Journal of Defense Resources Management

Vol. 12 Issue 1(22)/2021

BRASOV - ROMANIA

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ISSN: 2068 - 9403
elSSN: 2247 - 6466

CONTENTS

A STUDY ON THE IMPACT OF THE COVID-19 PANDEMIC ON THE LEVEL OF INDIVIDUAL CONSCIOUSNESS AND ORGANIZATIONAL CULTURE IN MONOSPECIAL HOSPITAL UNITS IN ROMANIA

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Abstract: *In the context of the COVID-19 pandemic, the identification and evaluation of the factors that affect the motivation, attitude and satisfaction of employees working as medical, health or auxiliary staff in health organizations, directly involved in the fight against the pandemic, was a desideratum of this scientific research. The results obtained maintained the conclusions formulated in previous research, the research model developed by the author, in order to facilitate the transformation of human resources management (HRM) in health organizations, proving its reliability in the current pandemic context, with positive impact, in public health and in terms of national security.*

Key words: *public health, human resources, commitment, motivation, performance, attitude, work climate, staff turnover*

1. INTRODUCTION

The present scientific study represents the continuation of the scientific research carried out by the author, during 2020, the results of which were published in the article entitled "*Approaching the transformation of human resources management in medical structures"* (Barcan, 2020).

In fact, at the beginning of 2021, the research model was applied on time, with nine latent variables and fifteen manifest variables, related to studying the impact of transforming HRM on employees, working as medical, health or auxiliary staff and management of health organizations, at the level of some monospecialty hospitals, from Romania, which were directly involved in the fight against the COVID-19 pandemic.

Following the application of the research model with nine latent variables and fifteen variables, developed by the author, scientific results have been obtained that are relevant, in the field of public health and national security. For this reason,

the author decided to continue the research, theoretically, qualitatively and quantitatively.

In the current pandemic context, everyone recognizes today that employees are an essential resource of health care organizations. Unlike other financial, technical and technological resources, human resources can be acquired, evaluated and developed (Deaconu and Rașcă, 2009). At the conceptual level, Radu (2007) considers that a health organization is an association of people, who work together to achieve a common goal, namely to ensure the health of patients and society.

2. THE IMPORTANCE OF HUMAN RESOURCES ACTIVITY IN RELATION TO THE PERFORMANCE OF HEALTH ORGANIZATIONS

People becomes human resource (HR) after obtaining formal education and training at different levels, respectively primary, secondary or higher education. Against this background, Deaconu (2007) shows that HR should become an agent of continuous transformation, process formation and culture, which improves the capacity of an organization for change. Next, in the context of globalization, the question arises as to who makes this transformation. This is where the role of the HR department comes in, which is responsible for strengthening the competence of staff and HR activity.

The economic, technical and social changes in contemporary society caused by the spread of the COVID-19 pandemic and the emergence of the third wave of mass infections are challenges and opportunities for all health organizations, regardless of the nature of capital. With the development of the information society, the amount of data available on the pandemic situation has increased, and the way information can be accessed and changed has changed, and become much more global, with the risk of perpetuating false or only partially true information.

Muiswinkel (2013) stated that these evolutions and organizational changes will continue in the future, and organizations will need to be active, through the development of HRM, to take advantage of new technologies and data sources.

2.1. The role and content of HR activity

In this pandemic context, McGaughey (2020) noted that HRM is a strategic process, which is related to staff, compensation, retention, training and labor law, as well as the organization's policies. In fact, the researcher pointed out that the HR manager has both the role of writing policies and procedures, and of hiring people, as an administrative role, and of using strategic plans, to ensure that the right people are hired and trained, for the right job at the right time.

The modernization of services, offered by organizations in contemporary society, is not only organizational and technical, but is also based on the development of HR, and the skills and attitudes of staff members, at all levels. Jashari and Kutllovci (2020) noted that HR management and training are important for the modernization of health organizations, as evidenced by the COVID-19 pandemic, when labor costs account for almost 80% of the budget.

HRM requires as much involvement from someone who is a HR manager or from someone who runs a business. So that is necessary to emphasize that each manager has a role related to HRM. Just because a person does not hold the title of HR manager, does not mean that they will not perform all or at least some of the tasks of the HR manager.

Juneja (2020) argues that personnel management includes staff recruitment, development and compensation functions, which are mainly performed by the management of the HR department, in consultation with other departments. This type of management is concerned with promoting and stimulating the competent workforce, in order to contribute, as far as possible, to resolving staff situations.

In our opinion, personnel management has the role to advise and help line managers in personnel matters, there is only one personnel department within the organization. Many HRM functions are also tasks performed by other department managers, which makes this information important, as opposed to career path.

In his paper, Portolese (2014) identified seven main roles that HRM plays in organizations. The first role is that of Personnel. It lies in the need for people to perform tasks and work in the organization. Even with the most sophisticated cars, people are still needed. For this reason, one of the major tasks in HRM is personnel management, which involves the entire employment process from posting a job to negotiating a salary package.

Portolese believes that there are four main steps in the staff function. A first step is to develop a staffing plan, which allows HRM to see how many people should be hired, based on income expectations. A second step is the development of policies to encourage multiculturalism in the workplace. Multiculturalism in the workplace is becoming more and more important, as we have more people from different backgrounds in the workforce. Recruitment is another step and involves finding people to fill available positions. In the Selection stage, people will be interviewed and selected and an appropriate compensation package will be negotiated, this step being followed by training, retention and motivation.

Blajin et al. (2015, pp. 71-72) states that another important role of

HRM is Development of workplace policies. Every organization has policies to ensure fairness and continuity within the organization. One of the jobs of HRM is to develop the language that surrounds these policies. In policy development, HRM, leadership and directors are involved in the process. The HR professional will recognize the need for a policy or policy change, seek opinions on the policy, write the policy, and then communicate that policy.

Researchers at the University of Minnesota (2016, p. 11) noticed that HR departments do not work and cannot work alone. Everything I do must involve all the other departments in the organization. Examples of workplace policies could be Discipline Policy, Vacation Time Policy, Dress Code, Ethics Policy or Internet Use Policy.

Dron (2019) argues that a third role of HRM is managing compensation and benefits. HR professionals need to establish that compensation is fair, meets industry standards and is high enough to attract people to work for the organization. Compensation includes whatever the employee receives for his work. In addition, HR professionals need to ensure that the salary is comparable to what other people who perform similar tasks are paid.

Feffer (2017) observed that HR practices must follow the HR strategy, exemplary being employment, training, evaluation and compensation. The results obtained positively affect the commitment, quality, innovation and involvement, the internal performance of the organization being improved. Compensation involves the establishment of payment systems, which take into account the number of years in the organization, years of experience, education and similar issues. Examples of employee compensation identified by researchers at the University of Minnesota (2016, p. 12) include actual payments, cash or account, health benefits, and private pensions. At the same time, other methods of compensation include stock purchase plans, holiday vouchers, sick leave, bonuses or school reimbursement.

Tripon and Dodu (2016, pp. 12-13) state that personnel management motivates employees, through its effective incentive plans, so that employees offer the most complete cooperation. Also, the personnel management deals with the problems appeared at the level of HR, discussing with the people in the sense of solving the appeared problems. In the context of labor disputes, the personnel management relationship is to manage relationship with employees and unions.

