF ELEMENTARY ELECTRIC OSCILLATORS

Generating in wave zone EMF with mainly one polarization (horizontal or vertical) antennas generates EMF with another polarization near-field region and their levels are compared. EMF of complex antennas are determined by integration of EMF of the appropriate elementary electric oscillators in linear size of these antennas. Let considered below the offered calculation method of EMF of elementary electric oscillators on the basis of which EMF of complex antennas of directed radiation can be calculated.

The calculations of radiation of the elementary oscillations placed above semiconductive surface are basis of offered EMF calculation method near the transmitting antennas. The complex components of magnetic field and of vertical elementary oscillator (fig. 1) placed in cylindrical coordinate system along of Z-axis (Z-axis is perpendicular to separation surface and  $z=0$  point is placed on the separation surface) are calculated by the next formulas:

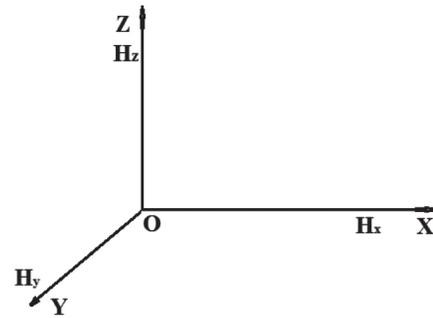


Fig. no. 1. The complex components of magnetic field of vertical elementary oscillator.

$$H_x = -\frac{k_1 \omega p}{4\pi} h_{fs} \cdot \sin\varphi \cdot \frac{e^{ik_1 R_1}}{R_1} \cdot x_0 \quad (1)$$

$$H_y = -\frac{k_1 \omega p}{4\pi} h_{fs} \cdot \cos\varphi \cdot \frac{e^{ik_1 R_1}}{R_1} \cdot y_0 \quad (2)$$

By using of (1) и (2), the  $H_\varphi$  component of cylindrical coordinate system can be obtained:

$$H_\varphi = H_y \cos\varphi - H_x \sin\varphi. \quad (3)$$

There are below notations in (1)-(3):  
 $p = il \cdot I / \omega$  is a complex amplitude of dipole moment;

$I$  is an exceeded oscillator current;

$l$  is a length of oscillator;

$i$  is an imaginary unit;

$\omega$  is a circle frequency;

$k_1 = 2\pi/\lambda$ ;

$r, R_1, R_2$  – are geometric parameters:

$$R_1 = \sqrt{x^2 + y^2 + (z - h)^2},$$

$$R_2 = \sqrt{x^2 + y^2 + (z + h)^2},$$

$$r = \sqrt{x^2 + y^2}$$

$x, y, z$  are the coordinates of point in where EMF is determined;

$h$  is a height of oscillator bracket;

$$h_{fs} = ia_r - i\Delta b_r + 2 \cdot i\Delta u^*(\delta)$$

$$a_r = i \left( 1 + \frac{i}{k_1 R_1} \right) \sin\theta$$

$$b_r = i \left( 1 + \frac{i}{k_1 R_1} \right) \sin\theta'$$

$$\sin\theta = \frac{r}{R}$$

$$\sin\theta' = \sqrt{1 - \frac{(z+h)^2}{R_2^2}}$$

$$\Delta = \frac{R_1}{R_2} e^{[-ik_1(R_1-R_2)]}$$

The complex components of field, and of horizontal elementary electric oscillator placed in the Cartesian coordinate system in a XOZ plane (fig. 1), where a XOY plane is a separation surface, are calculated by below formulas:

$$H_x = \frac{k_1 \omega p}{4\pi} \cdot h_{xx} \cdot \frac{e^{ik_1 R_1}}{R_1} \cdot x_0, \quad (4)$$

$$H_y = \frac{k_1 \omega p}{4\pi} \cdot h_{yx} \cdot \frac{e^{ik_1 R_1}}{R_1} \cdot y_0, \quad (5)$$

$$H_z = \frac{k_1 \omega p}{4\pi} \cdot h_{zx} \cdot \frac{e^{ik_1 R_1}}{R_1} \cdot z_0 \quad (6)$$

There are below notations in (4)-(6):

$$h_{xx} = -(h_{rf} + h_{fr}) \cdot \cos\varphi \cdot \sin\varphi;$$

$$h_{yx} = -h_{rf} \cdot \sin 2\varphi + h_{fr} \cdot \cos 2\varphi;$$

$$h_{zx} = -h_{sf} \cdot \sin\varphi;$$

$$h_{rf} = ia_s + i\Delta b_s - 2\Omega' U^v \delta^{-1} + 2\Omega' U^v \delta + 2\Delta' I^v \delta^{-1}$$

$$h_{fr} = -ia_s + i\Delta b_s - 2\Omega' U^v \delta^{-1} + 2\Omega' U^v \delta + 2\Delta' I^v \delta$$

$$h_{sf} = -ia_r + i\Delta b_r - 2i\Delta U^v \delta^{-1}$$

Included in these expressions the parameters are calculated by next:

$$a_s = i \left( 1 + \frac{i}{k_1 R_1} \right) \cos\theta, \quad \cos\theta = \frac{z-h}{R_1}$$

$$b_s = i \left( 1 + \frac{i}{k_1 R_2} \right) \cos\theta', \quad \cos\theta' = \frac{z+h}{R_2}$$

$$a_r = i \left( 1 + \frac{i}{k_1 R_1} \right) \cos\theta, \quad \sin\theta = \frac{r}{R_1}$$

$$b_r = i \left( 1 + \frac{i}{k_1 R_1} \right) \sin\theta', \quad \sin\theta' = \sqrt{1 - \frac{(z+h)^2}{R_2^2}}$$

$$\Delta = \frac{R_1}{R_2} e^{-ik_1(R_1-R_2)}, \quad \delta = \frac{1}{\sqrt{\varepsilon + i60\lambda\sigma + 1}}$$

$$\Omega = \frac{\delta^2 \Delta}{k_1 r(1-\delta^2)}, \quad \Omega' = \frac{\Omega}{\delta}, \quad \Delta' = \frac{\Delta}{\delta}$$

The auxiliary functions  $I(\delta)$  and  $U(\delta)$  are expressed via attenuation functions  $y(z,r)$  by next:

$$I(\delta) = y(z,r),$$

$$U(\delta) = r \left( i - \frac{1}{k_1 R_1} \right) \frac{y(z,r)}{R_1}$$

With aim of calculation of the attenuation function that contents probability integral with complex argument, the convergent and asymptotic expansions are used:

$$|S| < 12 \Rightarrow y(z,r) = 1 + j\sqrt{\pi S_0} e^{-s} - 2\sqrt{S \cdot S_0} \sum_{\nu}^n \frac{(-2S)^\nu}{(2\nu+1)!}$$

$$|S| \geq 12 \wedge \text{Im}S^{0.5} \geq 0 \Rightarrow y(z,r) = 1 - \sqrt{\frac{S_0}{S}} \sum_{\nu=0}^n \frac{(2\nu-1)!}{2S^\nu},$$

$$\text{Im}S^{0.5} < 0 \Rightarrow y(z,r) = 1 + 2j\sqrt{\pi S_0} e^{-s} - \sqrt{\frac{S_0}{S}} \sum_{\nu=0}^n \frac{(2\nu-1)!}{2S^\nu},$$

here,  $S_0 = 0.5ik_1 R_2 \delta^2 R_2^2 r^{-2}$

$$S = S_0 \left[ 1 + \frac{z+h}{\delta R_2} \right]^2$$

### 3. CONCLUSIONS

1. By using of the methods based on the integral Fredholm equations of first and second kinds, the analysis of the futures of EMC assurance of a compact group of radio stations in military field communication has been done.

2. By using of the methods of electrodynamics analysis, the mathematical expressions have been obtained for estimation of EMF levels of antenna's systems for the HF and SHF ranges with low and mean power up to 1 kW with aim of reliability assurance of military field site of radio communication.

3. This method and formulas can be used for compact placement of radio stations and antennas in military field site of radio communication.

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# COMMUNICATION CHALLENGES IN THE POST-TRUTH ERA

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*Communication, possibly one of people's most favourite activity, is present everywhere, every moment and therefore, connected to the basic social and managerial functions like: planning, organizing, motivating, controlling aiming at a "(...) continuous and dynamic shaping, modification or change of knowledge, stances and behaviours towards the directions being in conjunction with the values and interests of the subjects being in mutual relations". It aims at producing effects at three different levels: idea, emotion and behaviour level. The idea level is the easiest to impact, new ideas can develop or can be taken into consideration without much analysis; the second level is not as easy to influence however, emotions can be stirred through communication. The third level, the most important one is the hardest to affect because a change in behaviour is difficult to attain due to the complexity and the lengthiness of the process. A lasting change in behavior usually requires a considerable dedication of time, effort, and emotion.*

**Key words:** *communication, ideas, emotions, behaviour, truth, change.*

## 1. INTRODUCTION

During the second half of the twentieth century, the world has gone through quick and frequent changes and developments in the political, social, technological and economic environment and since communication is not a static concept that remains unchanged like a theorem while society and technology evolve it changed and evolved as well.

Communication, possibly one of people's most favourite activity, is present everywhere, every moment and therefore, connected to the basic social and managerial functions like: planning, organizing, motivating, controlling aiming at a "(...) continuous and dynamic shaping, modification or change of knowledge, stances and behaviours towards the directions being in conjunction with the values and interests of the

subjects being in mutual relations” (Filipiak, 2004, p. 18).

How do we know that the communication process has attained its goal? Well, what happens these days, the past decade especially, polarization of information and popular truth is shallow pool of knowledge, of opinion shaping built only on the trustworthiness of the people who are involved in the communication process and not on real evidence and real facts. Consequently, even if apparently communication works the effects it triggers are vitiated.

## 2. EFFECTIVE COMMUNICATION

It is worth mentioning that effective communication never occurs as single-sided based on the grounds activity, effective communication takes place when feedback happens, when the addressee comprehends the message and the addresser has proof that those processes took place indeed. And the process does not end here, receiving and understanding a message does not equate with the idea that the message will produce the envisaged effects.

Communication aims at producing effects at three different levels: idea, emotion and behaviour level. The idea level is the easiest to impact, new ideas can develop or can be taken into consideration;

the second level is not as easy to influence however, emotions can be stirred through communication. The third level, the most important one is the hardest to affect because a change in behaviour is difficult to attain due to the complexity and the lengthiness of the process. A lasting change in behavior usually requires a considerable dedication of time, effort, and emotion.

Nevertheless, in order to be able to evaluate the impact as accurately as possible, a baseline should be taken before communication happens and the effect measured afterwards.

## 3. COMMUNICATION CHALLENGES

What is the biggest challenge for communication?

It seems that we live in the post truth era, post truth is a term which became popular in the year 2016 and also gained the reputation of word of the year in 2016 according to Oxford Dictionaries [1], which seems to be a very prolific year for highlighting communication concepts like *fake news* and *alternative facts* which transformed from an illustration of a social media phenomenon into a stereotype. A catchword that has gone viral so quickly fake news, empty words, rumors and political lying. “Polarization and unethical politicians or unregulated social

media; shoddy journalism; or simply the inevitable chaos ushered in by digital media technologies” are among the sources of this post-truth era communication briefly, we could say that, in general, human nature is the reason.

What makes the current trend of fake news different, said Harari (Harari, 2019), is technology, which enables us to tailor propaganda on an individual basis, and match the lies to the individual prejudices.

The first person to use the term “post-truth” in its contemporary context was the Serbian American playwright Steve Tesich. In his 1992 article “A Government of Lies” [2], Tesich criticized the American public for accepting the lies of the Bush (Sr.) administration without having any reaction thus accepting a life in the post-truth world, i.e., in a world in which the truth is no longer important or relevant. The term resurfaced in 2004, in the title of a book by Ralph Keyes, *The Post-Truth Era* [3].

Post truth refers to the this situation the “circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.” (OUP, 2016). Therefore, whoever wishes to influence public opinion should concentrate on the creation of a discourse that is easy to accept and which places an emphasis on what satisfies the emotions and beliefs of the large public, instead of the real

facts. The issue is that people have a tendency to hope in spite of all reason and what they hope for may or may not be realistic and may or may not be based on truth and facts. So, the attempt to preserve hope will always be more important to people than some abstract quest for truth.

“Post-truth” is not simply the contrary of truth, it is not necessarily a lie, it is a good smoke screen for or from other things. Speakers tell listeners what they want to hear in order to keep them satisfied and to avoid unrest and curiosity. It is a term comprising an agglomeration of elements, hot air talk, empty words, emotional topics, lies, catchy phrases, it is the perfect product of the consumerism era when we buy what looks shinier even if it is useless.

*Echo chambers* are another element that distorts and impedes communication. People thrive in echo chambers because they offer them the comfort of opinion confirmation. According to Oxford Learners Dictionaries they are „an environment in which somebody encounters only opinions and beliefs similar to their own, and does not have to consider alternatives” [5]. Echo chambers influence and cocoon their members, not by interdicting communication with the world, but by changing what and who they trust. The only accepted opinions are those aligned to the members’, the ones confirming the biasis. These

chambers can be the modern form of Plato's Allegory of the Cave.

Those people who lived ever since their childhood, not birth, in a cave and saw only some shadows on the walls of the cave believed that reality was the shadows they saw and nothing else existed. Similarly, those who hear only one side of the story will never know, therefore accept, that reality is more complex.

Going further there can be mentioned other challenges like: the fame some people acquire thus becoming larger than life figures and whose opinions are taken for granted by most of their admirers or the fact that people do not discuss ideas, they discuss other people. Our views on other people's arguments, ideas are strongly influenced by how much we like them.

Communication also fails because the targeted audience is not enough analyzed and understood and the messages are not tailored. There is no such thing like one size fits all messages if we are interested in obtaining results. When communicating we should identify and take into consideration the push and pull factors specific to the target audience. Simply put, push and pull factors are those factors which either push people from where they stand (beliefs, attitudes) into a specific direction or attract and make them stand by their beliefs even stronger.

#### 4. CONCLUSIONS

How to react? How to fight back? How to make sure that we are not inadvertently caught in such a trap?

It is not a simple endeavor because most of the influences mentioned before are too strong due to the feeling of mental comfort they provide. However, the repetition of true facts does eventually have an effect, the information sticks to the memory and in time it provoke critical analysis.

James Kuklinski and colleagues discovered in research [8] that although misinformed or unfounded beliefs can be very resilient, people's minds can be changed "when one hits them between the eyes" (Kuklinski et al. p. 806) recurrently with the accurate, unbiased information or the pure truth. It is not easy, especially since the accurate information is inconvenient for those who support a specific idea, but it can be done. Unfortunately, the percentage of success varies and it is never 100. Eventually, when it matters to us we are capable of "resolving our cognitive dissonance by rejecting our ideological beliefs rather than the facts" (McIntyre, 2018).

Researchers propose new terms such as "counterknowledge" and "reinforcement" [10] considering that they are more appropriate and define better the new era of communication

and information dissemination characterized by actions in which the source of the message/ information aims to influence the public through emotions and not through facts and logical arguments.

However, we cannot focus only on facts or use a black and white, true or false analysis or measurement scale because communication, human relationships are based on emotions and relatedness. Audiences identify themselves in the stories they hear. Emotions are a significant feature in rhetoric. Ever since Aristotle's time we have the Rhetorical triangle which presents the three fundamental rhetorical elements, Ethos, Logos and Pathos (emotions). Good communicators must appear involved in their speeches not distant and rigid.

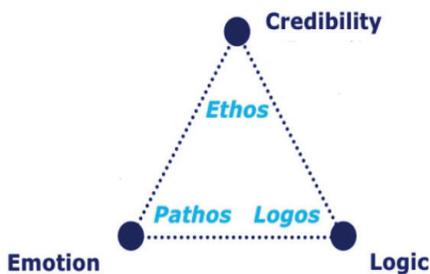


Fig. no.1. Rhetorical triangle

Ethos or credibility refers to the trustworthiness of the speaker, the tone, the style. Logos or logic refers to the reasoning and argumentation, all the elements that the speech is based on, facts and

figures. Pathos or emotion is what mostly stirs people, the emotional impact of the stories.

Fake news, lies are not the biggest problem because many a time what stirs the audience is not the information, the facts presented (may them be real or not), but the way the story is delivered pushing emotion buttons, making people feel part of it. Reporting is most of the time based on actual facts. The problem is that they launder and reorganize the story making it more appealing for a specific cause and, as Davis says in his book *empty assertions, obfuscation* (by irrelevant facts) and *gibberish* replace information (Davis 2017).

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# SOCIAL TRANSFORMATION OF INDONESIAN SOCIETY AFTER THE 1965 INCIDENT AND ITS CONTRIBUTION TO SOCIAL RESILIENCE IN THE REPUBLIC OF INDONESIA

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*The 1965-incident became a scourge for the Indonesian nation due to the occurrence of a bloody incident in form of a horizontal conflict involving ideological political factions in Indonesia at that time. Nevertheless, the 1965 incident was able to bring the novelty and progress that occurred in Indonesian society afterwards as its positive aspects. The study aims to provide an analysis of Post-1965 social transformation and its contribution to the social resilience of the Unitary State of the Republic of Indonesia. This research employed Soft System Methodology, Interpretive Structural Modeling, System Dynamic for extracting information related to research topics by bringing together sources to share facts and views regarding the research topic. Based on the research results from subject-matter experts, there are 12 (twelve) main elements that were confirmed and selected to design the model and interpretive structural modeling. the result of ISM and MICMAC diagram analysis then divided the twelve elements into 4 (four) quadrants, namely Quadrant I (Autonomous) consisting of two elements, namely: a) grassroots solidity (C12); b) social transformation (C9). Quadrant II (Dependent) consists of six elements, namely: a) elements of society (C1); b) community organization (C2); c) leader of political party (C3); d) education and social gap (C8); e) traumatic society (C9); f) social transformation (C10). Quadrant III (Linkage) consists of elements of the People's Representative Council (C5). Quadrant IV (Independent) consists of three elements, namely: a) Government (C4); b) Regional Heads (C6); c) political education.*

**Key words:** Social Transformation, 1965 Incidents, Social Resilience, Soft System Methodology, Interpretive Structural Modeling (ISM).