A very important role of HRM is Retention. Retention involves maintaining and motivating employees to stay with the organization. Compensation is a major factor in retaining employees, but there are other factors as well.

Rivenbark (2005) observed that 90% of employees leave their organization due to work-related problems, challenges with their manager, a poor fit with the organizational culture or the existence of a poor work environment. Rivenbark also noted that 90% of managers believe that employees leave organizations as a result of salaries. Therefore, managers often try to change their compensation packages to prevent people from leaving, when the compensation is not at all the reason why they are leaving.

Singh (2015) argues that a special role of HRM is dealing with laws that affect employment. HR must be aware of all laws affecting the workplace, namely discrimination laws, health care requirements, compensation requirements such as the minimum wage or workers' safety laws and even labor law. The legal environment of HRM is constantly changing, so the HR manager must always be aware of the changes that are taking place, and then communicate these changes to the entire organization and its management.

Worker protection is a special role of HRM. Safety is a major issue in all organizations. New laws are often created to set standards to ensure the safety of workers. Trade unions and trade union contracts can also affect workers' safety requirements at work. At the same time, Singh considers that HR manager must be aware of the requirements of worker protection, and ensure that the workplace meets national and union standards.

Boselie (2009) showed that a very important role of HRM is Awareness of external factors. In addition to managing internal factors, the HR manager must consider the external forces at play that may affect the organization. External forces or external factors are those things over which the organization has no direct control. However, there may be things that could have a positive or negative impact on HR.

Chetty (2019) argues that external factors may include globalization and relocation, changes in labor law, or healthcare costs. A special category of external factors is the expectations of employees, the diversity of the workforce or the change in the demographics of the workforce. These factors are accompanied by the use of a more trained workforce and redundancies, the technology used, such as HR databases or even the increased use of social networks, to distribute information to employees.

In the current pandemic context, Campbell and Busby (2020) noted the recent trend of flexible work schedules, using telecommunications, which allow employees to work from home or from a remote location for a specified period of time, such as one or more days a week. The COVID-19 pandemic and the government measures taken to eradicate it are

external factors that have affected HR and are still in action (Gravett, 2020). The HR manager must be aware of these external issues so that he can develop policies that respond not only to the needs of the organization, but also to the needs of the people.

Scott (2019) argues that the five major functions of HRM therefore lie in the roles that HRM has within the organization. In past centuries, when the notion of HR focused only on personnel management, the main role of the personnel manager was to hire and fire, as required by the top management of the organization. Today, this is only a small part of the picture, as HRM comprises five key functions in the workplace.

The first function of HRM is Recruitment. Depending on the level of specialization and seniority of the positions held, a HR department may have recruiters specialized in HR dedicated to supplying potential employees with the appropriate set of skills. In recent years, it has evolved into a specialized area with a wide range of external agencies focused on assisting HR in finding the right candidates.

Where there is a surplus of market expertise, this may be unnecessary. However, where market demand exceeds supply, specialized recruitment agencies have the potential to give HR an advantage over competitors. Effective HRM will set values around recruitment to generate relatively successful measures, such as the cost of employment, time to fill the position, retention period and many other values that can help highlight actual effectiveness of recruitment.

In the context of the COVID-19 pandemic, Sarpita (2021) considers the function of Insertion of new employees as the second function of HRM. Some organizations fail to take advantage of the opportunity offered by a new employee to involve new recruits in the culture and practices of the organization. Effective insertion will ease new employees' anxiety and discomfort at work and will lead to much higher levels of satisfaction.

New employees' first impressions of an organization have a significant impact on their integration into the team and their level of job satisfaction. Hiring is an opportunity for a business to meet new recruits, help them settle down and make sure they have the knowledge and support they need to fulfill their role. For an employer, the effective insertion of new employees can also have an impact on the employer's turnover, absenteeism and brand.

Regarding the work environment, Sarpita considers that first impressions matter. A key part of the initial image will be formed when a new employee is placed in the work environment. Organizing an office or a store can have a huge psychological effect on an employee's attitude towards his employer. The work environment indicates how organizations care about staff or consider employees to

be small wheels of a machine, which be exploited for maximum profit.

Scott identified Staff Relations as a separate function of HRM. A positive climate of employee relations, with high levels of employee involvement and commitment, can improve business results and contribute to employee well-being. The recognition fact that employees are individuals, with complex personalities and with varied needs, desires and ideals, both outside and inside the workplace has become an important factor in the evolution of HR practice. Good staff relationships, individual and collective, between staff and employer, have the potential to increase employee employment levels, which in turn can lead to better employee performance and superior competitiveness of the organization.

The Personnel Development function is highlighted at the level of the organization in a variety of ways. Juneja states that, the basis of the staff development function is the idea that organizations, in order to remain competitive, must improve their employees through lifelong learning processes in the workplace. As the work environment has matured in recent decades, HRM has evolved in parallel, developing practices and skills designed to help employees and employers maximize value, ideally for mutual benefit.

Training should not be confused with development, as training involves a change in the employee's attitude, skills or knowledge about his tasks. Instead, development is strategic in nature. McGaughey noted the major difference between training and development. He believes that training often focuses on current employee needs or skills shortages, while development is concerned with preparing people for tasks and responsibilities.

In our opinion, HRM has evolved to include a broad set of disciplines that reflect the career path of employees, from a potential recruit to a staff member, to promotion, skills development and finally, leaving through competitive employment or retirement.

2.2. Factors that influence the performance of employees and organizations

In the context of the COVID-19 pandemic, Manolescu et al. (2021) highlighted that training is the function or activity of an educational character, organized, structured and carried out in order to improve individual / organizational performance. Against this background, organizational performance is the real result, ie the results obtained by an organization, measured in relation to its intended results (or objectives).

In the field of health, organizational performance includes three specific areas of firm results, namely financial performance (profits, return on assets, return on investment, etc.), service market performance (sales, market share, etc.) and shareholder return (total

return of shareholders, economic added value, etc.). Specialists in many fields are concerned with organizational performance, including strategic planners, operations managers, CFOs, legal advisers, entrepreneurs (the owner of the organization).

In the current pandemic context, Radu et al. (2020) noticed that the concern for performance is an essential coordinate of the world we live in, with an increased emphasis on capitalizing on people's work. Of course, we are not all the same in terms of time spent at work, intensity, direction and perseverance of effort. Quantifying investment in labor is proving to be a challenge. Intuitively or based on our experience, we know that this investment leads to more in terms of results. Sometimes, however, more becomes too much, and crossing this threshold has negative implications for organizational performance.

Factors that influence the activity of HR in health organizations, with impact on employees and management of organizations, are represented by workforce diversity, employee attitude, individual performance, employee motivation, talent management and staff turnover, and the environment activity, organizational structure and economic factor. Similar to globalization, diversity and social issues have had a dramatic effect on the study and application of management and organizational behavior. 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 (Barcan and Barcan, 2019).

HR practices play a significant role in building a good employee-employer relationship, which would impact the employee's attitude changes and ultimately affect the organization's performance. HR practices are considered to be very effective in preserving valuable human capital. Organizations have learned the importance of good relationships with the workforce, those who do not realize the importance of its HR cannot make progress. Employees also like the organizations that take care of them and reward their services accordingly. In the workplace in relations with employees there is a strong association between HRM and the attitude and performance at work of employees.

Productivity is influenced by employee motivation, and performance is influenced by employee skills, motivation and organizational structures. The effectiveness of HRM practices depends on how they create appropriate attitudes and behaviors in employees, in addition to their implementation. HR 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, relationships that are generating the best type of competitive advantage (Barcan and Barcan, 2018).

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. 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. Employee productivity is influenced by their motivation, which is a complex and targeted process to ensure a work environment and atmosphere that helps meet the aspirations, needs and interests of employees and stimulates their action in a desirable way. 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 (Anthonisamy, 2013).

The major purpose of performance appraisal is to increase employee motivation and self-esteem. Performance appraisal increases employee productivity, which in turn increases organizational performance. Performance appraisal improves professional development and motivates employees to work harder to achieve organizational goals. Merit-based performance appraisal increases employee motivation and commitment, with a significant effect on organizational performance.

Hyun (2009) observed that human motivation is also explained by Maslow's theory of human behavior, which starts from the idea that people work to meet unmet needs. The most important needs are the physiological ones, respectively regarding the need for food, water, sex, etc., security, needing personal protection and economic protection. Other needs are social, affiliation, ie the need for love, affection, the need to have a sense of belonging, the need for friendship. The last two needs are the need for esteem, ie the need for respect, prestige, recognition from others and the need for fulfillment, which seeks professional growth, such as the development of creativity and innovation. Needs are ranked from their order of satisfaction, from basic to higher.

Starting from the concepts of Maslow's pyramid, Herzberg published a theory, also called the two-factor theory, Herzberg's theory of motivation-hygiene or the theory of dual factors, which identifies two groups of elements, demotivating and motivating. According to this theory, employees are not satisfied with the satisfaction of lower needs at work, such as those needs associated

with minimum wage levels or safe and pleasant working conditions. Rather, employees seek to meet higher-level psychological needs, which are related to the achievement, recognition, responsibility, advancement, and nature of their own work, which seems parallel to Maslow's theory of a hierarchy of needs (Khalifa and Truong, 2010).

Herzberg added a new dimension to this theory, proposing a two-factor motivation model, based on the idea that the presence of a set of job characteristics or incentives leads to employee satisfaction, while another separate set of job characteristics leads to to dissatisfaction at work. Satisfaction and dissatisfaction are not continuous, one increasing as the other decreases, they are therefore independent phenomena. This theory suggests that in order to improve attitudes and productivity at work, managers need to recognize and follow both sets of characteristics carefully and not assume that an increase in satisfaction leads to a decrease in dissatisfaction (Hyun, 2009).

Motivating employees through compensation is a HR 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. A successful organization is aware of the importance of its staff and their positive motivation.

Today, when advances in technology, information and globalization occur most often, the human factor becomes the biggest competitive advantage. The importance of HR is considered strategic, becoming part of the strategic management of an organization and an important factor for sustainability. 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 labor force to meet the organization's objectives (Barcan, 2019).

Organizations in which the most productive employees can choose tasks according to their will and capacity are considered more beneficial and more productive. In unfavorable circumstances, organizations try to reduce their expenses, so that the talent management system is the means by which the performance of each employee is optimized, having a direct impact on the motivation, creativity, satisfaction and competence of employees. 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 (Barcan and Barcan, 2018).

The topic of the impact of HRM on staff turnover has been

the subject of numerous scientific studies worldwide. In contemporary scientific studies, the influence of HRM on staff turnover is described in different ways, and can be represented by measuring the correlations between organizational performance and HRM effectiveness or by quantifying the connections between staff turnover and HRM. At the level of the organization, it is relevant to discover the non-managerial causes of staff turnover that could be avoided through specific measures for HRM.

When employees leave the organization, whether of their own free will or not, the consequences could be extremely serious. The high staff turnover costs a lot, because it involves in the organization direct financial expenses for recruitment and selection, employment, training and adaptation of newcomers. The belief that improving organizational performance depends on HRM is becoming increasingly categorical not only because it cannot be easily imitated by competition, but also because it is able to react quickly and efficiently to changes in market requirements.

The organizational structure influences HRM differently. 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 their ability to achieve organizational goals.

In the field of health, managerial efficiency means increasing the volume of activity, obtaining positive financial results, increasing the addressability of patients to the organization through a wide range of services, and the overall growth of the organization. Another important aspect of managerial efficiency is the reputation of the organization, 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 the activity of HR.

In order to increase managerial efficiency, it is necessary to rethink the management of HR, namely the management of the entire workforce of the organization so that it fulfills its role as efficiently as possible. First of all, HRM needs to find a way to reduce administration through automation processes and redistribute related responsibilities. HR in small organizations have a greater role in managerial efficiency. The smaller the business, the greater is the impact of HR, thus explaining that in smaller organizations managers do not use strategic thinking. HRM has long been considered a cost center, but now it generates revenue by attracting the right people to ensure the success of the organization.

An efficient performance management process is the basis for aligning individual efforts with

the organization's objectives. By linking the individual work efforts of employees to the mission and objectives of the organization, the employee and the organization understand how the workplace contributes to the organization. By focusing on setting clear performance expectations (results, actions, and behaviors), performance management helps the employee know what needs to be done to succeed in the workplace. By using objectives, standards, performance dimensions, and other measures, the effort is focused, which helps the department achieve what needs to be done and provides a solid basis for eliminating work that is no longer useful (Bryson and White, 2019).

Through regular partial evaluation discussions, performance management promotes flexibility, allowing the evaluator and employee to identify problems early and change the course of a project or work mission. Emphasizing that an annual review should simply be a summary of the conversations, conducted between the evaluator and the employee throughout the cycle, the focus is now shifting from performance, as an annual event, to performance, as an ongoing process. An efficient performance management process requires time for planning and implementation, but can save employees time and energy. Most importantly, performance management can be a very effective motivator, as it can help both, the evaluator and employee, to compete for organizational success (Hassan, 2016).

Performance management is the continuous process of communication between managers and employees, with the mutual goal of achieving the strategic objectives of the organization. It is the foundation for employee performance and involvement in any organization that wants its employees to reach their full potential and increase their productivity and success. The process, which often combines both oral and written components, takes place throughout the year and usually results in an annual performance evaluation. The whole communication process involves defining clear specific expectations, setting goals, providing continuous feedback, and examining results (Mathis and Jackson, 2013, pp.287-288).

The continuous cyclical process of performance management has several main activities (Sienkiewicz, 2018, p.28). This cyclical process includes planning, verification and review activities. To begin the planning process, the evaluator and the employee examine the general expectations, which include collaborating in the development of performance objectives. Individual development goals are also updated. Then a performance plan must be developed that directs the employee's efforts toward achieving specific results to

support organizational excellence and employee success. The objectives are discussed throughout the year, during the partial verification meetings, providing a framework to ensure the employees achieve results. At the end of the evaluation period, the employee's performance is analyzed according to the expected objectives, as well as the means used and the behaviors demonstrated in achieving these objectives. Together, new goals will be set for the next performance period.

A performance goal is a state of future achievement that helps the organization succeed and create value. This performance goal is a direct link between the work an employee does and the overall goals and mission of the department and organization. As the needs of the organization change and the direction changes, so will the performance goals of an employee.