## 1. INTRODUCTION

Debate about the finalization of state ideology in Indonesia has not yet come to an end. One of the reasons was the initiative of the Indonesian People's Representative Council/*Dewan Perwakilan Rakyat-Republik Indonesia* (DPR-RI) regarding the discussion of the Pancasila Ideology Policy Bill (*RUU HIP*). The debate related to the Bill also shifted to the issue of the emergence of communist aspirations in the draft. Some people think that the drafting of the *RUU HIP* might potentially restore communism in the context of state ideology. Influential Islamic organizations in Indonesia, such as NU, Muhammadiyah, and MUI, expressed their disapproval of the continuing discussion of this Bill due to their concern on the open possibility for the Bill enactment to resurrect communism in Indonesia.

The 1965 incident became a scourge for the Indonesian nation because at that time there was a bloody incident in the form of a horizontal conflict involving ideological political factions in Indonesia (Keys & Cottle, 2017). Nevertheless, the 1965 incident was able to bring the novelty and progress that occurred in Indonesian society afterwards as its positive aspects. If explored in more depth, it could become knowledge materials that

trigger public awareness about the functionalization of social conflicts. Its positive aspects contained wisdom for the development of civilization in Indonesian society at large. Pancasila as a national consensus is the basis for the formation of the state order. Therefore, a serious effort is needed to present a positive reality construction after the 1965 incident (Stroud, 2015).

Based on the aforementioned background, this study aims to provide an analysis of Post-1965 Social Transformation and Its Contribution to the Social Resilience of the Unitary State of the Republic of Indonesia. In this research, Soft System Methodology (SSM), Interpretive Structural Modeling (ISM), System Dynamic (SD) are used. This research is expected to be a tool for extracting information related to research topics by bringing together sources to share facts and views regarding the research topic.

There are several previous references in supporting research, including the development of a tourism conceptual model for the identity of the city of Bandung (Adianto, et al., 2020). SSM's approach to IS change management (Asadi, 2020). Using Soft Systems Methodology as an Approach To Evaluate Cheating In The National Examination (Iriani & Manongga, 2018). Application of SSM to Trigger Solar Energy in

Iranian Building (R.Sirous, et al., 2016). Soft System Methodology in the sugar industry (Proches & Bodhanya, 2015). Development of a business model at *Bank Negara* in Indonesia (Edi, et al., 2019). Improving Performance of Indonesia State-Owned Enterprises Holding; Policies and Strategies (Utoyo, et al., 2019). ISM for Navy Development Strategy (Susilo, et al., 2019). ISM for Sustainable Rural Development (Panackal & Singh, 2016). ISM for green Supply Management (Dubey, et al., 2015). Modeling Dynamic Systems with Efficient Ensembles of Process-Based Models (Simidjievski, et al., 2016). System Dynamics Modelling 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). Simulation of Dynamics Behaviors for Shipping Equipment Support with System Dynamics Analysis Approach (Song & Yang, 2015).

This paper consists of several parts. Section 2 describes the theory of social transformation, the theory of social resilience, the September 30, 1965 incident, the concept of SSM, the concept of ISM, the concept of SD, methods, and research steps. Section 3 describes the analysis of the Post-1965 incident of social

transformation in Indonesia and their contours. Section 4 explains the conclusions of the research.

## **2. MATERIAL/METHODS**

### **2.1. Social Transformation Theory**

Transformation means the process of change or renewal of social structures, transformation also means the process of changing values. Transformation means to change or something beyond. Social change always occurs along with human development. In the past, society was known as an agricultural life but now it has turned into an industrial society (Feola, 2015). Social values in society have also undergone changes. Previously people expected everything to be modern with the help of technology, nowadays modern society feels sorrow and has lost the meaning of life. Thus, it needs a transformation to return to running a more humanist, community-based social system (Sutton, 2013).

Social transformation is a process of changing society from an agrarian society to an industrial society (Yonda, 2016 ). According to Emile Durkheim, a French sociologist and the originator of the structuralism-functionalism (S/F) theory, an agrarian society is called a homogeneous society since its members carry out relatively similar

activities so that its division of labor becomes very simple (Coleman, 2014). In addition, the community has relatively the same values, ideals, aspirations, or life goals. Social transformation means talking about the process of changing structures, social systems, and cultures.

Social transformation can occur deliberately and indeed be desired by society. For instance, programmed development to transform the previously unpleasant to become pleasant; Poverty into prosperity; and Agricultural culture into industrial culture. With this deliberate form of transformation planned, the management becomes clearer because it can be programmed and the occurred changes can be seen. Inadvertent transformations can occur due to influences from within the community itself or by influences from outside society, for example by entering new technology. Looking at the term social transformation shows a process, understanding, differences, characteristics, social at a certain time (Healy, 1998).

## **2.2. Social Resilience Theory**

Social resilience is a dynamic condition of a nation that consists of toughness and resilience and the ability to develop national strength in facing all kinds and forms of threats, challenges, obstacles, and disturbances both from within and outside, directly or indirectly.

which threatens and endangers the integration, identity, survival of the nation and state as well as the struggle to achieve the goals of the national struggle (Isabella, 2017).

Keck and Sakdapolrak (2013) define social resilience which consists of three dimensions: 1. Coping capacities, namely the ability of social actors to overcome and solve all kinds of problems; 2. Adaptive capacities, namely the ability to learn from past experiences and adapt to future challenges in everyday life; 3. Transformative capacities, namely the ability to set up institutions that promote individual welfare and sustainable community resilience against future crises. In this way, building social resilience, especially in terms of concern for the poor and marginalized, can be expressed as a political issue, not just a technical one (Keck & Sakdapolrak, 2013).

The development of the definition of social resilience formulated by Keck and Sakdapolrak (2013) is a development of the thinking of Voss (2008), Lorenz (2010), and Bene (2012), which refers to three types of capacity as mentioned above, namely: coping capacities, adaptive capacities and transformative capacities. For this reason, Keck and Sakdapolrak see social resilience not only as the ability of a person/institution to solve problems, but also the ability of social participation and transformation.

### **2.3. The September 30, 1965 Incident**

The 1965 incident became a scourge for the Indonesian nation because at that time there was a bloody incident in the form of a horizontal conflict involving ideological political factions in Indonesia. A year later, there were political changes that led to changes in the social and cultural fabric of Indonesian society. However, these changes did not necessarily erase the memory of society as a nation. Almost every year, the discourse on communism emerges as a debate that grabs public attention and energy (Miner, 2018).

The 1965 incident can be compared to similar conflicts in various countries, such as World War I during 1914-1918 and World War II during 1939-1945. Although this event is commemorated every year, this does not necessarily become a scourge for the people who experience it (Thaler, 2012). This condition can occur because each conflicting party views this moment as lesson learned for betterment in the future, which indicates the maturity of the people involved in the war. Another event was the civil war in the United States during 1861-1865. Despite the many lives claimed, formation of a new social order that strengthened the identity of the United States of

America was able to be established afterwards (Wahid, 2018).

### **2.4. Soft System Methodology**

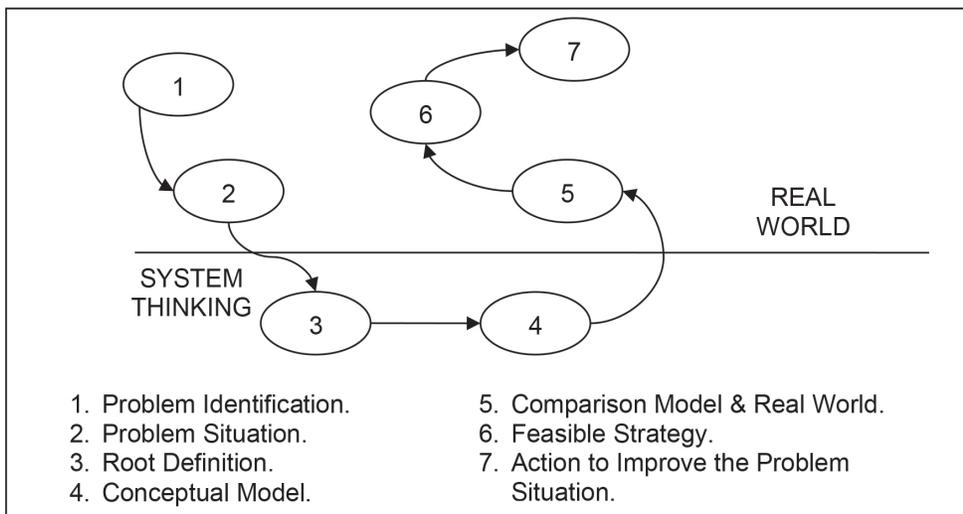
Soft systems methodology (SSM) is a systemic research process that uses systems models (Checkland, 2000). The development of the system model is carried out by untangling the unstructured problems, discussing intensively with related parties, comparing the concept of systems thinking with the real world situation, and solving problems collectively. SSM is essentially a description using a specific language which contains the participants' thoughts in perceiving reality (Edi, et al., 2019).

SSM is a methodology that performs systematic analysis based on problems in factual organizations which are then used to improve situations in real-world organizations (Shahabi, et al., 2019). SSM can be used to analyze in the field of social and information systems studies, for example, the relationship between governance risks in society (Iriani & Manongga, 2018). There are several other reasons of employing SSM in building information systems, including: 1) SSM can support systemic thinking, 2) information systems need to be checked and analyzed consistently to develop organizational information systems, 3) support a logic streaming analysis

model which is then compared with the original process, 4) offers a process continuous learning, 5) supporting stakeholder participation, 6) well-preserved information history, 7) stakeholder answers become a means of rearranging and identifying appropriate solutions according to organizational needs at a particular time, 8) the context of the development of information systems is determined by the stakeholders themselves (Asadi, 2020).

or involve many factors and interact with each other (Mohammed et al., 2008). ISM is an interpretive method that presents solutions to complex problems through the basis of discourse on structural mapping of the relationship of complex elements (Susilo, et al., 2019).

ISM organizes several parts of a complex problem, makes the model a decision making and simplifies planning in finding solutions to problems. ISM is very flexible to use



**Fig. no. 1.** Steps of Soft System Methodology (Checkland, 2000)

**2.5. Interpretive 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

for problems that contain hundreds of elements. There is nothing that limits the types of methods used in analyzing the problem.

ISM technique can be employed to perform program analysis by the vision and mission. Broadly speaking, the ISM technique is divided into two

parts, namely: element classification and hierarchical arrangement. The first step that needs to be done in the ISM analysis is to determine the elements that correspond to the existing problems. Furthermore, sub-elements are arranged for each selected element. The selection of elements and arrangement of sub-elements is carried out 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 into the numbers 1 and 0. The element classification is based on the Structural Self Matrix (SSM) which is based on VAXO system, namely:

**Table 1.** Reachability Matrix Role for ISM (Shahabi, et al., 2019).

| 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      |

The matrix that has met the transitivity is continued to process it to get the reachability matrix, to get the Driver Power (DP) and

Dependence (D). The last stage is to classify the sub-elements into 4 sectors (Susilo, et al., 2019):

- a. Quadrant I: weak driver-weak dependent variables (Autonomous), which means that the sub-elements that enter this sector are generally not related to the system and may have a little relationship even though the relationship can be strong.
- b. Quadrant II: weak driver-strongly dependent variables (dependent) which means that the sub-elements in this sector are dependent.
- c. Quadrant III: strong driver-strongly dependent variables (linkage), which means that the sub-elements that enter this sector must be studied carefully because the relationship between the sub-elements is unstable.
- d. Quadrant IV: Strong driver-weak dependent variables (Independent), which means that the sub-elements that enter this sector are the remaining parts of the system which are called independent variables.

## 2.6. System Dynamic

The System Dynamics (SD) Society offers an updated definition by stating that SD is “a methodology for studying and managing complex

feedback systems". The dynamic system was first introduced by Jay W. Forrester in the 1950s, as a method of solving complex problems that arise because of the causal tendency of various variables in the system (Panahifar, et al., 2016). The SD method was first applied to management problems such as inventory fluctuation, labor instability, and a decline in the market share of a company. From the dynamic system model in the form of a causative diagram, a flow diagram is built to describe the simulation variables and parameterization as well as the model formulation to be ready to be simulated (Forrester, 1971). The variables in a SD are shown in Table 2.

polarity as stated above is divided into positive and negative. Another form of a diagram that also describes the structure of a SD model is a flow diagram. Flow diagrams represent the relationships between variables that have been created in a causal diagram more clearly, using certain symbols for the various variables involved (Sushil, 1993).

Causal Loop Diagram (CLD) is an image language that connects various variables in a loop diagram. The use of arrows will show the variables that are cause and or effect. The arrowhead shows the cause, while the arrowhead shows the effect. Each model must understand in advance about the processes that occur in the real

**Table 2.** Symbol of system dynamics (Sushil, 1993).

| Variable  | Symbol  | Description  |
|-----------|---|--|
| Level     |  | It represents the accumulated quantity that is accumulated over time, which can change in value in line with changes in the rate |
| Rate      |  | Presents flow rates that can change level values   |
| Auxiliary |  | Presents an auxiliary variable that contains a formulation that can be input on the rate.  |

The form of a SD model that represents the structure of the feedback diagram is a causal diagram or commonly known as a Causal Loop Diagram (CLD) (Ojha & Vrat, 2016). This diagram shows the direction of the flow of change in the variables and their polarity. The flow

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

## **2.7. Method / Step**

The data in this study are divided into two, primary data and secondary data. Primary data will be obtained through a series of Panel Discussions involving various subject-matter experts and representations of community groups who have studied various aspects of the 1965-incident. Secondary data were obtained through literature review, whether in the form of books, scientific reports, journal articles, documentary films, photos, and other document forms. The data obtained from the results of two Panel Discussions, the results of in-depth interviews, and the results of literature searches will be processed and analyzed by the research team.

The study used a qualitative approach which was strengthened by SSM as the data analysis technique. SSM is a methodology that uses a practical and pragmatic approach to define and find solutions to social problems that are considered unclear (Burge, 2015). This methodology was chosen because it was considered capable of producing a qualitative study that tested the entire worldview with a structured analysis step to determine improvements upon a social problem.

## **2.8. Subject & Goal**

In this research, the research subjects are National Historical Experts, World War History Experts, Sociologists, Anthropologists, Political Scientists, and Humanists.

By giving the same questions to these sources, it is expected to provide a comprehensive view related to research questions that make it easier for researchers to analyze the results of the sources' exposure. Social structural changes consist of the strengthening of the Indonesian national identity towards the values of Pancasila and increasing social solidarity of integration between ethnic groups.

## **3. RESULT**

### **3.1. Situation and condition of the problem**

The 1965 incident can be interpreted as a process of transformation that is taking place in the efforts of the Indonesian people to encourage the birth of social resilience or social resilience of the Unitary State of the Republic of Indonesia. Furthermore, this event can also be interpreted as a philosophy that emphasizes the importance of learning lessons from every incident so that it can contribute to strengthening the Indonesian National Identity.

In the first stage, an unstructured problem analysis was carried out. Based on the exploration results from various sources during the first step of the SSM method, several presumptions about the situations and conditions that might occur were identified. In general, these problems are related and divided into three aspects, namely: a) what and why

the problem occurs; b) what needs to be done; c) how the problem can be solved. These conditions include:

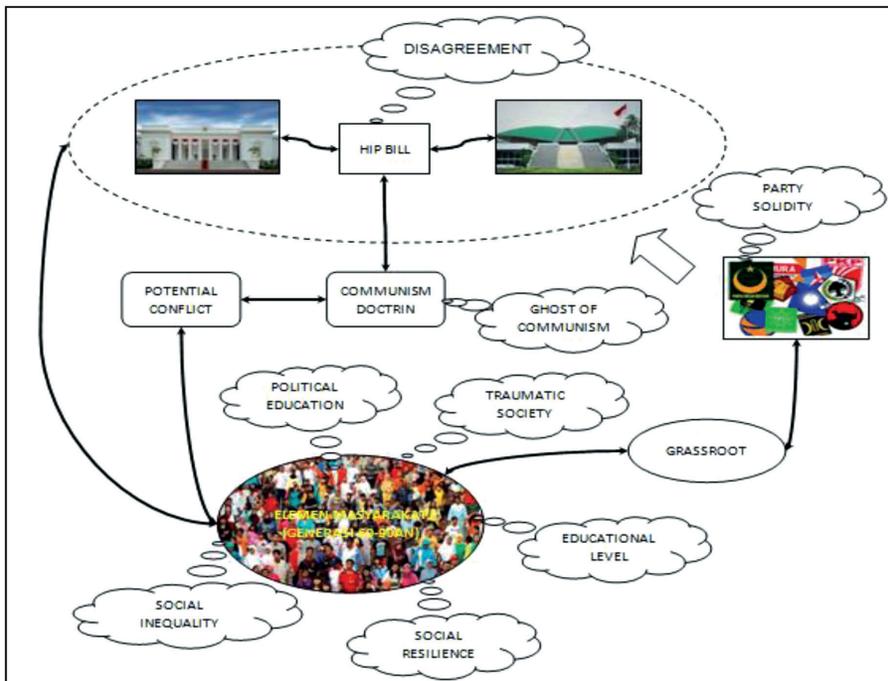
- a. The (RUU HIP) has the potential to restore communism.
- b. The 1965 incident was a very frightening specter for the Indonesian nation.
- c. Political conflicts that have spread to the grassroots level.
- d. Social resilience of society that is vulnerable to political issues.
- e. Potential for conflict and social disintegration in society.

**3.2. Structuring the problem**

The next step is to provide analysis by identifying the roles of

objects, subjects, and related problems involved in the social transformation of society. This step is carried out by examining related issues regarding current matters that become a system for the social transformation of society in dealing with the G30S / PKI issue on social resilience. The analysis results are contained in a single image called a rich picture.

The rich picture describes the structure, processes, relationships between structures, and the main concerns of the parties involved in the problem situations. Based on the identification of the parties involved, questionnaires, and interviews with subject-matter experts, the rich picture can be shown in Figure 2.



**Fig. no. 2.** Rich Picture of Social Resilience in Indonesia.

Based on the results of the mapping between the contingency theory model and the rich picture, this study finds five problems that are considered the most dominant and structured, namely: 1) There is a disagreement about the *RUU HIP* between the Executive and the Legislature as well as several elements of society that suspected the potential of communism ideology return should the Bill enacted; 2) The dark history of mass killings between conflicting parties in that year was still traumatic for the community, especially the generation born in the era of the old order and the new order. This condition caused the 1965 Incident to be a very frightening specter for Indonesian people; 3) Several political parties that exist today have a strong historical and mass base, which is supported by the strong solidity of existing parties so that political disputes can spread to the grassroots level; 4) The imbalance of social disparities and the level of existing education and minimal political education makes the social resilience of the community vulnerable to political issues. This condition also provides the

potential for social disintegration in the community; 5) There are elements of society who still cannot escape the shackles of ghosts and there are several parties who take advantage of this momentum for certain interests to stir the potential for a culture of conflict in society.

### **3.3. CATWOE Analysis dan Root definition**

The next stage is the systemic thinking process about the real world in the SSM process. In this stage, a root definition (RD) is discussed to obtain the root of the problem in each problem structure. RD is created to serve as a basis for conceptual modeling. RD that has been created will be enhanced by CATWOE analysis, which stands for Costumers, Actors, Transformation, Worldview, Owners, and Environment. CATWOE is a reminder tool to ensure the RD correctly describes a human activity system. The next step is to proceed with the 3E analysis, which stands for Efficacy, Efficiency, and Effectiveness. The results of the research discussion on social transformation are described in Table 3:

**Table 3.** CATWOE Analysis And Root Definition in this Research.

| Code | Aspect         | Element   |
|------|----------------|---|
| C    | Customer       | - Indonesian society  |
| A    | Actor          | - Element of society<br>- Community organization<br>- Leader of Political Party   |
| T    | Transformation | - The realization of social transformation that contributes to the national resilience of the Republic of Indonesia                                     |
| W    | The World View | - Healthy and dynamic social resilience for the sustainability of the life of the nation and state.   |
| O    | Owner          | - Government<br>- People's Representative Council (DPR)<br>- Head of the regional government  |
| E    | Environment    | - Political education is still minimal.<br>- The social and educational gap<br>- Traumatic society<br>- Strong grassroots solidity in political parties |

The results of the interviews have resulted in an exploration of problems in the field according to the informants. During this phase, each informant provided arguments according to their perception on a problem. Through these arguments, a worldview or *weltanschauung* can be explored on the social transformation that existed in Indonesia regarding the history of the 1965 movement.

Customers in the definition of social transformation systems in this study are the Indonesian

people. As the customers, the society will accept all the consequences, both positive and negative, from the social transformation of the 1965-incident. Society in its current condition has not received a good political education. Social inequality that is still high amidst the conditions of society added to the traumatic events of 1965 makes communism still haunts today. This condition includes actors which consist of elements of society, political organizations, and leaders of political parties, including the grassroots mass.

The government, DPR, and heads of the regional government as owners have the authority to stir up problems regarding the current social transformation. These actors have the responsibility for building social resilience as a result of the 1965-incident. The formation of the *RUU HIP* is an initial step that requires good communication between the sectors involved in the system without neglecting the obstacles that exist in the surrounding environment.

### 3.4. Conceptual Model

In the previous stage, the analysis used RD to understand the current system and state “what it is”. In this step, the analysis uses the results from the previous step to answer “what should the system do”. To achieve this goal, a conceptual model must be created for each

RD. In this research, ISM is used to map the model. ISM is a method for creating and understanding the relationships between elements of complex systems. ISM contributes greatly to managing complex relationships between system elements and helps identify internal variable relationships.

### 3.5. Initial Reachability Matrix

The first step is to change the detailed information:

The second step was applying the identified criteria or variables that are defined in pairs. The paired relationships are then developed between the factors that affect the system. The association matrix is evaluated by SSIM and used for transitivity within the ISM. Next, factorization is carried out on the existing criteria.

**Table 4.** Elements of Social Transformation and Social Resilience in Indonesia.

| Kode | Element                         | Kode | Element                  |
|------|---------------------------------|------|--------------------------|
| C1   | Elements of Society             | C7   | Political Education      |
| C2   | Community Organization          | C8   | Education and Social Gap |
| C3   | leader of the Political Party   | C9   | Traumatic Society        |
| C4   | Government                      | C10  | Social Transformation    |
| C5   | People’s Representative Council | C11  | Social Resilience        |
| C6   | Regional Heads                  | C12  | Grassroots Solidity      |

**Table 5.** SSIM for Social Transformation and Social Resilience in Indonesia.

| No | Code | Element                         | Element |    |    |   |   |   |   |   |   |   |   |   |
|----|------|---------------------------------|---------|----|----|---|---|---|---|---|---|---|---|---|
|    |      |                                 | 12      | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 1  | C1   | Elements of Society             | A       | A  | A  | A | A | A | V | X | X | V | V |   |
| 2  | C2   | Community Organization          | A       | A  | A  | A | A | X | X | X | X | A |   |   |
| 3  | C3   | leader of the Political Party   | A       | O  | O  | V | O | X | X | X | X |   |   |   |
| 4  | C4   | Government                      | O       | V  | V  | V | V | V | X | X |   |   |   |   |
| 5  | C5   | People’s Representative Council | O       | V  | X  | X | V | V | X |   |   |   |   |   |
| 6  | C6   | Regional Heads                  | O       | V  | V  | V | V | V |   |   |   |   |   |   |
| 7  | C7   | Political Education             | V       | V  | O  | V | V |   |   |   |   |   |   |   |
| 8  | C8   | Education and Social Gap        | O       | A  | A  | V |   |   |   |   |   |   |   |   |
| 9  | C9   | Traumatic Society               | O       | A  | V  |   |   |   |   |   |   |   |   |   |
| 10 | C10  | Social Transformation           | A       | V  |    |   |   |   |   |   |   |   |   |   |
| 11 | C11  | Social Resilience               | A       |    |    |   |   |   |   |   |   |   |   |   |
| 12 | C12  | Grassroots Solidity             |         |    |    |   |   |   |   |   |   |   |   |   |

**Table 6.** Reachability Matrix.

| No | Code | Element                         | Element |   |   |   |   |   |   |   |   |    |    |    |
|----|------|---------------------------------|---------|---|---|---|---|---|---|---|---|----|----|----|
|    |      |                                 | 1       | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1  | C1   | Elements of Society             | 1       | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0  | 0  | 0  |
| 2  | C2   | Community Organization          | 0       | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0  | 0  | 0  |
| 3  | C3   | leader of the Political Party   | 0       | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0  | 0  | 0  |
| 4  | C4   | Government                      | 1       | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 0  |
| 5  | C5   | People’s Representative Council | 1       | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  |
| 6  | C6   | Regional Heads                  | 0       | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 0  |
| 7  | C7   | Political Education             | 1       | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0  | 1  | 1  |
| 8  | C8   | Education and Social Gap        | 1       | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0  | 0  | 0  |
| 9  | C9   | Traumatic Society               | 1       | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1  | 0  | 0  |
| 10 | C10  | Social Transformation           | 1       | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1  | 1  | 0  |
| 11 | C11  | Social Resilience               | 1       | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0  | 1  | 0  |
| 12 | C12  | Grassroots Solidity             | 1       | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1  | 1  | 1  |

### 3.6. MICMAC Analysis

The next step is to arrange a hierarchy for each sub-element in the element being studied and classify it into four sectors, whether these sub-elements are included in the Autonomous, Dependent, Linkage, or Independent sectors.

Based on Figure 3, several classifications of elements regarding the social transformation of Indonesian society after the 1965 incidents and their contribution to the social resilience of the Unitary State of the Republic of Indonesia were obtained. These elements are divided into four classifications, namely:

Table 7. Driving-Dependence Power.

|   | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| X | 9  | 12 | 7  | 6  | 8  | 6  | 6  | 7  | 8  | 6   | 7   | 3   |
| Y | 6  | 5  | 7  | 11 | 12 | 10 | 8  | 4  | 5  | 6   | 5   | 6   |

The results of the MICMAC diagram processing classified elements into four sectors in a two-dimensional graph with the x (dependence) and y (powder driver) axes.

- a. Quadrant I (Autonomous) consists of two elements, namely: a) grassroots solidity (C12); b) Social Transformation (C9).

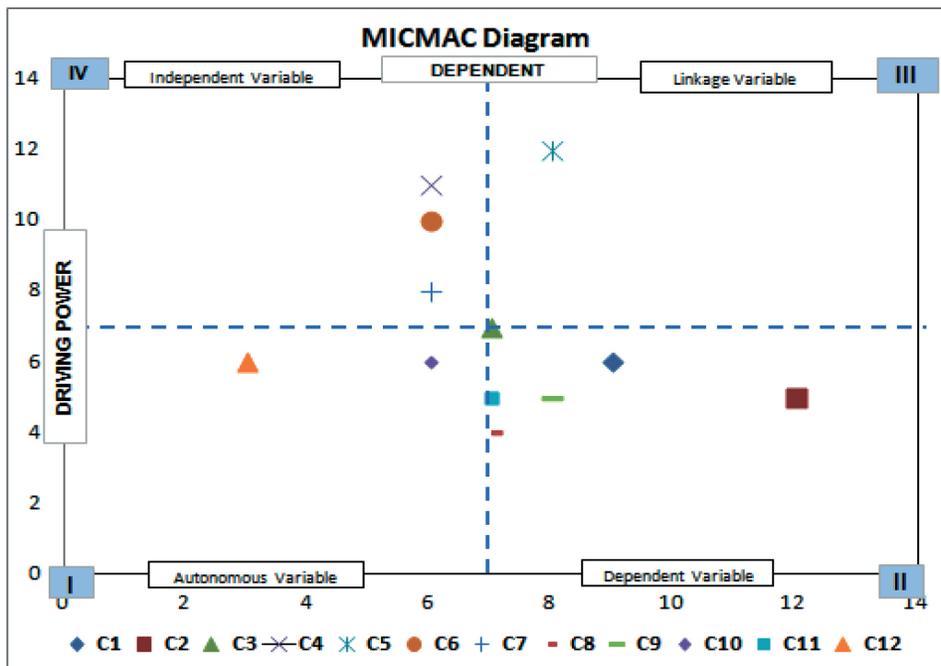


Fig. no. 3. Driving Power and Dependence Power Diagram.

- b. Quadrant II (Dependent) consists of six elements, namely: a) Elements of Society (C1); b) Community Organization (C2); c) Leader of the Political Party (C3); d) Education and Social Gap (C8); e) Traumatic Society (C9); f) Social Transformation (C10).
- c. Quadrant III (Linkage) consists of elements of the People’s Representative Council (C5).
- d. Quadrant IV (Independent) consists of three elements, namely: a) Government (C4); b) Regional Heads (C6); c) Political Education.

### 3.7. Dynamic System Model of Social Transformation and Social Resilience of the Republic of Indonesia

CLD model or a cause and effect diagram is a model used to solve or prevent problems by looking at every factor that exists related to other factors. CLD model uses an approach to problem-solving by looking at the complexity of the system which is depicted with a diagram in the form of a curved line with an arrow that connects one factor to another.

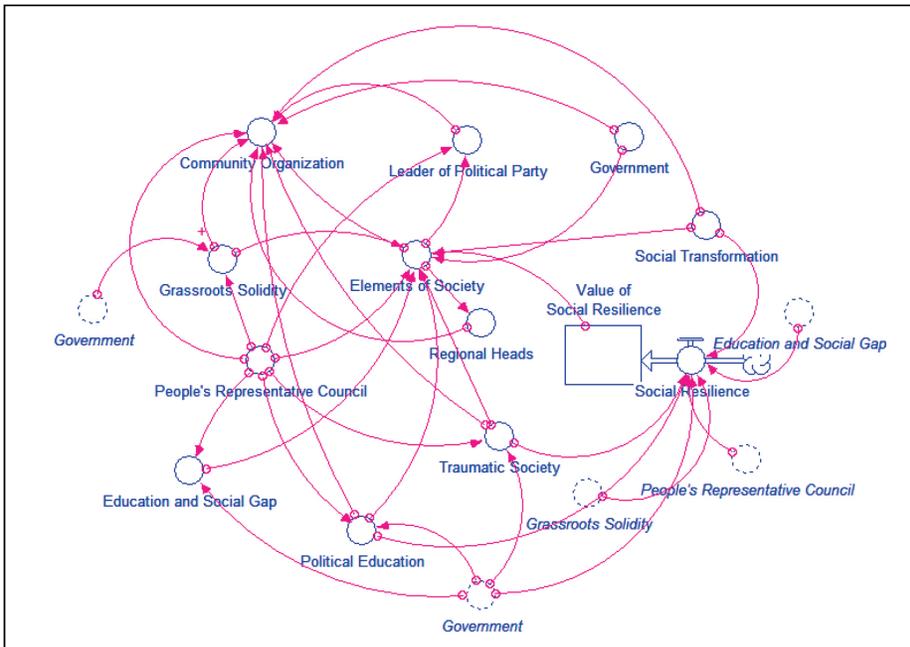


Fig. no. 4. System Dynamic Model of Social Transformation and Social Resilience in Indonesia.

Social Transformation Society is a system. Thus, it has a network that involves complex variables and dynamics. SD are used to draw models that examined existing problems, while causal diagrams are used to identify and highlight the dynamic relationships that exist in the problem. The dynamic model of the post-1965 Indonesian social transformation system and its contribution to the social security of the Unitary State of the Republic of Indonesia is described in the form of a CLD.

By understanding the SD approach, clear depiction of social transformation and social resilience analysis which consists of several elements that influence one another could be generated. This condition explains that the related elements need to be considered carefully because each unit can influence each other or have an impact on one another, especially those in Quadrant III and Quadrant IV. Elements of the People's Representative Council (C5), Government (C4), Regional Heads (C6), Political Education have a high influence in mobilizing other elements in the Social Resilience of the Unitary State of the Republic of Indonesia.

#### **4. CONCLUSIONS**

This study aims to provide an analysis of the Post-1965 Social Transformation and Its Contribution to the Social Resilience of the Unitary State of the Republic of

Indonesia. Based on the research results from subject-matter experts, there are 12 (twelve) main elements that were confirmed and selected to design the model and interpretive structural modeling. These elements are classified in CATWOE analysis.

Based on the results of the ISM and MICMAC diagram analysis, the twelve elements are divided into 4 (four) quadrants, namely Quadrant I (Autonomous), consists of two elements, namely: a) grassroots solidity (C12); b) Social Transformation (C9). Quadrant II (Dependent) consists of six elements, namely: a) Elements of Society (C1); b) Community Organization (C2); c) Leader of Political Party (C3); d) Education and Social Gap (C8); e) Traumatic Society (C9); f) Social Transformation (C10). Quadrant III (Linkage) consists of elements of the People's Representative Council (C5). Quadrant IV (Independent) consists of three elements, namely: a) Government (C4); b) Regional Heads (C6); c) Political Education. Elements of the People's Representative Council (C5), Government (C4), Regional Heads (C6), Political Education have a high influence in mobilizing other elements in the Social Resilience of the Unitary State of the Republic of Indonesia.

#### **Future Work**

- This study recommends that there is a need for strengthening social resilience

systems to overcome existing social disparities with good political education for the community, empowerment for each regional head, and establishment of good communication between stakeholders.

- In further research, it is necessary to weigh on each element as well as assessing the flow chart on the elements as the goals, namely the value of the Social Resilience of the Republic of Indonesia.