Performance objectives express mutually understood agreements for the results that an employee is expected to produce during the performance review period. Performance goals are not separate from the role of an employee, being part of the role. Objectives require the evaluator and the employee to think about planning the results, not just planning the activities. The identification of objectives encourages the evaluator and the employee to continuously look for ways to improve the overall effectiveness and efficiency of the department and to link the operations and results, individual and departmental, to the overall planning and mission of the organization. The objectives established through the collaboration process between the employee, the supervisor and the department determine the commitment (Burlea-Şchiopoiu and Rainey, 2013).

There are many ways to check performance, some of the most common being direct observation, specific work products (tangible evidence that can be reviewed without the employee present), reports and records, such as attendance, inventory, financial records, etc., checklists that can be completed by a patient or supervisor, that present specific observable criteria (that must be met in order to be considered complete), assessment scales that define, as accurately as possible, behaviors at different levels of performance (behaviorally anchored rating scales), as well as constructive or critical recommendations or comments received regarding the employee's work.

The review is the final phase of the performance management cycle. It provides an excellent opportunity to communicate with the employee about past performance, to assess employee satisfaction, and to make plans for his or her future performance. Performance review is the process of measuring an employee's performance in their current position. Many terms are used for this process, including evaluation, estimation and

appreciation, and the use differs depending on the organization's policy and/or the language of the contract. The performance appraisal summarizes the employees' contributions throughout the review period. Even if the policy and contract state that an employee should be evaluated at least once a year, it's strongly recommended that employees receive more frequent form of review whenever necessary, for improved performance (Heathfield, 2020).

3. ORGANIZATION OF HUMAN RESOURCES ACTIVITY, AN ESSENTIAL CONDITION OF THE PERFORMANCE OF HEALTH ORGANIZATIONS

The mission of the HR activity is to coordinate the people within an organization in order to achieve its objectives. HRM views people as organizational assets and internal customers and works to create job satisfaction and employee efficiency and effectiveness. The HR department leads the life cycle of employment, from attracting and hiring the right employees to facilitating the performance review or, finally, to the termination processing (Bădescu et al., 2008, p.14).

3.1. Career management

In the Encyclopedic Dictionary, career is defined as a profession, an occupation, and by extension either a good situation or a position in society. Career differs from careerism, perceived as the tendency to achieve at any cost and by any means. The HR dictionary defines career as a job for which you have been trained and which you expect to do all your life (Merce, 2004).

Career is also seen as one's own professional development, related to the level of the entire active life. In addition to individual evolution, career can be viewed in three ways: economically, sociologically and psychologically. From an economic point of view, the career represents a succession of the professional positions occupied by a person. Sociologically, this is seen as a succession of roles, each role being the basis of the one that will follow. From a psychological point of view, career choice and professional success depend on the skills, interests, values, needs, previous experience and aspirations of each individual (Heathfield, 2020).

Career decisions occupy the central place in the field of counseling and guidance, being an important attribute of the HR activity in the organization. One of the theories that has impacted assessment and guidance practice is Holland's theory of vocational personalities and work environments. The basic idea of the theory is that most people can be described by a combination of six personality types, namely Realistic, Investigative, Artistic, Social, Entrepreneurial and Conventional (Calo, 2017).

Each personality type is characterized by a constellation of interests, favorite activities, beliefs, abilities and values. Similarly, work environments can be characterized by their resemblance to a combination of personality types. People seek and will enter work environments that allow them to exercise their abilities and skills, to express their attitudes and values and to assume roles with which they can identify. Calo argues that a high degree of congruence between the personality type of the individual and the type of work environment would lead to job satisfaction, stability and performance. According to Holland's theory, career orientation should be based on one of the personality patterns of the individual.

Career management is a point of interest for both the employee and the employer. It is a process of designing and implementing goals, strategies, and plans that allow the organization to meet its HR needs and individuals to meet their career goals. Career management is carried out on two distinct levels, namely organizational career planning, which aims to integrate short- and long-term HR needs and develop an individual career plan, as well as individual career planning, based on capacity assessment, skills and personal interests, recording data on opportunities, setting career goals and developing a strategy for achieving them (Barcan and Barcan, 2019).

In simple terms, career management is perceived by the employee as a structured career planning through personal choice. Career management is a process that includes choosing, establishing and developing strategies to achieve personal goals. At the level of career management we can distinguish several objectives, the main one being to support the proper development of the career in accordance with the nature of the activity carried out within the organization, as well as with individual and organizational needs/possibilities.

Gallardo-Gallardo et al.(2020) notes that career management also aims at merging the needs and goals of the employee in the needs and objectives of the organization. For this, it is necessary to meet the organizational needs and intensify favorable image of the organization, by recognizing the training and development needs of employees. Against this background, talent management will allow the recognition and retention of the best employees or those with certain professional potential by satisfying personal needs and aspirations in the short and long term.

Bhasin (2020) shows that at the level of the organization it is necessary to write career plans for employees, with a predilection for the development of talent management. At the same time, it is necessary to introduce special promotion schemes for competent employees. This

situation is necessary in the case of competent employees for whom no career development positions are available. In this case, the competent employees will be guided and supported to achieve their personal objectives in accordance with their potential, needs and aspirations, as well as with their contribution within the organization.

In the case of employees who are not subject to talent management, it is necessary to support them in identifying the qualifications and qualities that are needed for both current and future positions. The aim is to provide the necessary training and development for employees to enable them to cope with any level of responsibility. However, there is a condition that employees have the potential or ability to achieve the required level of responsibility (Merce, 2004).

In organizations, it is also important to find and apply career development methods, to guide employees in as many directions as possible, as well as professional stimulation, of those who show certain stagnation or capping of their career. In this way, mutual benefits can be obtained, both for the organization and for its employees (Bădescu et al., 2008, p.14).

Regarding career stages, Calo stated that they can be defined as general patterns of progress, essential obligations and changes in the activities undertaken by an individual throughout his active life. Successive stages include exploration, stabilization, advancement, maintenance and end of career. In the first phase, that of exploitation, each individual faces the transposition of the visions formed in adolescence into the real world. It is the period of experimentation, the period in which talents, abilities, interests, values are discovered and developed. It is an important moment in the formation of the professional identity and the choice of a field of activity.

Stabilization is the stage in which the acquired notions are deepened, each seeking improvement in the chosen field following the process of exploration. Calo also observes that advancement and maintenance are a natural continuation of stabilization, each individual, through human nature having the desire to overcome, to obtain moral and material benefits. The end of the career can be a period of continuous growth in status and influence in the organization, or a period spent in the highest level of responsibility and status.

Anthonisamy stated that career management involves the individual choice of strategies as a result of which each person anticipates the problems that may arise in professional development and makes long-term planning. Thus, in the self-knowledge strategy it is important for the individual to perform a careful analysis of the career orientation, of the weak or strong points he has, of the place he occupies.

By applying a strategy of knowing the professional environment, the individual can anticipate unpleasant events and opportunities. For this strategy to be successful, it is necessary to know the environment, economic problems and competing organizations. An additional element is to maintain the best possible professional reputation. This allows highlighting the skills and achievements, ie everything that individualizes the employee. Against this background, the special qualities that the individual possesses, the possibility to invest and the ability to complete projects are relevant (Barcan, 2019).

Flexibility, availability and continuous training are important throughout your career. This continuously pursues the correspondence between personal skills and those skills that are sought in the labor market, as well as those that are easily transferable. In this sense, by documenting their own successes, which means providing evidence for what they have achieved, given that identifiable results and achievements are more valuable in the labor market (Bhasin, 2020).