## ACKNOWLEDGEMENT

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# DEFENSE DIPLOMACY AND COUNTRY EXISTENCE

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*This paper aims to discuss defense diplomacy efforts by TNI to strengthen the country existence. The world multipolarization put foreign policy into new challenges of world power distribution, non-boundary and not centered on two classical blocs (East and West). This condition requires the TNI to have an adaptive capacity related to the role and ability in responding to challenges in defense diplomacy tasks. There are 3 conclusions related to defense diplomacy in strengthening the existence of country. First, world multipolarization creates challenges to provide an opportunity for Indonesia to use it as an opportunity to build more constructive relationships in developing the country interests from the economic, socio-cultural and defense sectors. Second, actualization of defense diplomacy as a national policy must be consistent with country interests, especially in effort to maintain domestic stability which is closely related to regional situation. Third, several strategic partner countries of Indonesia need to receive comprehensively a systematic and programmed treatment in according with character of defense diplomacy, namely Confidence Building Measure (CBM), enhancement of defense capabilities and development of defense industry. Therefore, government needs to develop its relevance by exploring defense diplomacy as the spearhead to strengthen the existence of Indonesian nation and country.*

**Key words:** *Diplomacy, Multipolar, Defense, TNI*

## 1. INTRODUCTION

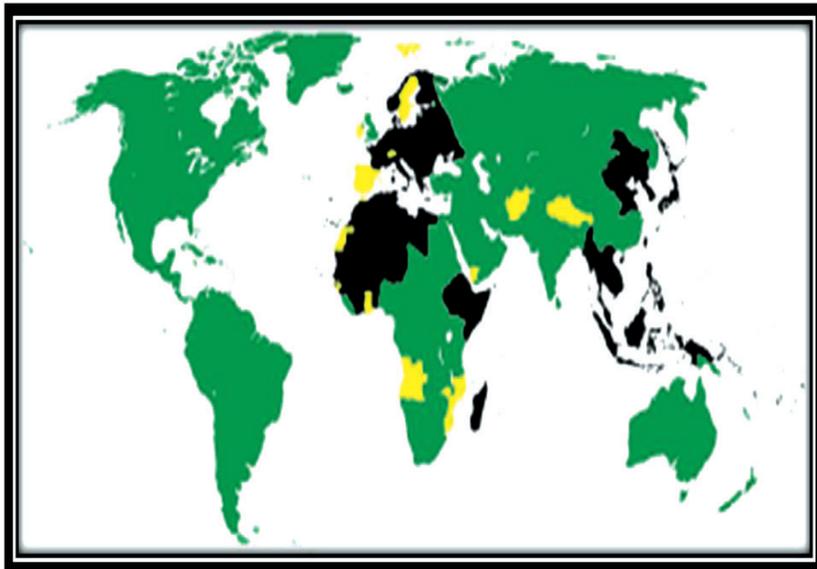
The complexity of nation's problems today creates various challenges, both from within and outside the country. This condition requires the TNI to have an adaptive capacity to deal. This situation is sufficient to emphasize

aspects of role and ability of TNI in responding to the challenges of defense diplomacy tasks. This capability is based on formal legal aspects referring to Law 37 of 1999 on Foreign Relations that every diplomatic effort is always aimed at national interests and has a strategic function. As we know, all national

interests that are accommodated in any international diplomacy must be based on a constitutional politics of “free and active” and not follow certain blocs. Figure 1 shows the classic world powers / blocs formed after the Second World War.

relationship in order to create a kind of mutualism symbiosis with many countries in developing the country’s interests from the economic, socio-cultural and defense sectors.

The reality shows that issues raised in international constellation



**Fig. no. 1.** Classical Powers / Blocks of Post-World War II World  
**Description:**Green: Coalition countries, Black: Axis Power, Yellow: Neutral countries, Source: study.com

The strategic environment in multipolarization world has brought the “free and active” foreign policy into new challenges where the international constellation shows that distribution of world power has spread to several countries, non-boundary and no longer centered on two classical blocs (East and West). However, this challenge becomes an opportunity for Indonesia to take advantage to build a more constructive

are growing from political and security issues to strategic problems in economic, social, cultural, energy and environmental development fields (Ozkan, 2015; Golan and Carrol, 2012). The emergence of these problems cannot be separated from the fact that without proper handling, it will have an effect on vulnerabilities of fundamentalism, poverty, social inequality and drugs. This condition becomes a kind of

latent danger to threaten regional security and world stability. It should be anticipated early through a constructive approach and comprehensive diplomacy.

## **2. RESEARCH METHODOLOGY**

This research is a case study and observation on defense diplomacy conducted by Indonesia. The research time was January to June 2020.

The study type is descriptive research to describe the research object to describe the object under study. The method used by the author is qualitative (Moleong, 2017). Informants are individuals who have a direct relationship with the implementation of Indonesia's defense diplomacy.

This research data collection method consists of literature and field studies. Literature study is the process to get data or information by studying the books, journals, other written works, and internet sources. Field study is data or information collection through direct research activities at research location using three research instruments used, namely observation, interviews and documentation (Ghozali, 2016).

Data analysis in this study used a qualitative method. It is done

by examining all available data from various data sources, studying the data, analyzing, compiling in a unit, which was then categorized at the next stage and checking the validity of the data and analyzing to get research findings from the data (Moleong, 2006).

## **3. DEFENSE DIPLOMACY SCHEME**

The dynamics trend of political and security threat accompanied by fluctuating stability in economic, social and cultural fields make the international diplomacy patterns play an important role for a country (Nath, 2014; Khalitova et al., 2020; Magen and Lapid, 2018). For Indonesia, referring to "Defense White Paper 2008", there are two levels of cooperation "layers" which can be derived into a defense diplomacy format. The first layer is military-military cooperation with ASEAN member countries, while the second layer is defense cooperation with "external powers" such as China, Australia, United Countries and South Korea. Judging from the development of above cooperation patterns, in principle everything can be classified into two levels of international relations institutions or what is known as "Track". Track I is a form of international cooperation

to involve government personnel such as ministerial level officials, members of parliament and members of military. While Track II is a form of collaboration by facilitating academic forums, communities, NGOs or government think Thank institutions.

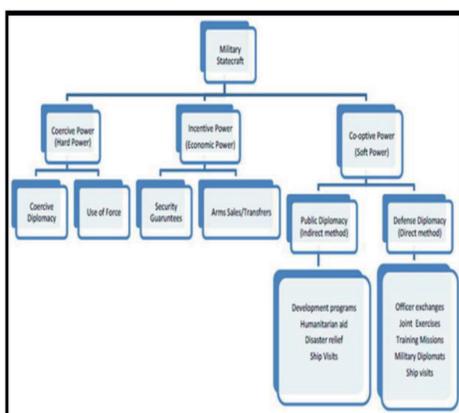
The actualization of defense diplomacy can continue to develop based on country interests, especially to maintain the domestic stability that closely related with regional situation. This ability can make Indonesia to have a country entity that can communicate effectively in implementation of relations between countries. Berridge and James (2003) stated that diplomacy was “The use of tact in dealing with people”. In particular, this situation can be seen as Indonesia’s diplomatic initiative for the sensitive issues, such as those related to country sovereignty, transnational crime, and regional conflicts as efforts to create security and prosperity both domestically and abroad.

Indonesia, as the largest country in Southeast Asia, has taken several concrete steps through the domination of strategic influence. Indonesia is ASEAN initiators that active to encourage countries to seek peaceful solutions to several problems such as disputes in South China Sea, overcoming natural disasters, fighting terrorism, human

trafficking, and cyber security and so on. The transnational maritime crime prevention uses the patterns such as joint exercises and patrols as a continuation of Track-1, while academic forums, scientific discussions, workshops are examples of Track-2 applications. The two tracks basically move in a system that provides mutual input so that formulated agreement can be accepted by all countries.

#### **4. CHARACTER OF DEFENSE DIPLOMACY AND ITS IMPLEMENTATION**

The projection of multipolar international political constellation encourages Indonesia’s defense diplomacy to move to create strategic partnerships in defense sector with several developed countries. Countries such as the US, France, Russia and China are currently considered to have a fairly progressive level of military modernization in world. The construction of Indonesia’s strategic partnership, especially in defense sector, should be able to catch up and bench mark itself with these countries for sake of strengthening, modernizing and professionalism in building existing military structures. This is consistent with the schema in Figure 2.



**Fig. no. 2.** Conceptualization of Defense Diplomacy

Source: Winger (2014), *Velvet Gauntlet: A Theory of Defense Diplomacy*

The position of defense diplomacy for a country will also become the determinant at this point. It is needed to provide direction for development of its defense forces in order to secure national interests in a very dynamic strategic environment. In accordance with national defense policy, modernization of defense forces does not only rely on domestic national resources, but is also supported by cooperation with friendly countries.

Mertz (2015) described defense diplomacy as an art of “playing” the tension between the bashing and bargaining). It can mean a strategic partnership with a number of countries in order to create opportunities and especially for Indonesia to strengthen its defense diplomacy construction to achieve the optimal benefits in

defense sector. It contains the value of a partnership. This essence must be as effective as possible to avoid the counterproductive impression of a negative dependencies and unnecessary dependence on foreign countries. To achieve this aim, Indonesian government needs to pay careful attention to character of defense diplomacy in an effort to build a defense diplomacy mechanism that beneficial for nation interests. Therefore, the defense diplomacy should have character below.

- a. Defense diplomacy should increase in Confidence Building Measure (CBM). The defense diplomacy should create a conducive strategic environment for Indonesia. For this reason, it is time for defense diplomacy to be prepared as a policy study in national defense projections. Confidence Building Measure has a close relationship with condition of national defense because this character determines the nature of cooperation developed with other countries. The focus is a series of efforts to build good relations with other countries in order to share perceptions, creating a conducive climate bilaterally and transparently. These steps will reduce the tension of mutual suspicion, mutual threat so that

development of a country's military capability is not misinterpreted as a threat to other countries. The scope of defense diplomacy for CBM includes communication, constraints, transparency and verification. If the objectives of CBM are achieved, globally it will create security and stability at national, regional and regional levels to support domestic and regional welfare development programs. CBM's current concrete efforts can be seen in various diplomatic activities such as communication forums at the bilateral and multilateral levels, country visits, information exchange, cooperation agreements, and educational exchanges to training and joint security patrols.

- b. Defense diplomacy should increase the Defense Capabilities. The emergence of military power elements in pattern of international diplomacy is an important variable to affect the bargaining aspect. Schelling (1980) stated that in a realist perspective, diplomacy is interpreted as a bargaining chip, and then the presence of military power becomes a separate element of

intervention for this concept. Therefore, national interest of a country in today's modern era increasingly requires the existence of its defense capability. This situation put the defense diplomacy as a transformation tool to increase the defense capability of a country which of course still takes into account the elements of limited resources, threats, challenges, vulnerabilities and opportunities. For example, that limited resources in an effort to increase defense capability can be a starting point to exploit the defense diplomacy through an economic and arms trade approach. The Export Credit (KE) mechanism in purchasing Alutsista can be categorized as defense diplomacy with a character of defense capabilities.

- c. Defense diplomacy should increase Defense Industry Capability Development. Defense policy through developing forces to achieve Minimum Essential Force (MEF) is implemented in form of modernization of military equipment. The priority for domestic production is the main program to meet this need. Referring to Law No.

16 of 2012 on the Defense Industry, format for procuring military weaponry needs from foreign countries is permitted if it is not maximally fulfilled domestically. Therefore, character of defense diplomacy specifically emphasizes the role of diplomacy in developing the capability of defense industry. Technically, this cooperation mechanism can be regulated in more detail at several systems, including the structure of counter trade, transfer of technology and others to produce the high technology defense equipment required by TNI.

The defense diplomacy in developing the capability of defense industry should be used to “hold” other countries contribution. There is a demand for Indonesia to continue to proactively increase cooperation in defense industry with strategic partners; the effective defense diplomacy becomes the main foothold. The steps should take to be built mutual benefits, among others, through the mechanisms of joint production, joint development, training and research and development in an effort to increase the capacity of human resources.

The strategic setting of defense industry development with a defense diplomacy platform has broader

opportunities to increase capabilities in terms of quality of human resources, technology, production and marketing. The outcome of this is the creation of jobs which in turn will improve the welfare of people, strengthen the capability of domestic defense industry and creating synergies with defense industry abroad.

The three characters of defense diplomacy above will ultimately be useful to strengthen the existence of a country with a military capability approach. For Indonesia, of course the TNI professionalism is a key component to create a defense force capability to secure national interests. Therefore, the defense diplomacy can become the main gate for military as one variable to show the existence of country to continue the capabilities development. The cooperation to improve the professionalism of soldiers with other countries has been established, in form of joint training, education and training, exchange visits and others. This diplomacy creates an opportunity for TNI to improve the professionalism of its soldiers.

Strategic partnership through defense diplomacy is a great opportunity for a country by increasing its military professionalism. Several countries, such as the US, Australia, Japan, Korea and China, are strategic partners in Indonesia and have a long history of military experience,

which has influenced the current doctrinal and defense strategy. Although the doctrinal and defense strategies adopted by Indonesia's strategic partner countries are not the same as Indonesia's defense doctrines and strategies, they can enrich TNI's insights to improve its professionalism.

## 5. CONCLUSIONS

Several conclusions can be drawn from the discussion related to defense diplomacy in strengthening the existence of following countries.

- a. World multipolarization brings foreign policy to new challenges, namely the distribution of world power, non-boundary that no longer centered on two classical blocs (East and West). This presents a challenge that provides opportunity for Indonesia to build more constructive relationships in developing the country interests from the economic, socio-cultural and defense sectors.
- b. The actualization of defense diplomacy as a national policy must be consistent with country interests, especially in effort to maintain domestic stability which is closely related to regional situation. This is a diplomatic

ability of Indonesia as a country entity that can communicate effectively to make relationship between countries.

- c. Third, several strategic partner countries of Indonesia need to receive comprehensively a systematic and programmed treatment in according with character of defense diplomacy, namely Confidence Building Measure (CBM), enhancement of defense capabilities and development of defense industry.

For the three characteristics, government needs to develop its relevance by exploring defense diplomacy as the spearhead to strengthen the existence of Indonesian nation and country.

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# THE DEVELOPMENT STRATEGY FOR EMPOWERING THE DEFENSE AREA OF A NON-MILITARY ASPECT IN PACIRAN, LAMONGAN

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*The Regional government of Lamongan Regency has made various efforts in dealing with this non-military threat, but it is still not sufficient for the conditions expected. One of which is by cooperating with several side agencies to overcome it (TNI-Polri and other related agencies). This study aims at designing a strategy for developing a state defense system of a non-military aspect in Paciran, Lamongan Regency in resisting non-military threats. This study employed SWOT-Analytical Hierarchy Process (AHP) method. What makes this study differ from previous research is there are aspects of the astagatra (8 aspects of life) criteria included in the internal factors of the SWOT analysis. Furthermore, the SWOT and AHP factors are used to determine strategies in supporting non-military defense aspect policies. In the formulation of a strategy for developing the empowerment of the non-military aspect of defense in Paciran-Lamongan, the selected strategy has been identified, namely the ST strategy (using strength to deal with threats) consisting of six sub strategies. This research is expected to provide input for regional governments in capability development based on regional developments in facing non-military threats.*

**Key words:** *Non-military, Analytical Hierarchy Process (AHP), Strength Weakness Opportunity Threat (SWOT), Strategy.*

## 1. INTRODUCTION

The existence of the Paciran area as one of the accesses to large ships has an impact on the entry of capitalism's power in that area.

Needless to say, this possibility will also have an impact on the displacement of small traders in the local area. In addition, the high number of productive ages is not accompanied by the existence

of educational facilities and infrastructure around the Paciran area. The Regional government of Lamongan Regency has made various efforts in dealing with this non-military threat, but it is still not sufficient for the conditions expected. One of which is by cooperating with several side agencies to overcome it (TNI-Polri and other related agencies). There are several weaknesses in overcoming these efforts, including the efforts to overcome non-military threats still partially carried out between related stakeholders, the development of the state defense system, in this case Lamongan Regency, still using hardpower, the existence of a communication gap between the central government, provincial governments and district governments in the development of the national defense system.

Based on these problems, strategy of state defense system development of a non-military aspect is required in Paciran area, Lamongan Regency in confronting non-military threats. This study aims at designing a strategy for developing a state defense system of a non-military aspect in Paciran, Lamongan Regency in resisting non-military threats. This study employed SWOT-Analytical Hierarchy Process (AHP) method. What makes this study differ from previous research is there are aspects of the astagatra (8 aspects of life) criteria included in the internal factors of the SWOT

analysis. Furthermore, the SWOT and AHP factors are used to determine strategies in supporting non-military defense aspect policies.

There are several references to support this research. References to non-military defense, among others Indonesia Defense Strategy Dealing With Shift The United States Strategy In Asia Pacific (Sari, 2017). A review on defense innovation : from spin-off to spin-in (Leske, 2018). Research on the plans and programs of the complex and interdependent politics of national security carried out by the Republic of Macedonia (Grozdanoska, 2014).

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This research is expected to provide input for regional governments in capability development based on regional developments in facing non-military threats. Next, it contributes to non-military defense science in the concept of developing non-military defense forces and capabilities.

This paper consists of several parts. Part 2 discusses the theoretical and methodological studies related to research, namely the concept of strategy, PEST analysis, non-military, SWOT method, AHP method, research method, and research stages. Section 3 describes data analysis and discussion of the development strategies of defense of non-military aspects. Section 4 describes the conclusions and recommendations of the study.

## 2. MATERIAL/METHODS.

### 2.1. Strategy Concept.

Strategy is a word having many meanings, and all of them are relevant and useful to those tasked with setting strategies for companies, businesses, or organizations (Özleblebici, et al., 2015). The strategy comes from Greek, namely *Stratego*, which is defined as a plan to destroy the

enemy by using resources effectively (Athapaththu, 2016). Koks and Kilika (2016) analyzed the role of strategy in product development as a breakdown in business growth in response to a theoretical perspective of direct strategic relationship to the role of market characteristics. Purwono et al (2015) provided an analysis of the strategy for developing business of *Rumah Tempe Indonesia* (Indonesian Tempe House) in Bogor by formulating alternative strategies and prioritizing development strategies. Arini and Utomo (2017) provided a study of strategies for developing the competitiveness of Micro, Small and Medium Enterprises (MSMEs) in Tarakan (a city in North Kalimantan province, Indonesia) to face the ASEAN Free Trade Area.

### 2.2. PEST (Political, Economic, Social and Technological) Analysis

PEST Analysis is the most common approach to considering the external environment of a business/organization (Gupta, 2013). In analyzing the macro environment of an organization, it is important to identify the factors and a number of important variables that might influence the level of supply and demand of the organization and its costs (Koumparoulis, 2013). PEST analysis is used to analyze Political, Economic, Social, and Technological, and it describes a framework for

macro environmental factors used in the component of the strategic management environment scan.

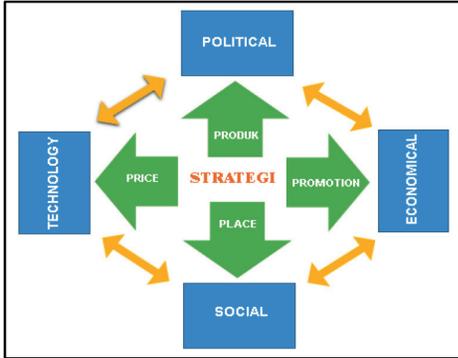


Fig. no. 1. Main aspects of PEST analysis. (Gupta, 2013).

### 2.3. Non-military

Based on Law No.3 of 2002 regarding the state defense system in encountering non-military threats

puts government agencies outside the field of defense as the main element, according to the form and nature of the threats faced supported by other elements of the nation's strength. The key strength in dealing with non-military threats is the main element which is also a guarantee of synergy between military and non-military defense in the implementation of state defense.

Non-military threats are essentially threats using factors considered to have the ability to endanger the sovereignty of the State, the territorial integrity of the State and the safety of the entire nation. Non-military threats can come from outside or within the country. Non-military threats possess diverse characteristics from military threats in which they are unphysical, and

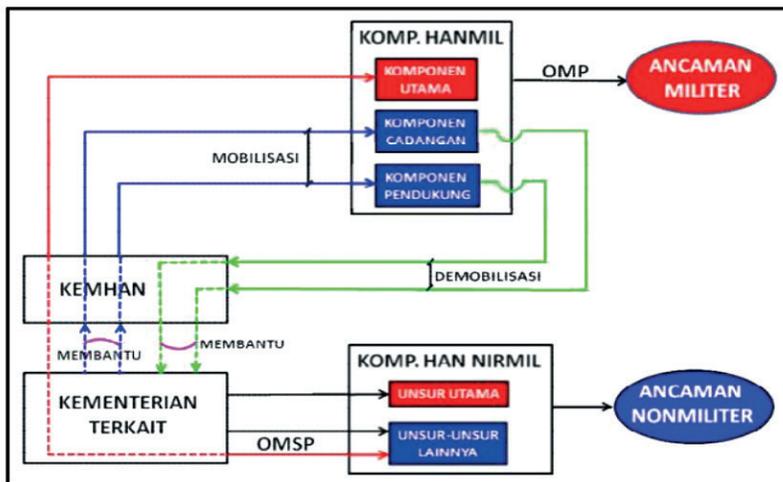


Fig. no. 2. Scheme to integrate military and non-military defense components (Kemenhan, 2015)

their form is invisible. Some non-military threats include:

- a. Ideological threats (individualism, materialism, radicalism, anarchism).
- b. Political threats (trust in government, separatism, environment, democratization).
- c. Economic threats (unemployment rate, infrastructure, economic inequality, low competitiveness).
- d. Socio-cultural threats (poverty, education level, racial conflict, social inequality, foreign culture, human trafficking, corruption).
- e. Public safety threats (natural disasters, thuggery, terrorism, food and energy, narcotics crimes).
- f. Technological threats (cyber threats, technology lag, spread of viruses).
- g. Legality threat (human rights issues, overlapping regulations, legal intervention).

## 2.4. SWOT Method

SWOT analysis is the most common technique that can be used to analyze strategic cases (Hill & Westbrook, 1997). SWOT is a tool often used to analyze the internal and external environment to achieve a systematic approach and support for decision situations (Wheelen & Hunger, 1995). SWOT is an acronym for strength (S), weakness (W), opportunity (O) and threat (T). The first two factors (strengths and weaknesses) relate to internal factors of the organization, while opportunities and threats cover the broader context or environment in which the entity operates (Collins-Kreiner & Wall, 2007).

Internal and external factors are referred to as strategic factors, and are summarized in the SWOT analysis. Strengths and weaknesses are factors in the system allowing and hindering the organization from achieving its goals. Opportunities and threats are considered as external

**Table 1.** Matrix SWOT

Source: (Malik, et al., 2013)

| <b>INTERNAL/<br/>EXTERNAL FACTORS</b>         | <b><i>STRENGTH (S)</i><br/>(Maximal)</b> | <b><i>WEAKNESS (W)</i><br/>(Minimal)</b> |
|---|--|--|
| <b><i>Opportunities (O)</i><br/>(Maximal)</b> | S-O Strategy<br>(Maximal-Maximal)        | W-O Strategy<br>(Minimal - Maximal)      |
| <b><i>Threat (T)</i><br/>(Minimal)</b>        | S-T Strategy<br>(Maximal- Minimal)       | S-O Strategy<br>(Minimal- Minimal)       |

factors facilitating and limiting the organization in achieving its respective goals (Wasike, et al., 2010).

### 2.5. Analytic Hierarchy Process (AHP)

Analytic Hierarchy Process (AHP) is a general measurement theory. AHP was used to derive the ratio scale of both discrete and continuous comparison pairs. This comparison can be taken from actual measurements or from a fundamental scale reflecting the strengths of preference and objectivity (Saaty, 1987). AHP is a mathematically based procedure which is very good and suitable for the evaluation conditions of qualitative attributes. These attributes are mathematically quantitative in 1 (one) set of paired comparisons. The advantages of AHP compared to others are due to the hierarchical structure, as a consequence of the selected criteria,

down to the most detailed sub-criteria (Makkasau, 2012).

AHP describes a complex problem of a multi-factor or multi-criteria into a hierarchy. According to Saaty, hierarchy is defined as a representation of a complex problem in a multi-level structure, where the first level is the goal, followed by the factor, criteria, sub-criteria level and so on. Down to the last level of the alternative with a hierarchy of a complex problem, it can be broken down into groups then arranged into a hierarchy as the problem will appear more systematically structured. One of the main advantages of AHP differentiating it from other decision-making models is that there is no absolute consistency requirement. Therefore, the existence of problems can be felt and observed, but the completeness of numerical data does not support to model problems quantitatively. In determining the weight of each criterion in AHP, it can be described as follows:

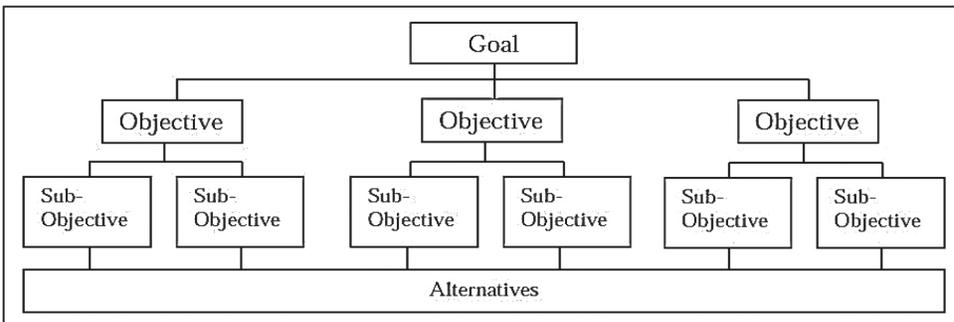


Fig. no. 3. AHP Structure.

In preparing the AHP procedure, it can be grouped into two steps (Saaty, 1990):

- a. Hierarchy formation, (Decomposition). Hierarchy is used to show the effect and objective from highest to lowest level. A hierarchy can also be used to decompose a complex problem; hence, the problem becomes structured and systematic.
- b. Pairwise Comparative. Pairwise comparison is implemented to consider decision factors or objectives

and alternatives by taking into account the relationship between other factors/sub factors or criteria/sub criteria.

Instinctively, humans can estimate modest quantities through their senses. The most straightforward process is to compare two things with a justifiable accuracy of the comparison. For this reason, Saaty (2006) determined quantitative scales of 1 to 9 to assess the comparison of the importance of another element. The scale of the comparison can be explained as follows:

**Table 2.** Rating Scale of AHP (Saaty, 1990)

| Scale of Interest | Definition   | Explanation   |
|-------------------|--|---|
| 1                 | <b>Equally Important</b>   | Two activities contribute equally to an objective                 |
| 3                 | <b>More Important</b>  | One activity is slightly more important than the other activities |
| 5                 | <b>Important</b>   | One activity is more important than the other activities          |
| 7                 | <b>Very Important</b>  | One activity is very important compared to other activities       |
| 9                 | <b>Extremely Important</b>   | One activity is extremely important compared to other activities  |
| 2, 4, 6, 8        | <b>Median</b>  |   |
| <b>Reciprocal</b> | Describes the dominance of the second alternative over the first alternative |   |

2.6. Method/Stages

Based on the research focus and objectives, the research approach used in this study is a quantitative approach. In this study, data sources consisted of two types, primary and secondary data. The main data were obtained from interviews and questionnaires from 6 (six) selected experts. These experts provided information that will serve as the main data source in the early stages of research development. Research subjects are selected according to the needs of the empowerment of the area where this research took place, including: Government of Lamongan Regency, commanders of Indonesian Navy (TNI AL), several Heads of related agencies, commanders of Kodim, and District Heads were selected because the work units are directly related to the development of empowering the defense aspect of the Paciran area.

Table 3. Research Subject.

| No | Respondent/Expert              | Total |
|----|--------------------------------|-------|
| 1. | Government of Lamongan         | 1     |
| 2. | Regency                        | 1     |
| 3. | Commander/Staff of             | 2     |
| 4. | Indonesian Navy (TNI           | 1     |
| 5. | AL)                            | 1     |
|    | Head/Staff of Related Agencies |       |
|    | Commander/Staff Kodim          |       |
|    | Head/Staff of Sub-District     |       |

The research site was in Paciran sub-district, Lamongan Regency. Paciran is one of the sub-districts in the Lamongan Regency, which is in the Northern Hemisphere of the capital city of Lamongan Regency with a distance of + 43 Km. Paciran sub-district consists of 16 villages, 1 urban village, 34 hamlets, 95 RW, 379 RT. The area of Paciran is 61,304 Km<sup>2</sup> located at an altitude of 2 meters above sea level.

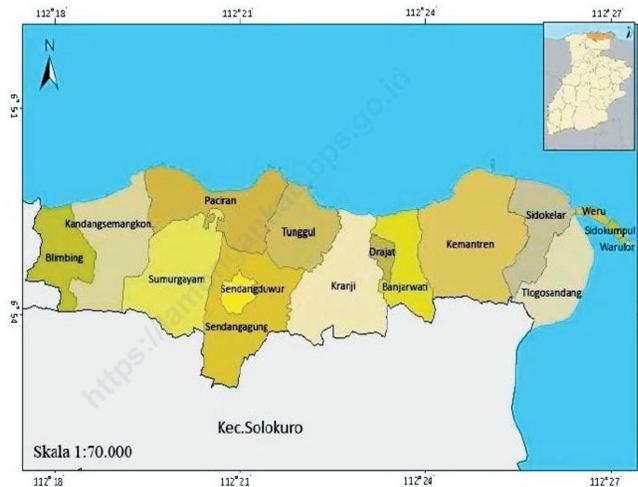


Fig. no. 4. Map of Lamongan Regency, (BPS-Lamongan, 2016)

## 2.7. Research Stages and Objectives

- a. Formulation and development strategy of national defense in encountering non-military threats in Paciran, Lamongan Regency
- b. Determining the priority of the national defense development strategy in facing non-military threats in Paciran, Lamongan Regency

factors and the Astagatra corridor to identify internal factors as well as non-military defense strategies. Second, the strategy formulated in the SWOT analysis will form a strategic hierarchy structure to identify the linkages between the strategies. This condition aims at analyzing the correlation between the development strategy for empowering non-military defense in mapping related strategies. Hierarchy preparation and strategy determination in this

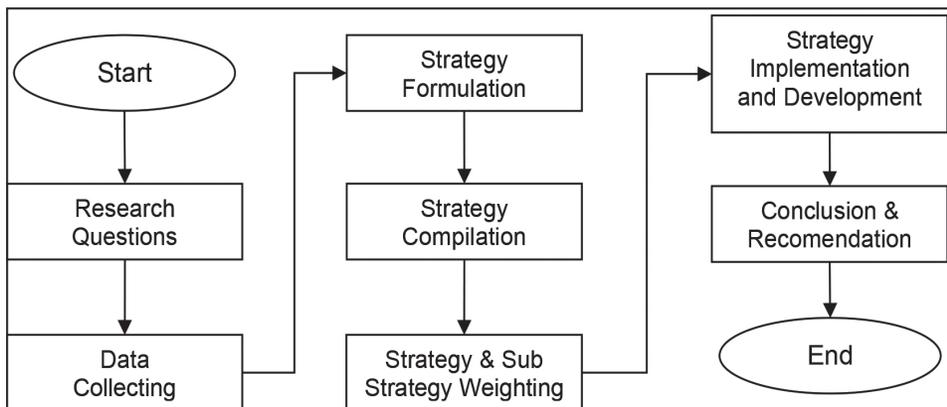


Fig. no. 5. Research Flow Chart

In this study, there are several stages to achieve the expected objectives. First is the identification and formulation strategies. In this study, SWOT analysis method was used to identify and formulate several strategies for developing empowerment of non-military defense in the Paciran area. The SWOT analysis method used in this development strategy is integrated with the Analysis area corridor of PEST Theory to identify external

study were carried out employing the Analytic Hierarchy Process (AHP) method. Hierarchy or decision structure is made to describe the identified system elements or strategic alternatives.

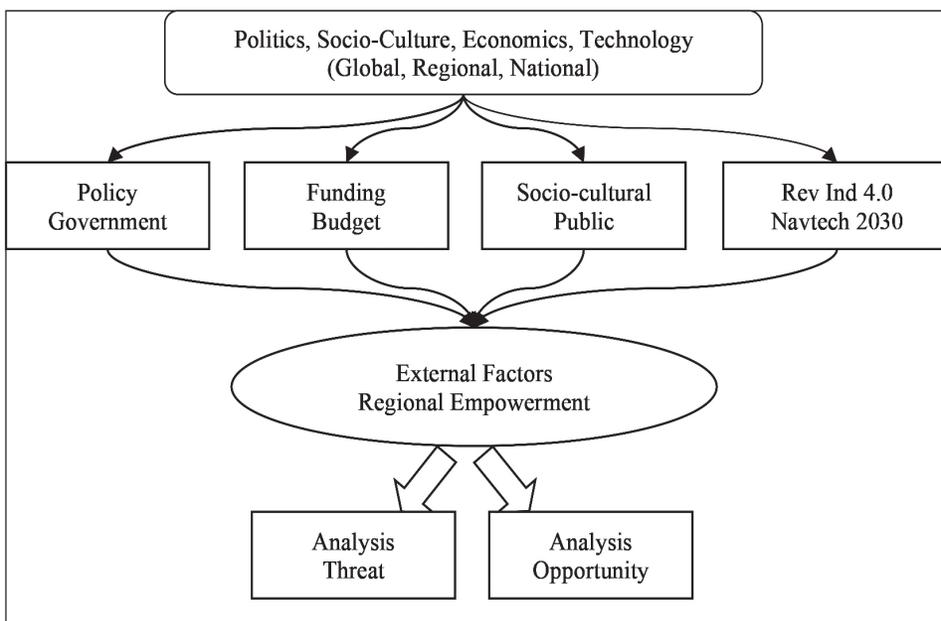
## 3. RESULT

The research stage began with data collection by conducting interviews with six expert personnel (E1; E2; E3; E4; E5; E6)

in the development strategy for empowering defense area. After all data are collected, the data are divided into 2, namely external and internal analysis. To find out the strengths and weaknesses in internal conditions related to posture development, and to find out the opportunities and threats, a SWOT analysis is used. SWOT also serves to determine the current condition of the Indonesian Navy (TNI AL)’s posture development. After the analysis was carried out, it was extended by developing 4 types of strategies, namely: Strength-Opportunity (S-O) Strategy, Weakness-Opportunity (W-O) Strategy, Strength-Threat Strategy (S-T), and Weakness-Threat (W-T) Strategy.

### 3.1. Formulation and Strategy

The external environment is external factors that can affect the choice of direction and action and affect the organizational structure and internal processes. External environmental analysis indicates the opportunities and threats faced in development strategy for empowering defense area. External analysis aims at gaining knowledge about new opportunities can affect strategy development and is not only limited to opportunities to implement the strategy but can also take the form of obstacles or challenges.