In our opinion, in the current pandemic context of COVID-19, in order to have a successful career the individual needs to prepare a plan, reserve, being very important to maintain a status, professional and social, comfortable. Maintaining a good financial and mental shape allows the employee to have a basis, comfort and balance professionally and socially.

3.2. Personnel management and policies

HRM focuses on internal sources of competitive advantage and considers people as the most important asset of an organization. The HR department communicates with employees and adapts the culture and structure of the organization to their needs, for example in negotiating with unions or reengineering processes. Personnel management is the responsibility of the HR department. In practice, however, depending on the size of the organization, different situations are encountered. This activity can be performed by the administrator, by the accountant or even by another person in the organization (Meyers et al., 2019).

The first operational function of personnel management is the procurement of HR. The HR department is concerned with procuring and hiring people who have the necessary skills, knowledge and aptitudes and performs job analysis, workforce planning, recruitment, selection, placement, introduction and internal mobility (Bădescu et al., 2008, pp. 43-52).

In fact, job analysis is the process of gathering information about operations and responsibilities related to a specific job. Also, HR planning is a process of determining and ensuring that the organization will have an adequate number of qualified people, available at the appropriate hours, who will perform

jobs that would meet their needs and provide satisfaction to those involved (Meyers et al., 2019).

Introduction and orientation are techniques by which a new employee is accommodated in his new environment and introduced to practices, policies and relationships with people in the organization. The new employee must know the principles that define and guide the organization, its mission statement and the values that form its backbone. The movement of employees from one job to another through transfers and promotions is called internal mobility. Some employees leave an organization for various reasons leading to resignation, retirement and even termination of life, these movements being known as external mobility. In the interest of an organization and its employees, job changes should be guided by well-designed principles and policies(Barry et al.,2014).

HR department play an important role in leading a competitive advantage for organizations through the unique differentiator of each organization, ie their people. A HR procurement strategy considers fundamental aspects, such as planning, followed by recruitment and selection of staff, as well as the introduction of employees in the organization and retention. The process of identifying the HR requirements and developing plans to meet these requirements is HR planning (Blajin et al., 2015, pp. 71-72).

In healthcare organizations, HR planning is a continuous process of systematic planning to achieve optimal use of an organization's most valuable asset, namely quality employees. HR planning ensures the best match between employees and jobs, while avoiding labor shortages or staff surpluses. There are four key steps in this planning process, namely the analysis of current labor supply, forecasting labor demand, balancing projected labor demand with supply and supporting organizational objectives. HR planning in the organization is an important investment because it allows it to maintain its indicators of productivity and profitability (Gallardo-Gallardo et al., 2020).

HR planning must be flexible enough to meet short-term staffing challenges while adapting to changing conditions in the long-term business environment. HR planning begins with assessing and auditing the current capacity of HR. The challenges for this are ever-changing forces, such as employees getting sick, being promoted or going on holiday. In order to achieve their goals, HR managers need to develop plans to find and attract qualified employees to select and train. The best employees must be rewarded. Plans must also provide solutions to conflicts or absenteeism (Kenton, 2020).

An organization is as good as its employees, and a high level of employee involvement can

be essential to the success of the organization. If the organization has the best employees and best practices, it can mean the difference between slowness and productivity, contributing to the organization's leadership towards profitability. Of major importance is the improvement of staff use, which aims to streamline the organization's activity, as well as creating the possibility to anticipate the emergence of potential staff surpluses or deficits (Dodu et al., 2017, pp. 55-61). Regarding these objectives, we consider that it is very important to develop the workforce in order to streamline the organization's activity by improving professional qualifications and adapting to the tasks required in the activity.

The training of employees and their professional development determines the improvement of skills and performances in the activity they carry out or are going to carry out. The process of evaluating staff performance is to establish criteria for evaluating the activity and consists of conducting an effective evaluation, discussing with employees the results achieved, but also identifying a way to reward or motivate them, in order to achieve performance. The reward is to establish values of salary and other benefits. In this context, employee career tracking is the collection and processing of information related to their promotion, transfer, departure or dismissal.

Other goals of the HR activity are the organization, the procurement of HR, their adaptation to requirements, the valorization of the employees, as well as the creation and maintenance of optimal relations between them and the employer. The organization aims to create an optimal organizational structure. For this, it is necessary to procure HR through recruitment and selection procedures, the adaptation to HR requirements being achieved through the training and development of employees. Their optimal valorization will be achieved by creating and strengthening motivation, by providing material and intangible rewards, by performance management, but also by creating and maintaining fair relationships between employer and employees (Kenton, 2020).

HR planning involves modeling and implementing analyzes on the factors that may affect that segment of the labor market in which the organization is directly interested, in order to be able to predict as accurately as possible different situations that may arise in the future. If necessary, the restructuring plan of the personnel scheme in the organization aims to identify the number of employees to be laid off, the methods that will be used for the effective dismissal of employees, and the terms in which this process will be unfold (Armstrong, 2006, p.370).

The labor force fluctuation analysis estimates the voluntary departures of employees that the

organization may register in the future. This analysis must also identify possible reasons for the employees' decision. Staff turnover tends to have negative connotations, mainly because replacing lost talent is costly in terms of employee compensation and business profitability. Excessive staff turnover can cost an organization about a third of its employees' compensation package, which includes salaries and benefits (Munns,2020).

In addition to these losses, organizations must control employee morale because poor morale is considered unhealthy for organizations in general. At the level of analysis, it is extremely important to measure this fluctuation as accurately as possible, and, in particular, to carry out a detailed analysis of the causes. To measure labor fluctuation there are several indices that need to be calculated (Bryson and White, 2019).

Staff turnover is the number of employees who leave the organization within a set time. If you have a large staff turnover, it means that many employees leave the organization at a certain time. The reduced staff turnover means that the workforce is relatively stable and that the organization's employees tend to stay. For example, the average staff turnover rate in the UK in 2020 is around 15%, although the figure varies between industries. In 2019, the average rate of staff turnover was 1.3% in the US in the fields of education and health (Munns, 2020).

Employees leave the organization for a variety of reasons, such as lack of cultural aptitude, an unhealthy work environment, or below-average compensation, especially for the best performers or those who manage to assert themselves. However, objectivity is needed for the HR team to understand that poor management of people is also a major culprit in most cases of voluntary departures from the organization. One of the ways this could be demonstrated is how managers develop employees (Andrievici, 2020).

Without proper development, employees maintain a status quo without any improvement in their work performance, which can eventually lead to employees becoming unproductive or feeling inadequate. Such an attitude could have a negative impact on the growth and success of individual employees, as well as on teams within an organization. Employees may also feel that the responsibilities they have been given do not live up to their expectations.

Uncertainties and mistrust can hinder relationships with employees, causing another hurdle in retaining talent. In extreme cases, there may be unfair treatment of employees, such as playing favorites or blaming the workplace. The stability index is the number of employees with at

least one year of service, compared to the number of employees who were registered at the level of the organization a year ago. The last index that needs to be calculated is the analysis of the seniority of the staff in service (Moldovan, 2017).