**Fig. no. 6.** Analysis of External Factors for Empowering Defense Areas.

**Table 4.** Analysis of External Factors for Empowering Defense of Paciran, Lamongan.

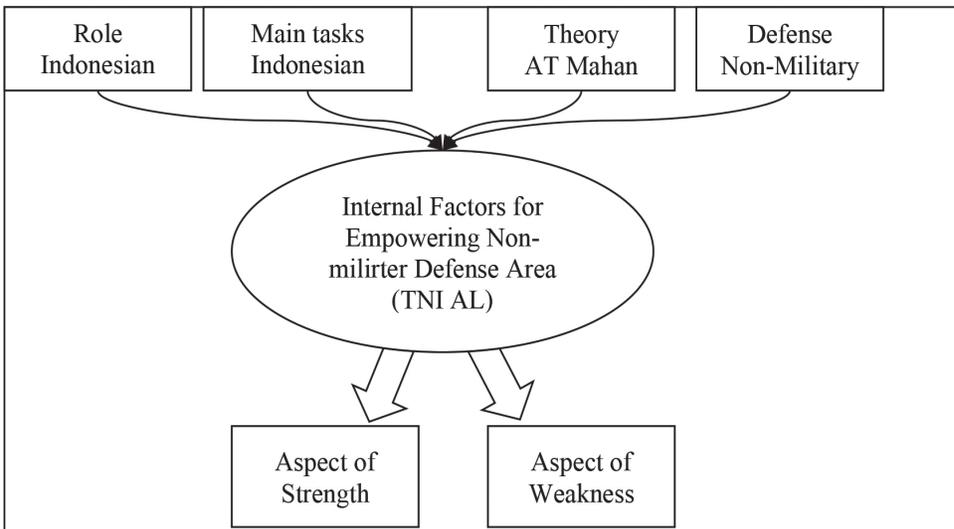
| <b>Factor Analysis</b>                                   | <b>Opportunity</b>  | <b>Resistance</b>   |
|--|---|---|
| <b>World Maritime Axis Policy</b>                        | <ul style="list-style-type: none"> <li>- In line with the development for empowering defense areas</li> <li>- Synergizing with port development in Lamongan.</li> </ul> |   |
| <b>Geographical Position and Physical Form</b>           | <ul style="list-style-type: none"> <li>- Located in a strategic position in waters of northern Java</li> </ul>  |   |
| <b>Population awareness (Maritime domain Awareness).</b> |   | <ul style="list-style-type: none"> <li>- Maritime awareness is still low in Paciran in particular and Lamongan in general</li> </ul>                |
| <b>Population demographics</b>                           | <ul style="list-style-type: none"> <li>- Abundant workforce</li> </ul>  | <ul style="list-style-type: none"> <li>- Become a social burden if not properly prepared</li> </ul>   |
| <b>Population composition</b>                            | <ul style="list-style-type: none"> <li>- Most of them are in the central and south Lamongan region.</li> </ul>  |   |
| <b>The character of the Indonesian nation</b>            | <ul style="list-style-type: none"> <li>- Lamongan as the history of a maritime country, a maritime gateway</li> </ul>   |   |
| <b>Economic growth</b>                                   | <ul style="list-style-type: none"> <li>- Economic growth above the national average</li> </ul>  | <ul style="list-style-type: none"> <li>- Uneven economic growth between the North and Central Lamongan regions</li> </ul>                           |
| <b>Maritime Service Industry</b>                         | <ul style="list-style-type: none"> <li>- There is a maritime service industry in the North Lamongan Region</li> </ul>   | <ul style="list-style-type: none"> <li>- Maritime Service Industry (Injasmar) does not absorb all the workforce from the local community</li> </ul> |

| Factor Analysis   | Opportunity   | Resistance   |
|---|---|--|
| <b>Information system infrastructure and technology</b> | - Having sufficient basic information system infrastructure and maritime technology | - Still being partial  |
| <b>Budget</b>   |   | - Empowerment of defense areas is only supported from the central budget |
| <b>Socio-cultural</b>                                   | - The socio-cultural level of religion is quite good in the North Lamongan region   |  |

**3.2. Internal Factor Analysis**

Analysis of the internal environment aims at identifying a number of strengths and weaknesses in the internal business processes and resources. Resources and

internal business processes are said to possess strength if these resources and internal business processes acquire the capability that will create distinctive competencies, so that an organization will gain an advantage.



**Fig. no. 7.** Analysis of Internal Factors for Empowering Non-military Defense Area of Paciran-Lamongan Region .

In the development strategy of non-military defense in Paciran area, analysis of internal factors is used to identify strengths and weaknesses (Fig. no. 7). The analysis of internal factors is based on several aspects, including 1) Main Duties of the Indonesian Navy (TNI AL); 2) The role of the

Indonesian Navy (TNI AL); 3) AT Mahan theory; 4) Non-Military Defense Theory. Based on the results of data collected through interviews with relevant experts, research documents, observations and some literature, internal factors can be formulated. Identification of these internal factors, including:

**Table 5.** Analysis of Internal Factors for Empowering Defense of Paciran, Lamongan.

| Factor Analysis   | Strength   | Weakness  |
|---|--|---|
| <b>The role of the Indonesian Navy (TNI AL)</b>   | <ul style="list-style-type: none"> <li>- As the biggest power in Southeast Asia.</li> <li>- As a balancing force in Asia Pacific.</li> </ul>   | <ul style="list-style-type: none"> <li>- Soldiers' welfare is still low.</li> </ul>   |
| <b>AT Mahan Theory</b>  | <ul style="list-style-type: none"> <li>- Character as a maritime society</li> <li>- Lamongan is located close to the Java Sea.</li> <li>- Physical form as a maritime city</li> <li>- The workforce is abundant.</li> </ul>  | <ul style="list-style-type: none"> <li>- The area is mostly for agriculture.</li> <li>- The city government has not maximized its maritime potential.</li> <li>- The strength of Municipal Police is still limited.</li> </ul>  |
| <b>Main Duties of the Indonesian Navy (TNI AL)</b> <ul style="list-style-type: none"> <li>• Defense</li> <li>• Security</li> <li>• Intelligence</li> <li>• Support</li> <li>• Empowerment of Defense Areas</li> </ul> | <ul style="list-style-type: none"> <li>- Sufficient defense and security capabilities</li> <li>- Regional intelligence capabilities integrated with other units.</li> <li>- The ability to support and empower the defense area is quite good and has cooperated with other Regional Leadership Conference (Muspida).</li> </ul> | <ul style="list-style-type: none"> <li>- Intelligence capabilities have not been supported by an information system capabilities.</li> <li>- Cyber capabilities are still separate.</li> <li>- The ability to support still depends on non-alternative energy</li> <li>- Non-military personnel are still lacking at a technical level</li> </ul> |

| <b>Factor Analysis</b>    | <b>Strength</b>   | <b>Weakness</b>   |
|---------------------------|---|---|
| <b>Non-Military Power</b> | <ul style="list-style-type: none"> <li>- There is sufficient available reserve power of Banser, Ansor and Muhamadiyah.</li> <li>- State defense is based on religious ideology that is quite strong.</li> </ul> | <ul style="list-style-type: none"> <li>- Development of non-military defense areas that are not in line with development</li> <li>- Partial political party.</li> <li>- Limited non-military technology.</li> </ul> |

### **3.3. Determination of Strategic Priorities**

After the internal factors are grouped into strengths and weaknesses, external factors are grouped into opportunities and threats. The next step is to weight

IFAS - EFAS. Based on the results of interviews and questionnaires, it was found that the strategy of non-military defense area in Paciran-Lamongan still has weaknesses and threats. Based on the SWOT matrix, the following analysis results are obtained:

**Table 6.** Strength Analysis of Strategy for Empowering Defense Areas.

| <b>No</b> | <b>Internal Strategy Factors</b>             | <b>Weight</b> | <b>Rating</b> | <b>Score</b> |
|-----------|--|---------------|---------------|--------------|
| <b>S</b>  | <b>Strength</b>                              |               |               |              |
| 1         | As the biggest navy power in Southeast Asia. | 0.101         | 4.500         | 0.455        |
| 2         | As a balancing force in Asia Pacific         | 0.131         | 4.167         | 0.544        |
| 3         | Character as a maritime society              | 0.077         | 3.667         | 0.282        |
| 4         | Lamongan is located close to the Java Sea    | 0.107         | 3.833         | 0.411        |
| 5         | Physical form as a maritime city             | 0.055         | 4.500         | 0.248        |

| No           | Internal Strategy Factors   | Weight | Rating | Score |
|--------------|---|--------|--------|-------|
| 6            | The workforce is abundant.  | 0.116  | 3.667  | 0.424 |
| 7            | Sufficient defense and security capabilities  | 0.110  | 4.167  | 0.460 |
| 8            | Regional intelligence capabilities integrated with other units  | 0.070  | 3.833  | 0.268 |
| 9            | The ability to support and empower the defense area is quite good and has cooperated with other Regional Leadership Conference (Muspida). | 0.063  | 3.500  | 0.220 |
| 10           | There is sufficient available reserve power of Banser, Ansor and Muhamadiyah.   | 0.094  | 3.333  | 0.313 |
| 11           | State defense is based on religious ideology that is quite strong   | 0.076  | 4.667  | 0.357 |
| <b>Total</b> |   | 1.000  |        | 3.985 |

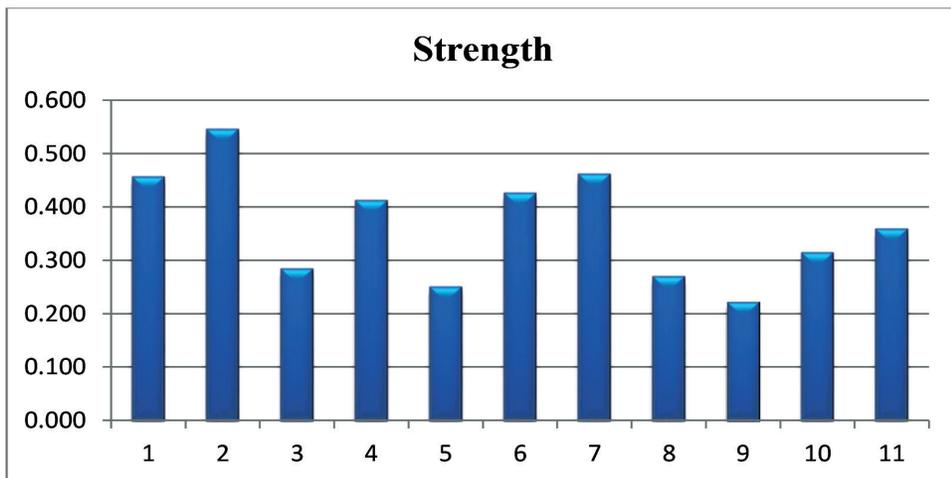
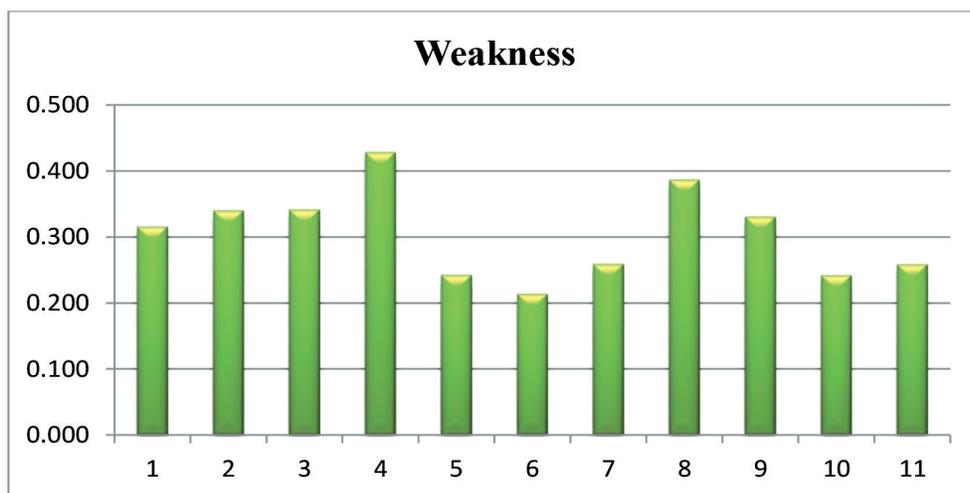


Fig. no. 8. Histogram of Strength Aspect

**Table 7.** Weakness Analysis of Strategy for Empowering Defense Areas.

| <b>W</b>     | <b>Weakness</b>  |       |       |       |
|--------------|--|-------|-------|-------|
| 1            | Soldiers' welfare is still low   | 0.090 | 3.500 | 0.316 |
| 2            | The area is mostly for agriculture   | 0.093 | 3.667 | 0.340 |
| 3            | The city government has not maximized its maritime potential.                                      | 0.102 | 3.333 | 0.342 |
| 4            | The strength of Municipal Police is still limited  | 0.112 | 3.833 | 0.429 |
| 5            | Intelligence capabilities have not been supported by an integrated information system capabilities | 0.086 | 2.833 | 0.242 |
| 6            | Cyber capabilities are still separate  | 0.071 | 3.000 | 0.214 |
| 7            | The ability to support still depends on non-alternative energy                                     | 0.078 | 3.333 | 0.259 |
| 8            | Non-military personnel are still lacking at a technical level                                      | 0.106 | 3.667 | 0.387 |
| 9            | Development of nonmilitary defense areas that are not in line with development                     | 0.104 | 3.167 | 0.331 |
| 10           | Partial political party  | 0.081 | 3.000 | 0.242 |
| 11           | Limited non-military technology.   | 0.077 | 3.333 | 0.258 |
| <b>Total</b> |  | 1.000 |       | 3.360 |



**Fig. no. 9.** Histogram of Weakness Aspect.

From the results of the analysis on Table 6 and Table 7 above, the Strength factor has a total score of 3.981, while the Weaknesses factor has a total score of 3.247. The average score of Strength has a total value of 3,985 meaning that each respondent gives a good score on the company's internal factors. The average score of Weaknesses has a total value of 3.333 meaning that

each respondent gives a score on sufficient internal factors.

In the power factor analysis, sub-factor of S2, in which Indonesia is as a balance of strength in the Asia Pacific region, has the highest score of 0.543. Whereas, in the analysis of the weakness factors, sub-factor of W4, which is the limited strength of the personnel of the civil service unit, has the highest score of 0.444.

**Table 8.** Opportunity Analysis of Strategy for Empowering Defense Areas

| No           | External Strategy Factors   | Weight | Rating | Score |
|--------------|---|--------|--------|-------|
| <b>O</b>     | <b>Opportunity</b>  |        |        |       |
| 1            | In line with the development for empowering defense areas         | 0.119  | 4.167  | 0.494 |
| 2            | Synergizing with port development in Lamongan                     | 0.134  | 4.500  | 0.604 |
| 3            | Located in a strategic position in waters of northern Java        | 0.197  | 4.667  | 0.921 |
| 4            | Abundant workforce  | 0.099  | 3.500  | 0.347 |
| 5            | Most of them are in the central and south Lamongan region         | 0.100  | 3.500  | 0.350 |
| 6            | Lamongan as the history of a maritime country, a maritime gateway | 0.302  | 3.500  | 1.059 |
| 7            | Economic growth above the national average                        | 0.048  | 3.667  | 0.177 |
| <b>Total</b> |   | 1.000  | 3.929  | 3.951 |

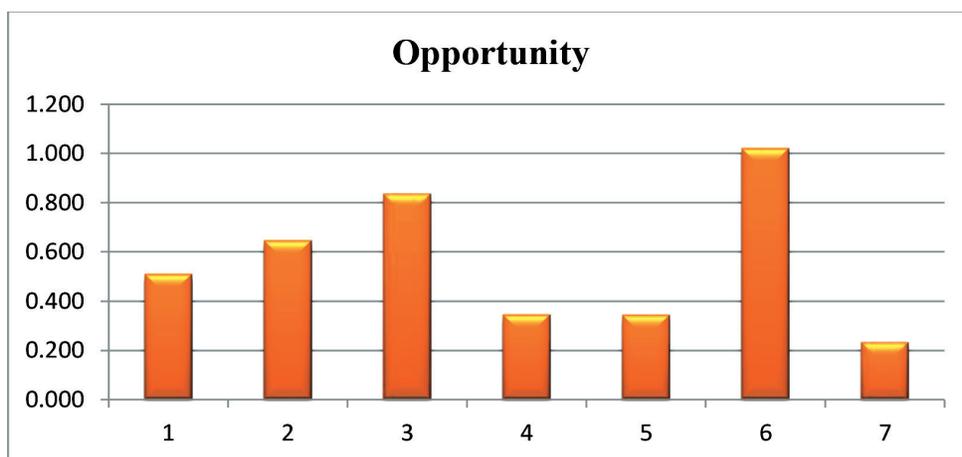


Fig. no. 10. Histogram of Opportunity Aspect.