In our opinion, the possibility of automating activities in health organizations must also be considered, the offer of software products and hardware capabilities becoming richer. Thus, one can consider hiring a part-time person or a freelancer, as well as outsourcing that activity, if it allows. The direct benefits for the organization derive from the full coverage in time of the job requirements through automation or outsourcing, as well as capital savings, in case of hiring a person for part time.

The main object of the skills analysis is a functional analysis on a position. This analysis is performed to identify the job skills required for a job (Lorincova et al., 2019). Another necessary analysis is a behavioral one, in order to be able to establish the dimensions at the behavioral level that influence the competencies that determine the performance on a position or a role (Hassan, 2016). The job description must accurately indicate the levels of hierarchy in the organization, responsibilities and responsibilities, specific tasks, legal and functional requirements, limitations and extraordinary elements.

One mistake to avoid is specifying the skills and qualifications required to fill the position. Setting too drastic rigors in the selection process will massively reduce the number of applications and will have an effect of lowering the employment rate (Popa, 2018). At the same time, the feelings of frustration, of uselessness at work will manifest in a short time after employment. Equally wrong is an underestimation of job or role specifications. An optimal appreciation of the specifications will always make the difference, often the inaccuracies having consequences in terms of the organization's image. When attracting candidates to an organization, it is necessary to take into account the external conditions as well as its strengths and weaknesses (Feffer, 2017).

During the recruitment and selection process, it is sometimes necessary to take into account the human potential of the organization. Often, hiring from an internal source creates morale problems and dissatisfaction can occur among employees. At the same time, the employment problem is only temporarily transferred, for the vacant position the employment procedures will be resumed. In the opinion of other specialists, internal recruitment can be seen as a form of promotion or compensation (Anthonisamy, 2013).

A last aspect, but very important is the familiarization of the new

employee with the organizational culture or with the subculture corresponding to the position and the compartment, in order to minimize the risk of abandonment. Modification, termination or suspension of the individual employment contract is also related to staff management (Bell and Kozlowski, 2008).

If for the personnel management part it is essential to look carefully at people, in the case of payroll the attention is focused on the calculations, and responsible for the correctness of their preparation is usually the accountant. An accountant with responsibilities in the field of HR, in addition to the salary calculation, must prepare other supporting documents, which should explain each calculated amount that is included in the salary. In this sense, the timesheets must be introduced and the payroll must be drawn up, also called the payroll statement (Burlea-Şchiopoiu, 2008, pp.118-124).

Timekeeping is the basis for entering attendance data for salary calculation. It is a supporting document that shows the number of hours worked by the employee in a certain period, usually a calendar month. As such, regardless of whether an organization has one or more employees, it must go through all these legal obligations (Popa, 2018).

In our opinion, the right software applications can help organizations simplify these processes, ensuring that they benefit from more facilities, shorten processing time and reduce process errors.

3.3. Performance orientation in personnel policy

In an economy characterized by increasing competition, competitiveness becomes a sine qua non for the existence of health organizations. Achieving competitiveness implies the rejection of conservatism and immobility, respectively its permanent adaptation to market conditions and patient requirements. The current period is characterized by the dictation of the patient in which the bidders, in order to be competitive, must constantly be concerned with meeting his requirements. Consequently, we can say that there is a strong interrelationship between the quality of medical services and competitiveness, and the latter is an engine for the development of organizations.

The application at the level of health organizations of a quality-focused strategy has as main consequence the improvement of the organizational reputation, created by the quality of the medical services offered. It is gained over time by the concern to provide patients with the services they want, at pre-established standards. One consequence is the development of the service market, the efforts made to increase the quality and improve the performance

of services leading to the growth of their market, even if sometimes the prices are slightly increased.

Another consequence of the implementation of a quality-focused strategy at the level of health organizations is the reduction of costs, by eliminating the additional expenses generated by non-quality, expenses that the organization will bear from its own revenues. At the same time, respecting commitments is very important, because the quality seen alone is not enough to ensure competitiveness. It must be integrated into the organizational strategy, taking into account the environment and the competitive situation in which the organization operates. In other words, the strategic importance of quality for business success is nullified if it is not integrated into the overall strategy of the organization.

To fulfill their mission, health organizations rely on the professionalism of employees and the assimilation of high-performance medical technologies and practices. At the same time, the aim is to comply with the regulations regarding the storage of materials and waste, as well as the protection of the environment. The Integrated Quality and Environment Management System is a necessity, with a favorable impact on the organization's progress and increasing patient satisfaction. This system will provide the framework for continuous improvement, ensuring future trust for both the organization and patients.

The interest shown by health organizations in quality is also due to possible external threats, generated by real or potential losses of competing organizations, losses that are caused by non-quality. This is the reason why quality is seen as a strategic contribution that cannot be neglected to achieve competitiveness. The competitiveness of the organization can be obtained through an offensive development strategy, defined in terms of knowledge of the economic and social environment. Within this strategy, an important role is played by quality, which represents on the one hand a strategy to differentiate the services offered, and on the other hand a means by which the organization creates competitive advantages.

Ensuring long-term competitiveness can be achieved by applying quality-focused strategies that have the patient as a central element, with his expectations (needs), desires and preferences. In support of the application of a strategy to improve competitiveness, through quality, we can recall that the quality of services provided contributes to improving the image and notoriety of the health organization, their superior quality having the ability to create market and expand the organization's market.

From the point of view of performance, the quality of the offered

services entails obtaining better prices and implicitly higher profits, which in turn can be reinvested in other activities. It should be noted that the application of a quality-focused strategy does not necessarily entail additional costs for the organization, and quality improvement solutions can be identified while maintaining or even reducing costs by attracting the support of all employees in this direction. As such, implementing a quality-focused strategy at the organizational level is not an easy process.

The complex activity developed by the organizations in the field of health presupposes the specialization of the structure, of the personnel and implicitly the separate development of the spheres of activity of the organization. For example, at the level of February 2021, the structure of the medical, sanitary and auxiliary staff of a profile organization included eight middle management positions and 72 positions with executive functions. From the point of view of the gender of the employees, 13 men and 67 women are included in the respective staff structure. Regarding the TESA segment, some of the support services were outsourced, being concluded service contracts for tax consultancy, audit, HR support, web administration, labor protection and occupational medicine, as well as for the maintenance of the thermal power plant, including regarding the waste recycling activity.

In other words, the policy on social responsibility of health organizations aims to respect fundamental human rights, as set out in the Charter of Fundamental Rights of the European Union and the Labor Code and to inform management, employees and collaborators of the principles social responsibility. In this sense, the main objective proposed in this direction is to focus the actions of organizations towards protecting the rights of employees, anticipating their future needs. Another objective is the continuous improvement of health and safety conditions, as well as the continuous improvement of the efficiency of the social responsibility management system and organizational performance.

The investments made have an important social component, these being found in constructions, in environmental aspects, technologies, in the organization of supply, storage and sales flows, as well as in the improvement of working conditions. It is very important that the good results of the organization are reflected in an employee reward system. Thus, by increasing salary income, a positive contribution to the life of the community will be observed, thus participating in solving many of the problems faced by employees.

In our opinion, the main difficulty that arises is to attract and motivate all employees of the organization in the process of ensuring the quality of services provided, through the quality of

work performed. The low interest sometimes shown by them for the quality of work can be justified on the one hand by the poor development of moral values in the work process. On the other hand, this disinterest can be motivated by the lack of motivations such as financial compensation to ensure their material well-being, working conditions and safety, opportunities for continuous training and retraining or opportunities to develop a career according to their skills.