Table 9. Threat Analysis of Strategy for Empowering Defense Areas.

| T            | Threat  |       |       |       |
|--------------|---|-------|-------|-------|
| 1            | Maritime awareness is still low in Paciran in particular and Lamongan in general                                    | 0.109 | 4.167 | 0.452 |
| 2            | Workforce Become a social burden if not properly prepared   | 0.044 | 4.333 | 0.189 |
| 3            | Uneven economic growth between the North and Central Lamongan regions   | 0.313 | 4.833 | 1.512 |
| 4            | Maritime Service Industry (Injasmar) does the availability of not absorb all the workforce from the local community | 0.389 | 3.833 | 1.490 |
| 5            | Information systems and technology infrastructure are still partial   | 0.053 | 3.833 | 0.204 |
| 6            | Empowerment of defense areas is only supported from the central budget  | 0.093 | 4.000 | 0.374 |
| <b>Total</b> |   | 1.000 | 4.167 | 4.220 |

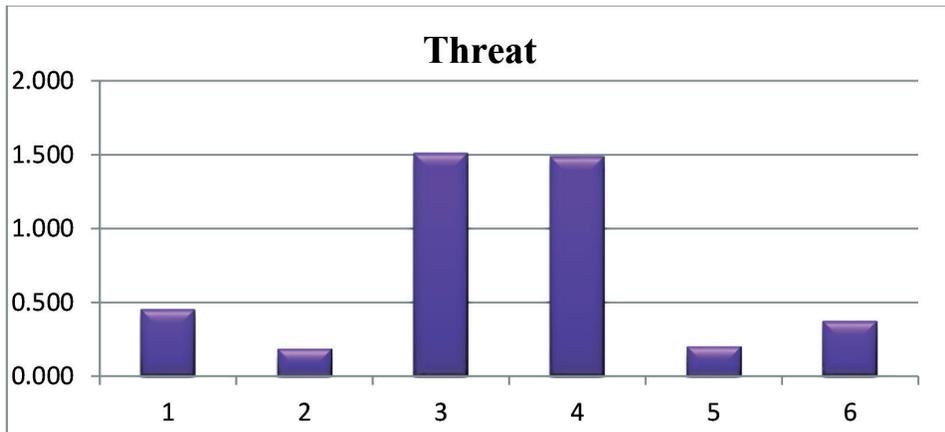


Fig. no. 11. Histogram of Threat Aspect

From the analysis results of Table 8 and Table 9 above, the opportunity factor has a total score of 3.95, while the constraint factor has a total score of 4.222. The average score of Opportunity has an aggregate score of 3,929. The average score of Weaknesses has an aggregate score of 4.167. In the opportunity factor analysis, the sub-factor of O6, in which Lamongan is as the history of the maritime gateway country, has the highest score of 1.059. Meanwhile, in the analysis of threat factors, the sub-factor of T3, which is uneven economic growth, has the highest score of 1.512.

Furthermore, the aggregate score of each factor can be detailed as follows: Strength 3,981; Weaknesses 3,364; Opportunities

3,951; and Threats 4,220. Seen from the aggregate score obtained from each respondent, the internal condition of the strength factor has a better aggregate score than the weakness factor. Furthermore, from external conditions, the threat factor has a better average score than the opportunity factor. Therefore, these conditions can be identified in the following SWOT diagram:

Table 10. Matrix EFAS-IFAS on SWOT.

| S     | W     | quadrant | Axis |
|-------|-------|----------|------|
| 3.981 | 3.364 | 0.618    | X    |
| O     | T     | Quadrant |      |
| 3.951 | 4.220 | -0.268   | Y    |

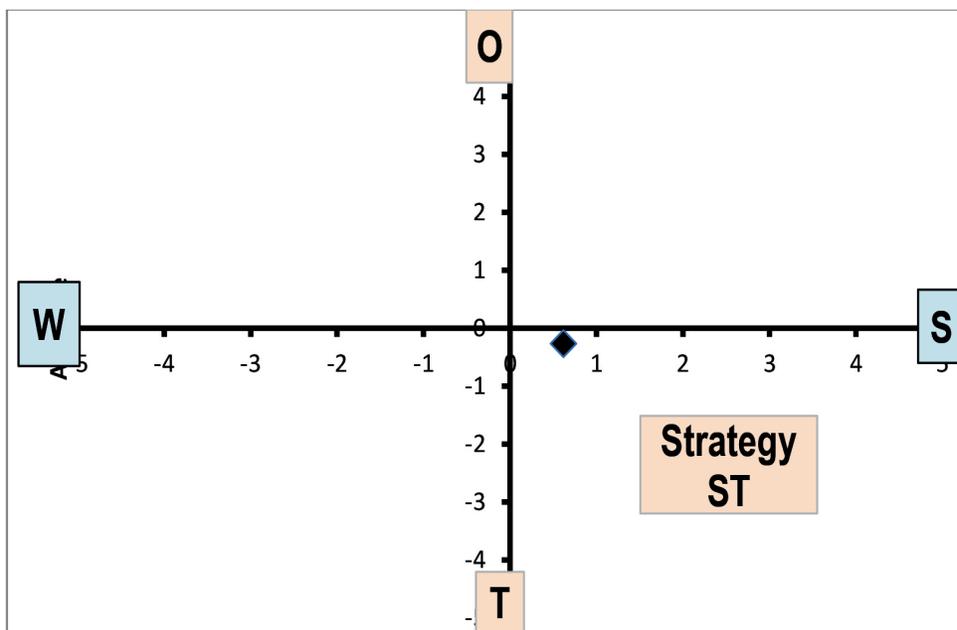


Fig. no. 12. EFAS-IFAS Diagram SWOT Analysis.

From results of Table 10 and Fig. no. 12 above, It shows that the development strategy for empowering the defense area in Paciran-Lamongan is in the positive-negative quadrant (ST Strategy). This condition is the most dominant position of internal factors in anticipating all existing threats. The results of the diagram show that the X axis which is the difference between Strength and Weaknesses obtains a score of

+0.618, and the Y axis which is the difference between Opportunities and Threats obtains a score of -0.286.

This condition indicates the development strategy for empowering the defense areas in the Paciran-Lamongan has a strong condition and a fairly prominent threat. Therefore, it is necessary to make related efforts by utilizing existing strengths to anticipate or overcome the current threats.

**Table 11.** Sub Strategy for Empowering Defense Areas.

| STRENGTH   | THREAT  |
|--|---|
| <p>S1. As the biggest navy power in Southeast Asia.</p> <p>S2. As a balancing force in Asia Pacific.</p> <p>S3. Character as a maritime society</p> <p>S4. Lamongan is located close to the Java Sea.</p> <p>S5. Physical form as a maritime city</p> <p>S6. The workforce is abundant.</p> <p>S7. Sufficient defense and security capabilities</p> <p>S8. Regional intelligence capabilities integrated with other units.</p> <p>S9. The ability to support and empower the defense area is quite good and has cooperated with other Regional Leadership Conference (Muspida).</p> <p>S10. There is sufficient available reserve power of Banser, Ansor and Muhamadiyah.</p> <p>S11. State defense is based on religious ideology that is quite strong.</p>   | <p>T1. Maritime awareness is still low in Paciran in particular and Lamongan in general</p> <p>T2. Workforce Become a social burden if not properly prepared</p> <p>T3. Uneven economic growth between the North and Central Lamongan regions</p> <p>T4. Maritime Service Industry (Injasmar) does the availability of not absorb all the workforce from the local community</p> <p>T5. Information systems and technology infrastructure are still partial</p> <p>T6. Empowerment of defense areas is only supported from the central budget</p> |
| <b>ST (Strength-Threat) Strategy</b>   |   |
| <p>(ST)1. Arousing maritime awareness with the spirit of the character of the maritime community, physical form and the location of the city of Lamongan as a maritime city.</p> <p>(ST)2. Preparing an abundant workforce is directed at supporting the development of the Maritime City because there is a fairly good economic potential.</p> <p>(ST)3. Building available maritime potential and supporting potential to provide economic equality in the Lamongan region.</p> <p>(ST)4. The development of the potential of Maritime Service Industry (Injasmar) by prioritizing local workforce to support the acceleration and absorption of local labor.</p> <p>(ST)5. Collaboration between <i>muspada</i> that has been quite well established can be utilized by building an information system connected to networks and technology, so that it is mutually integrated.</p> <p>(ST)6. Providing allowances in the form of a religious organization because of a strong enough religious basis to support the minimum budget for empowering the regional defense areas.</p> |   |

Although the ST strategy is the best alternative strategy having the highest weighting score, it is uncertain that all the existing sub-strategies can be implemented simultaneously. Therefore, it is necessary to prioritize if they encounter resource constraints in the implementation of those sub-strategies. The determination of policy priorities from several policy sub-strategies resulted from the SWOT analysis in this study were carried out using The Analytical Hierarchy Process (AHP).

#### **4. DISCUSSION**

Based on the results of the SWOT analysis and the expert validation, the selected ST strategy obtained 6 (six) alternative sub-strategies in the context of developing empowerment of defense areas in Paciran-Lamongan. These sub strategies include:

- a. Arousing maritime awareness with the spirit of the character of the maritime community, physical form and the location of the city of Lamongan as a maritime city.

One form of the glory of the Indonesian nation and state is the breadth and abundance of maritime resources that can be utilized by many people, especially the coastal areas of Paciran-Lamongan. Therefore, it is extremely significant to foster and empower the determined attitude and

identity of the maritime community as a form of state defense to ensure the survival of the Republic of Indonesia towards the world's maritime axis.

In the maritime community, including in Paciran-Lamongan, various sectors and sub-sectors of the maritime economy have grown having created social segments or categories like miners, industrial workers, tourism managers and employees, marines, academics/researchers, bureaucrats and others. Another tangible form of empowerment is to authorize fishing boats in the context of business development supported by qualified marine fishery's technology accompanied by building human resources for the maritime community itself. It will definitely experience a positive impact in exploring existing marine resources and reduce the risk of conflict between fishermen and weak economies. Empowerment itself means creating opportunities for maritime communities to determine their needs, plan and carry out their activities, which in turn establishes permanent independence in the life of the community itself.

- b. Preparing an abundant workforce is directed at supporting the development of the Maritime City because there is a fairly good economic potential.

The success of other cities in developing their maritime sector shows

the importance of local government support and integrated policies to create a strong maritime ecosystem. For this reason, the synergy of maritime infrastructure development includes several related sectors like shipping, fisheries, tourism, shipping and maritime human resources and their institutions. Currently, economic products and activities in the maritime sector in the Paciran-Lamongan do not reflect the undoubted potential due to a number of constraints such as the weak shipbuilding and ship component industry, foreign domination in shipping services, and limited quality maritime human resources.

The demographic bonus can cause a demographic disaster if human resources are not of good quality characterized by low levels of education and skills. For that, it is necessary to consider policies to optimize changes in the population structure. Considering this demographic challenge is a cross-sectoral issue, it is necessary to strengthen intensive coordination with various stakeholders in formulating sustainable national development planning policies. Cooperation between central and regional governments, business actors, industry, education sector and community need to be carried out to prepare the potential of young age groups in responding to demographic challenges.

- c. Building available maritime potential and supporting potential to provide economic equality in the Lamongan region.

Maritime development is no longer positioned as a peripheral sector, but it is perceived as a driving force for the economy as well as a source of progress and prosperity for the people of Paciran-Lamongan. If the potential of the maritime sector can be managed and maximized by the local government, of course, it will be qualified to provide significant other value to development. Maritime economic potential consists of marine wealth in the form of renewable natural resources like fisheries, coral reefs, mangrove forests, seaweed, and biotechnology products. There is also the potential for marine energy: tides, waves, wind, and OTEC or Ocean Thermal Energy Conversion.

- d. The development of the potential of Maritime Service Industry (Injasmar) by prioritizing local workforce to support the acceleration and absorption of local labor.

All *Injasmar* companies operating in Paciran-Lamongan must prioritize the recruitment of local workers. It is because the existence of companies investing in this area is an effort to create jobs for the local community. An understanding between the Government of Lamongan Regency and the company in recruiting workers should be existed. It is not

just an appeal, companies to sign a Memorandum of Understanding (MoU), regarding the company's participation in empowering and placing local workers. Therefore, local workforce receives priority. In fact, It is not only in acceptance, but also in skills training and apprenticeship for local men.

- e. Collaboration between muspida that has been quite well established can be utilized by building an information system connected to networks and technology, so that it is mutually integrated.

An information system collaboration between Muspida can increase the security of information on security. Currently, organizing Regional Governments with more extensive authority in the regions is one of the essences of decentralization and regional autonomy. Preparation of decentralization principles and granting autonomy to regions will further support regional independence in formulating policies according to the local wants, needs and characteristics. One of the necessary policies that need to be carried out by Regional governments in information technology development is the existence of an institution functioning as an information technology manager, whether in the form of information infrastructure, information technology or network infrastructure; as a data processing center work unit which is expected to act as a driving force

towards data automation for all levels of administration and regional government services to support the implementation of Good Government.

- f. Providing allowances in the form of a religious organization because of a strong enough religious basis to support the minimum budget for empowering the regional defense areas.

In essence, religious harmony is a noble value has long been taught and passed on by the ancestors of the Indonesia. This nation has successfully constructed many traditional systems and local wisdoms to create an atmosphere of harmony and peace in a pluralistic society. However, considering religious harmony is a dynamic condition that must continually be maintained, the Government together with all components of society must continue to strive to protect and preserve it.

- g. To maintain the existing harmonious conditions, coordination between religious institutions, government officials, media agencies, and figures had also been carried out periodically, either monthly, semiannually or annually. Interfaith Leader Coordination was attended by representatives from religious councils and administrators of religious organizations. Periodically and from time to time, coordination of

the control of religious harmony is also carried out. The involvement of various elements of society in the effort to maintain harmony also has a very high urgency, especially among youths, students, and students in the area of Paciran-Lamongan.

## **5. CONCLUSIONS**

In the formulation of a strategy for developing the empowerment of the non-military aspect of defense in Paciran-Lamongan, the selected strategy has been identified, namely the ST strategy (using strength to deal with threats) consisting of six sub strategies. The six sub strategies include: 1) Arousing maritime awareness with enthusiasm as the character of maritime society, physical form and location of Lamongan city as Maritime city as sub strategy 1 (ST-1) with a weight of 0.212; 2) Preparing an abundant workforce directed at supporting the development of Maritime cities because there is a fairly good economic potential as sub strategy 2 (ST-2) with a weight of 0.195; 3) Developing available maritime potential and supporting potential to provide economic equality in the Lamongan region as sub strategy 3 (ST-3) with a weight of 0.154; 4) Development of the potential for Injasmar by prioritizing local native labor, to support the acceleration

and absorption of regional labor as sub strategy 4 (ST-4) with a weight of 0.165; 5) Collaboration between muspida that has been quite well established can be utilized by building an information system connected to networks and technology so that sub-strategy 5 (ST-5) is mutually integrated with a weight of 0.163; 6) Providing allowances in the form of a religious organization because of a strong enough religious basis to support the minimum budget for empowerment of regional defense areas with a weight of 0.111.

## **Future Work (Further Research)**

- In strategic management, there are three stages: strategy development, strategy implementation and strategy evaluation. As a suggestion for further research, it is necessary to determine an appropriate strategy implementation plan.
- To further complement the research results, further research should be carried out on mitigation and risk analysis.
- In further research, it is necessary to formulate a road-map in the development of strategy of non-military aspects not only in terms of naval aspects.

## 6. ACKNOWLEDGEMENT

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# FAUNA PROTECTION PRACTICES FOR UKRAINIAN MILITARY TRAINING AREA IN VIEW OF NATO GUIDANCE DOCUMENTS

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*The objective of this article is an implementation of fauna environmental protection at one of the Ukrainian military training areas using the recommendations of NATO documents. The impact of military activities on territory of training area was evaluated by their influence on the two indicator species – listed in the Red Data Book of Ukraine – Lesser Spotted Eagle and White-tailed (sea)Eagle, included, in addition, to the European Red List too. The effect of heavy metals (lead, nickel, copper, zinc) that are accumulating in the soil of the training area on the ability to increase mass birds was investigated. It was found that the hazard index is significantly less than 1, which indicates satisfactory environmental conditions for the fauna of the territory.*

**Key words:** *military training area, fauna protection, ecological risk assessment.*

## 1. INTRODUCTION

Ukrainian intention to be the member of European Union and NATO, which is fixed in its constitution, is reflected in the military sphere too. Recently Ukraine has adopted a number of NATO standards, including those related to environmental protection. These are: STANAG 7141 «Joint NATO Doctrine For Environmental Protection During NATO-Led Military Activities» (AJEPP-4), STANAG 2582 «Environmental Protection Best

Practices and Standards for Military Camps in NATO Operations» (AJEPP-2), STANAG 2583 «Environmental Management System In NATO Operations» (AJEPP-3), STANAG 2510 «Joint NATO Waste Management Requirements During NATO-Led Military Activities» (AJEPP-5), STANAG 6500 «NATO Camp Environmental File During NATO-Led Operations» (AJEPP-6), STANAG 2594 «Best Environmental Protection Practices for Sustainability of Military Training Areas» (AJEPP-7).

The main document STANAG 7141 announces that “while meeting their military mission, NATO Forces should be committed to taking all reasonably achievable measures to protect the environment. To achieve this, commanders must know how NATO-led military activities affect and are affected by the environment. To implement this doctrine, NATO commanders should ensure environmental risk management is integrated into the overall planning for military activities. The risks associated with efforts to protect the environment should therefore be considered separately prior to, during and after military activities”.

One of the important components of military activity is the troops training at the training areas. Training land is the “classroom” for soldiers where they are taught how to fight, survive and win a battle. Training lands have become scarce and additional training space is not available. We must keep training lands available for optimal use not only for us, but also for future generations. Another very important environmental support function is to provide training land for realistic and effective military training on a sustainable basis. This principle of sustained training land availability includes two environmental objectives: (1) protect natural habitats as legally required and (2) maintain healthy ecosystems as the

prerequisite for realistic and natural training scenarios.

Another important aspect is that training areas have become very important retreat areas for threatened and endangered species. They are ecological islands surrounded by built-up areas and intensively used farm and forest lands. Training areas, therefore, provide homes for more flora and fauna species than hardly any other land in the densely populated and managed areas of central Europe.