4. RESEARCH ON THE EFFICIENCY OF HUMAN RESOURCES ACTIVITY

The decisional problem of the scientific approach consists in the evaluation and identification of some measures to increase the performance of the employees in the field of health in the context of the COVID-19 pandemic. For this, it is important to study the sources of pressure associated with human resources as well as their origin, being relevant to perform an analysis on the impact that these sources of pressure have on the commitment and attitude of employees.

Another important aspect that needs to be studied refers to the differences that occur in the individual consciousness of employees and their managers. Also, *the purpose of scientific research is to optimize the activity of HRM.*

4.1. The objective and hypotheses of the research

In present context, disturbed by the COVID-19 pandemic and socio-economic effects generated by it, the management is constantly required to face transformations that underlie decisions on HRM in health organization. Based on the considerations that substantiated the formulation of the purpose of scientific research, it was possible to establish *the objective* of the research, which identified necessary information, namely *Identifying and evaluating the factors that affect the motivation, attitude and satisfaction of employees working as medical, health or auxiliary in health organizations directly involved in the fight against the COVID-19 pandemic.*

Through the specialized literature, numerous theoretical aspects have been highlighted that refer to HR, being noted the major importance that HRM has in influencing the management of the health organization. Thus, starting from the results of the previous research, in order to define the research framework and to build the tools for collecting the necessary information, the hypotheses of the scientific approach were formulated.

Motivating employees through compensation is a HR 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. Compensation may include basic payment, overtime, bonuses, travel or lodging allowances, additional health insurance, commissions, and distribution of a share of the profit or a number of free shares. Employee migration has become a more important aspect of organizational life, with many intending to change their current positions (Moldovan, 2017).

A successful organization is aware of the importance of its staff and their positive motivation. HR are the factor that helps the organization to achieve its goals. Today, when advances in technology, information and globalization occur most often, the human factor becomes the biggest competitive advantage. The importance of HR is considered strategic, becoming part of the strategic management of an organization and an important factor for sustainability (Hassan, 2016).

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). To motivate employees there is a wide range of tools used. Taylor defined in 1911 money as the most important factor that motivates employees to achieve higher productivity. This form of reward results in employee satisfaction and directly affects their performance. Salary is a valuable tool that plays an important role in improving employee performance as well as organizational productivity.

Salary, promotion, bonuses and other types of rewards improve employee performance. Praise, setting realistic and achievable goals, properly defining workload, employee involvement, appropriate empowerment, responsibility, feed-back, work equipment, expressing positive personality traits of a supervisor, appropriate leadership style, fairness of senior staff and organization and the provision of relevant information are considered to be other important motivating factors (Grencikova et al., 2017).

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 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, job dissatisfaction with 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:

H1: There is a direct link between the employee's motivation and his commitment.

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 was provided by Locke, as a pleasant or positive emotional state, resulting from the appreciation of a job or work experiences. In Locke's definition, importance is given to affection and feeling, as well as knowledge and thinking. When we think, we have feelings about what we think. Instead, when we have feelings, we think about how we feel (Saari and Judge, 2004).

The mood can influence the experience of emotionally significant events in the workplace, which in turn influences job satisfaction. There is a relationship between mood or personality and job satisfaction. 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, at in turn, will contribute to increasing their satisfaction (Lorincova et al.,2019).

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. Effective HRM is essential to achieve the organization's goals and increase productivity.

Any practice that deals with the strengthening of skills, commitment and the strengthening of culture can be considered a HR practice. Practice can take the form of a system, a process, an activity, a norm, a rule, an accepted or expected habit, or just a way of doing things. In this context, HR practices that are incremental and collaborative are needed and provide employees with the opportunity to make decisions that affect their work and to share the rewards of their creative efforts.

HR practices play 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. HR practices are considered to be very effective in preserving valuable human capital.

Health organizations have learned the importance of good relations with the workforce, those who do not realize the importance of its HR cannot progress. Employees also like the organizations that take care of them and reward their services accordingly. In the workplace in employee relations there is a strong association between HRM and the attitude and performance at work of employees. HR practices are the primary means by which organizations can influence and shape the abilities, attitudes, and behavior of individuals to do their job and thus achieve organizational goals (Anthonisamy, 2013).

Productivity is influenced by employee motivation and performance is influenced by employee skills, motivation and organizational structures. The effectiveness of HRM practices depends on how they create appropriate attitudes and behaviors for employees, in addition to their implementation. HR 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. The individual benefits of performance appraisal can be brought to the attention of employees. It is not only for promotion and growth, but also for individual development and also better career opportunities. 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 following hypothesis is formulated:

H2: There is a direct link between the employee's attitude and his satisfaction.

Employee performance capabilities are a function of how organizations build and use their stocks of explicit and tacit knowledge effectively. Highly committed engagement-based HRM strategies are designed to develop such knowledge-based performance capabilities. Because they are dependent on employees' cognitive responses, on what they experience and see, affecting them in the workplace, it follows that the fundamental strategic goal is to create the types of experiences and conditions in the workplace

for employees who will respond desired by the management of the organization.

4.2. Scientific research methodology

The establishment of the scientific research plan was made after the objectives were defined and the research hypotheses were enunciated, this being 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 may influence the activity of HR. At this stage, we proceeded to identify and evaluate the factors that affect the motivation, attitude and satisfaction of employees. To this end, the role and content of HRM was assessed.

In the second stage of the plan, a qualitative research was carried out, in which 20 people were interviewed who work as medical, health or auxiliary staff in health organizations in Romania, in different localities, selected from the relational circle of the researcher, by applying a recruitment guide and an interview guide. The purpose of the qualitative research was to build and validate a set of questions that can be applied later in the form of a questionnaire in a quantitative research. The techniques used in the interview were blind exploitation and direct observation.

The third stage of the scientific research plan consisted of a quantitative research, carried out by applying a questionnaire to the 384 employees of some hospital units involved in activities to combat the COVID-19 pandemic. The proposed purpose was to assess the impact of the factors involved on the motivation, attitude and satisfaction of them.

The researched community was 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. These criteria were applied in both the qualitative and quantitative stages.

The qualitative research was carried out in the form of in-depth interviews, the participants in the qualitative research being selected from among the people in the relational circle of the researcher, people working in health organizations, by creating and applying a recruitment guide to

verify the correspondence of guests with the requirements of the research. 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, during February 1st to 5th, 2021, 20 in-depth interviews were moderated online by the researcher, lasting about 20-25 minutes each, with individuals working as medical, health or auxiliary staff in organizations from the field of health on the Romanian territory. 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 applied, with the role of structuring the interviews and facilitating the note-taking process.

For the quantitative study, the respondents were invited to complete a questionnaire addressed to staff of health organizations. This questionnaire was applied in compliance with the rules and legislation in force related to the protection of personal data. Within the quantitative research carried out between February 15th and 28th, 2021, a number of 384 completed questionnaires were registered. The data collection was done through a questionnaire accessed through an electronic form, the maximum time required to answer questions being a maximum of 20-25 minutes.