Another NATO document STANAG 2594 is dedicated to best environmental protection practices for sustainability of military training areas. It also notes that “military areas are important to conservation because of their large size, intact microtopography (when compared to agricultural or urban areas), trophic situation (have seldom been used agriculturally, and poorer nutrient conditions encourage a larger variety of plants) and intact natural processes. Additionally, large portions of military training areas remain untouched, favoring disturbance-averse species; other portions are heavily disturbed, favoring disturbance-dependent species. The rich habitat mosaics include the two extremes as well as the continua of disturbance and succession between them, thus providing suitable habitat for a very

large number of species with widely varying habitat requirements”.

At the same time military activities directly affect habitats include the following:

- Direct habitat loss, e.g. building and road construction;
- Introduction of alien, invasive species that out-compete native species;
- Reduction in habitat quality by discharging and emitting substances to air, land and water that affect the health of flora and fauna;
- Habitat fragmentation, whereby large areas are broken up by built developments, new transport routes or removal of hedgerow corridors;
- Dividing and confining populations to smaller areas may increase stress, make them less resilient to destruction and disease, and reduce the variety in the gene pool;
- Removal of elements that sustain an ecosystem.

Previously, we made an attempt to assess the influence of military activity on the environment at military training areas through the evaluation of environmental risk (Orel et al., 2018).

Now the objective of this article is the implementation of fauna environmental protection at one of the Ukrainian military training areas using the recommendations of NATO documents, which include environmental risk assessment.

## **2. ENVIRONMENTAL CHARACTERISTICS OF INTERNATIONAL PEACEKEEPING AND SECURITY CENTER (IPSC) IN VIEW OF STANAG 7141**

IPSC is located in Lviv’s region of Ukraine. Its mission is training the Armed Forces of Ukraine jointly with the other countries armed forces units. The applying of tanks, armored personnel carriers, infantry fighting vehicles is practiced on the territory for tactical training of troops. In addition, IPSC accommodates on its grounds signal training fields, artillery training grounds, missile and artillery units training areas and artillery shooting range (Orel et al., 2018).

According to STANAG 7141 “in order to effectively integrate environmental considerations for NATO-led military activities, commanders should identify the characteristics of the environment that may be impacted by or have an impact on NATO-led military activities:

- General environmental condition of the area;
- Climate;
- Water quality, including surface water and groundwater;
- Air quality;
- Natural and cultural resources;
- Presence of endangered species and critical habitats;

- Presence of birds or bird migration routes.”

The territory of the IPSC belongs to the western endings of the Roztochchya ridge - one of the most interesting physics and geographical regions of Western Ukraine, which is the boundary area of the East European platform and the Carpathian Regional deflection. The territory of training areas are characterized by flat-topped hills up to 350 m above sea level, dissected by a river valley and the system of lakes formed after glacial formation. Most of the territory is occupied by forest and the rest of it - by a meadow-bog cenosis. The river Vereschitsa flows from south to north through the territory of the IPSC. In addition, there are 10 lakes, which feed on underground sources. The reservoirs form the flow of the Vereschitsa River and play an essential role in the formation of phyto- and zoocenosis.

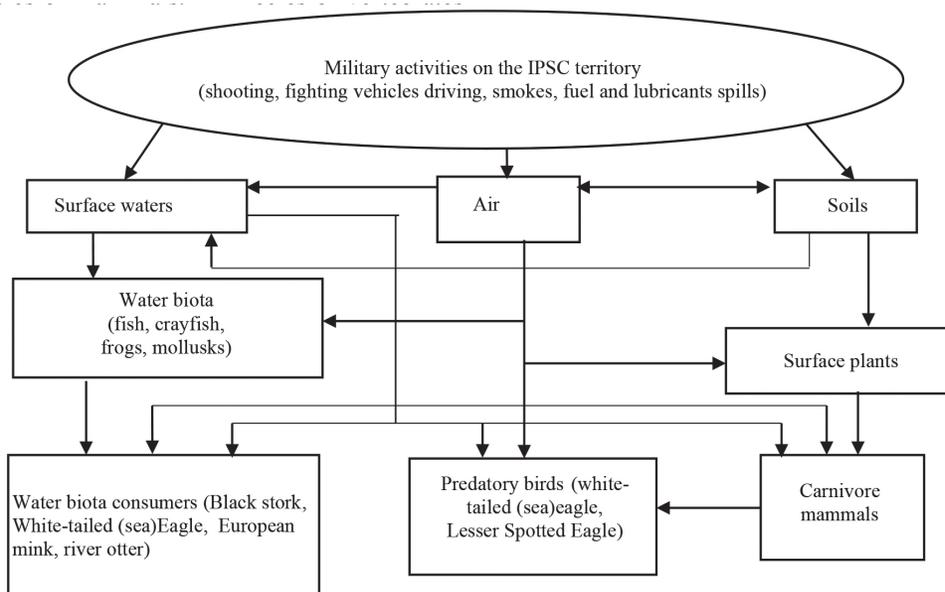
The diversity of the plant and animal life of the IPSC is determined by the natural conditions of the Roztochchya region, and primarily by its borderline location, which facilitates the exchange of floristic and faunal material with the region of Polissya and the Carpathians. The south-eastern part of the training areas adjoins the territory of the Yavoriv National Nature Park, which in its southern part borders the nature reserve “ Roztochchya”. Up to 700 species of vascular plants

can be found on the territory IPSC. Vertebrate fauna IPSC constitutes today 24 species of fish, 11 species of amphibians, 6 species of reptiles, 199 species of birds and 46 species of mammals. 26 species of vertebrates identified in the Red Data Book of Ukraine including 1 species of reptiles, 18 birds and 7 mammals (Kuchinska et al., 2005).

Among the permanent species of birds listed in the Red Data Book of Ukraine, the following can be distinguished: Black Stork (*Ciconia nigra*), category II (vulnerable species, which in the near future may be classified as “fading away” if the effect of factors that affect their condition is not stopped); White-tailed (sea)Eagle (*Haliaeetus albicilla* L.), category II, included, in addition, to the European Red List; Lesser Spotted Eagle (*Aquila pomarina* C. L. Brehm), Category III (rare species whose populations are small and which at the moment do not belong to the categories of “disappearing” or “vulnerable”, although they are endangered) (Parnikoza et al., 2005).

Among mammals there are: European Mink (*M. lutreola* L.), River Otter (*Lutra Intra* L.). All animals are classified in the second category of the Red Data Book of Ukraine, the river otter is also listed in the European Red List.

Conceptual model of military activities that affect especially rare animals is shown in Figure 1.



**Fig. no. 1.** Conceptual Model of the Impact of Military Activities on IPSC on the very rare representatives of the biota  
Sources: (Orel et al., 2018).

In the course of military exercises, ferrous and nonferrous metals, chemicals used in smoke and imitation of fighting poisonous substances, lubricants and others pollute the environment. These substances are released into the air, water and soils and, directly or through food chains, end up in the bodies of animals that are objects of concern.

It should be noted that there is no systematic monitoring of the environment condition on the territory of the IPSC. Studies conducted in 1997 (Pidlisna, 1979), found that there is a certain degree of soil contamination by

metals with little air pollution during exercises. The survey of the training territory conducted in 2009 (Manenko et al., 2009) and later studies showed that the degree of soil contamination remained at approximately the same level with some exceeding of the maximum concentrations of copper and nickel, pollution of water surface sources is within the limits of state norms, air pollution is absent. Therefore, further only environmental risk of polluted soils impacts on the biota was estimated. Concentration of contaminants into the soil of IPSC is given in Table 1.

**Table 1** Concentration of contaminants into the soil of IPSC  
Sources: (Manenko et al., 2009)

| Concentration (dry weight)                      | Pollutants |        |        |      |
|---|------------|--------|--------|------|
|   | Lead       | Nickel | Copper | Zinc |
| Maximum concentration in soil, mg/kg of soil    | 35         | 850    | 64     | 40   |
| Background concentration, mg/kg of soil         | 4.4        | 1.2    | 0.26   | 4.4  |
| The sanitary standard of Ukraine, mg/kg of soil | 6.0        | 4.0    | 3.0    | 23.0 |

It should be noted that animals which consume predominantly aqueous biota may be excluded from consideration due to the unpolluted water sources (with the exception of the White-tailed (sea)Eagle, which, in addition to fish, also consume avifauna and small mammals). Thus, the impact of military activities on IPSC territory on the environment will be evaluated by their impact on the two predators –indicator species – White-tailed (sea)Eagle and Lesser Spotted Eagle.

### 3 ENVIRONMENTAL RISK MANAGEMENT

Environmental risk management seeks to determine that environmental risks exist and then determine how to manage those risk in a way best suited to protect human health and the environment. Risk management is the action taken based on consideration of risk assessment which provides information on potential health or

ecological risks (US EPA (a)). An ecological risk assessment is the process for evaluating how likely it is that the environment may be impacted as a result of exposure to one or more environmental stressors such as chemicals, land change, disease, invasive species and climate change.

An ecological risk assessment includes three phases (US EPA (b)):

Phase 1 - Problem Formulation.

Information is gathered to help determine what, in terms of plants and animals, is at risk and what needs to be protected.

Phase 2 - Analysis.

This is the determination of what plants and animals are exposed and to what degree they are exposed, and if that level of exposure is likely or not to cause harmful ecological effects.

The first two phases of ecological risk assessment for military activities on territory IPSC are reviewed above.

**Phase 3 - Risk Characterization**

Risk characterization includes two major components: risk estimation and risk description. "Risk estimation" combines exposure profiles and exposure effects. "Risk description" provides information important for interpreting the risk results and identifies a level for harmful effects on the fauna of concern.

The impact assessment of contaminants (stressors) on the fauna (receptor) of IPSC will be carried out by means of a deterministic assessment of the ecological risk by determining the so-called "hazard coefficient". This value is equal to the ratio of daily stressor dose that influences the receptor to the so-called "reference value of toxicity", that has the meaning of daily stressor dose which impacts the receptor throughout life and does not give rise to an unacceptable effect to it (Guidance (a)). For us it means

ability to increase mass birds in the life process. That is,

$$HQ = AD / TRV, \quad (1)$$

where  $HQ$  – hazard coefficient;  
 $AD$  – average dose, mg/kg;  
 $TRV$  – the value of the reference value of toxicity in the corresponding dimension.

The ecological risk characteristics of harmful effects development under combined and complex action of stressors is conducted on the base of hazard index (HI) calculation. The hazard index for the conditions of simultaneous influence of several stressors is conducted in the same way (for example, by inhalation or oral) and is calculated by the equation

$$HI = \sum HQ_i. \quad (2)$$

For the rough estimation of risk by using  $HI$ , Table 2 can be used.

**Table 2.** Classification of risk levels  
Sources: (Lu et al., 2003)

| <i>HI</i>  | Risk level  |
|------------|---|
| <1.0       | Minimum - the desired (target) value of risk when carrying out environment preservation measures  |
| 1.0–10.0   | Minor - acceptable for most biota subjects, but requires in-depth study of the sources and possible consequences of harmful effects to solve the issue of risk management measures                          |
| 10.0–100.0 | Significant - not acceptable for most subjects of biota, requires dynamic control and in-depth study of sources and possible consequences of harmful effects to solve the issue of risk management measures |
| >100.0     | High - not acceptable for biota. It is necessary to implement measures to eliminate or reduce risk  |

It is obvious that pollutants can enter and accumulates into the birds' bodies only through the food consumption, as water sources and air are not contaminated. Consumption of water biota also does not bring hazardous substances into the diet of birds. The danger is having place only with consumption of creatures, which in turn consumed contaminated soil and plants that grew up on this soil.

The White-tailed (sea)Eagle's diet is composed of birds, fish and mammals. Prey composition depends from the hunt territory and constitute on average 51% of birds (mostly Anatidae), fish 42% and mammals only 7% (Nadjafzadeh et al., 2016) (Sulkava et al., 1997). In more arid territory diet is composed of 44% of birds, 28% of small mammals and 28% - fish (Zubarovskiy, 1977). The diet of Lesser Spotted Eagle is composed of mammalian species 88% (mostly *Microtus arvalis*), birds (mostly Galliformes) 6% and nearly 6% Amphibia, Reptilia and fishes (Dravecky et al., 2008).

Assuming that consumed birds are predominantly wild ducks (Anatidae) for White-tailed (sea) Eagle and partridge (Galliformes) for Lesser Spotted Eagle and mammals are field-mice (*Microtus arvalis*) for both predators, we can determine the intake of pollutants into the their bodies by the equation (4)

$$I = C_m \times IRf \times A_F \times AUF \times TUF / BW, \quad (4)$$

where  $I$  – pollutant intake, mg/(kg/day);

$C_m$  – pollutant concentration in the meat of prey, mg/kg (dry mass);

$IRf$  – consumption of food by predators, kg (dry mass)/day (normalized by body weight constitutes: for the eagle 0,12; for the snapper - 0,1 kg / (kg/day)) (US EPA Guidance 2018), (Methods and Tools);

$AF$  – the share (by weight) of meat in general diet of predators, kg/kg (for the White-tailed (sea)Eagle 0,575, for the Lesser Spotted Eagle 0,72 (Zubarovskiy, 1977));

$AUF$  – factor of the use of the area, hectare/hectare (in screening studies we assume  $AUF = 1$ , meaning that consumed prey is exclusively fed by contaminated food);

$TUF$  – factor of time, days/days (we assume  $TUF = 0,5$ ), as in the cold period of a year the White-tailed (sea)Eagle consumes different food, and the Lesser Spotted Eagle migrates to other regions, i.e., the consumption of contaminated food lasts for about 6 months;

$BW$  – predators' body weight, kg.

Pollutant concentration in the prey meat (wild duck, partridge and field mouse)  $C_m$ , taking into account

direct prey soil consumption, determined by the equation

$$C_m = C_s \cdot UF_p \cdot UF_{ep} \cdot P_F + C_s \cdot UF_{es} \cdot S_F \quad (5)$$

where  $C_s$  – pollutant concentration in soil, mg / kg;

$UF_p$  – factor of pollutant bioaccumulation by plants from soil, kg / kg;

$UF_{ep}$  – factor of pollutant bioaccumulation by meat of prey from the plant food, kg / kg;

$P_F$  – share (by mass) of plant food consumption in the total ration of prey, kg / kg (0,98 (Methods));

$UF_{es}$  – factor of pollutant bioaccumulation by prey from the soil, kg / kg;

$S_F$  – share (by mass) of direct soil consumption in the general prey ration, kg / kg (0.02, (Methods));

Initial data for the calculation of pollutant intake to the predators bodies are given in Tab. 3. The values of  $TRV$  for them are also presented here (EPA 530–D–99–001C).

The results of the military activity impact on the IPSC fauna (in the form of the hazard index value  $HI$ ) are presented in Tab. 4.

**Table 3.** Initial data for calculating the intake of pollutants into predators bodies  
Sources: (Methods and Tools, EPA 530–D–99–001C)

| Characteristic   | Pollutants |          |          |          |
|--|------------|----------|----------|----------|
|  | Lead       | Nickel   | Copper   | Zinc     |
| Factor of pollutant bioaccumulation by plants from soil, $UF_p$ , kg / kg                  | 0.045      | 0.032    | 0.4      | 0.123    |
| Factor of pollutant bioaccumulation by meat of prey from the plant food, $UF_{ep}$ , kg/kg | 1.56E-04   | 3.34E-03 | 2.42E-02 | 1.58E-03 |
| Factor of pollutant bioaccumulation by prey from the soil, $UF_{es}$ , kg/kg               | 1.50E-06   | 2.99E-05 | 4.14E-04 | 3.96E-05 |
| Value of $TRV$ , mg/(kg/day)   | 1.63       | 6.71     | 4.05     | 17.2     |

**Table 4.** The results of the military activity impact on the IPSC fauna  
Sources: (author)

| Objects of concern                                | Hazard coefficient $HQ$ |          |          |          | Total $HI$ |
|---|-------------------------|----------|----------|----------|------------|
|   | Lead                    | Nickel   | Copper   | Zinc     |            |
| White-tailed bald eagle (Haliaeetus albicilla L.) | 5.86E-06                | 5.76E-04 | 6.48E-03 | 1.92E-05 | 7.08E-03   |
| Small snapper (Aquila pomarina C. L. Brehm)       | 3.90E-06                | 3.84E-04 | 4.31E-03 | 1.28E-05 | 4.71E-03   |

Comparing the results of the calculations with the acceptable risk values (Tab. 2) it can be noted that the risk for fauna is very little, despite the fact that the soil contamination exceeds sanitary standards of Ukraine. So, there is no need for additional measures to protect the environment, as there is no threat to life and well-being of biota.

#### 4. CONCLUSIONS

The above article materials as well as experience from military territories of other countries (Jakimavičičūtė, I., 2004) shows that military training areas maintain a great biological diversity primarily because of specific military training activities, relative inaccessibility by the public as well as because fertilizers and pesticides are not used. Thus military utilization can be maintained in order to preserve rare natural objects unique to military training areas and rare in the countries of Europe. But the continued presence of rare fauna and flora in military training areas requires very well balanced and careful use of military land with proper conservation measures and regular observations and evaluations. The vital moment in nature management planning is continuity of this process. One-time management “injections” do not principally improve conditions for rare species and habitats. Regular

applying of NATO guidance documents when planning exercises at military training sites will allow saving and increasing rare fauna on military areas.

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