In the qualitative stage of the scientific research, the aspects on which the HR activity is based in the organizations in the field of health were explored. In this first step of the scientific approach, the identification of the factors that influence the activity of HR was performed and a set of questions was validated, which represents the purpose of 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 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 the activity of HR. Being of closed type, to each question the respondent chose an answer from three possible variants. 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 a tool used in quantitative scientific research to investigate the views of the sample of respondents. This questionnaire was designed to meet the objective proposed in the closed-ended research survey. 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 contains demographic questions addressed in order to identify differences between all categories of respondents and the second section contains questions on the impact of factors acting on employees of health organizations.

4.3. Research results. Their interpretation

The answers obtained from interviews were noted and analyzed in terms of content, in order to identify issues of a subjective nature that contribute to identifying and evaluating the factors that affect the motivation, attitude and satisfaction of employees in health organizations. The questions asked to the participants in interviews were according to the interview guide. Previously, people underwent a pre-compliance test, answering the questions in the recruitment guide.

The answers were provided sequentially, on this occasion being noted the reactions of a subjective nature and the comments of the respondents by the researcher, on this occasion being verified the validity of the research hypotheses. The scientific research aimed to identify and evaluate the factors that affect the motivation, attitude and satisfaction of employees, assessing the differences that occur in the individual consciousness in this pandemic period.

The participants in the qualitative research were selected from among the people in the relational circle of the researcher, the recruitment being made according to availability and accessibility. The recruitment process took into account the involvement in the activity of health organizations of persons invited to participate in in-depth interviews, who were interviewed about the specific position held in the organization in which they operate. All this was done in order to achieve a correct interpretation of the results obtained from the interview. The demographic variables used in describing the demographic profile of the participants in the qualitative research were gender, age, seniority in the current job and the hierarchical level of the position held.

According to the interview guide, in the first stage of the interviews, for a few minutes, the participants were introduced to the

general framework of the interview and were presented with the proposed purpose. At this stage, the rules according to which the interview is conducted and the technical aspects of the in-depth interview were explained, including aspects of the nature of the person being questioned about why notes are taken, ensuring the interview participant regarding its confidentiality and anonymity.

Starting from the premise that the notion of HRM has a wide meaning at the level of the group of respondents, the researcher also presented some general elements of it. This was necessary in order to eliminate possible confusion related to the terms and to facilitate the fluency of the sequence of questions and answers that were to be addressed. Regarding this aspect, a first conclusion was that the notion of HRM is known and familiar to the participants, the concept being broadly characterized without difficulties by them.

Thus, the qualitative research could continue without the risk that some of the answers would be formulated by the respondents in ignorance. The answers provided by the respondents to the closed questions were noted and processed in tabular form. Regarding the variables that characterized the questions, they were favorably validated through qualitative research, and it was not necessary for some of the questions to be eliminated or reformulated. In this context, the result obtained confirmed and maintained the proposed questionnaire to be applied.

The results obtained after the application of the questionnaire were integrated in tabular format and the interpretation of the results allowed us to quantify the degree of validation of the 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 answers were prepared through factorial analysis of the variables.

Verification of H1 hypothesis validation was performed by factor analysis of variables related to questions G1, G2, G3 and G5, including T and ANOVA tests, which showed that the answers received to the questions are very poorly correlated, Pearson correlation values being close to zero and statistically significant. This means that the questions approached different topics, but which, cumulatively, lead to the validation of the research hypothesis through the average values obtained. Considering the analysis undertaken on each category of questionnaire respondents, the explanations generated by the data obtained by qualitative techniques, as well as the factorial analysis performed, we can argue that H1 research hypothesis is validated there is a direct link between employee motivation and commitment.

Verification of H2 hypothesis validation was performed by factor analysis of variables related to questions G4, G5, G6 and G7, including T and ANOVA tests, which showed that the answers received to questions are correlated, Pearson correlation values being diverse and statistically significant. This means that the questions, cumulatively, lead to the partial validation of the research hypothesis through the average values obtained. Considering the analysis undertaken on each category of respondents, the explanations generated by the data obtained by qualitative techniques, as well as factorial analysis performed, we can argue that H2 research hypothesis is partially validated, not always a direct link between employee attitude and satisfaction.

The evaluation of fulfillment of the research objective by applying qualitative techniques and the questioning of a sample of 384 respondents leads us to the conclusion that the research hypotheses and the research objective were correctly formulated and met respectively the results of scientific research can be developed.

5. CONCLUSIONS & ACKNOWLEDGMENT

The main objective of this scientific research was to identify and evaluate the factors that affect the motivation, attitude and satisfaction of employees working as medical, health or auxiliary staff in health organizations directly involved in the fight against the COVID-19 pandemic. Following the research carried out both qualitatively and quantitatively, the validation of the two research hypotheses highlighted the existence of a direct link between the employee's motivation and his commitment.

At the same time, it has been shown that there is not always a direct link between the employee's attitude and his satisfaction, the current pandemic context exacerbating the differences found. The results obtained maintained the conclusions formulated in previous research, the research model developed by the author in order to facilitate the transformation of HRM in health organizations proving its reliability in the current pandemic context, with positive impact on public health and national security.

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PORTER'S DIAMOND MODEL AND THE COMPETITIVENESS OF THE TURKISH DEFENSE INDUSTRY

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Abstract: *Turkish Defense Industry is the locomotive of the national technology move. However, there is a need to develop strategies in line with the national strategic objectives to increase the contribution of the defense industry to national competitive edge. The ever-changing environmental and technological conditions and advances in the understanding of defense and security make it necessary to update vision for the defense industry. Porter's diamond model has become a generally accepted and frequently used model in terms of providing a more systematic and disciplined perspective in the context of competition strategies, promoting the creation of a value chain on a sectorial basis and supporting national competitiveness. Towards this end, the aim of this study is to analyze Turkey's defense industry's competitiveness by means of Porter's diamond model and present a future perspective. The reports of the Defense Industry Presidency and the Defense Industry Association have been systematically examined and analyzed.*

Key words: *Defense Industry, Defense Planning, Porter, Diamond Model*

1. INTRODUCTION

Lately, with the impact of the political and military pressure on Turkey, Turkish defense industry has gained momentum and experienced a similar dynamic like the mid-1980s. It has become increasingly critical to determine the strategies to make the contribution of the defense industry sustainable to the national competitiveness since it has been determined as the locomotive of the national technology move. Within the scope of the Vision 2023 studies, it has been determined on the basis of meeting the defense needs at the maximum level from the domestic market. Along with these, the concentration on the export of

defense products in the Eleventh Development Plan draws attention. Accordingly, analysis is needed to review the strategy and determine the strategy within the framework of the new vision.

One of the analysis methods that can be used in this context is Porter's diamond model. As a matter of fact, competitiveness can be handled at micro level on business or sector basis, as well as at macro level on a national or regional basis (Kuloğlu, 2016). It is seen that different models contribute to the determination of strategy road maps for the defense industry by different actors. The Defense Industry Presidency (SSB), which is officially responsible for the top policy, conducts current situation analysis within the scope of strategic planning, clusters such as OSSA (private sector cluster located in OSTIM organized industry zone), SAHA Istanbul (a nongovernmental organization representing private sector clusters) within the scope of developing international competition, professional organizations such as SASAD (a nongovernmental organization representing defense industry) within the scope of sectoral analyzes, and non-governmental organizations such as STM ThinkTech within the scope of foresight and insight studies. In addition, it is seen that analyzes are made with different methods within the scope of academic studies. For example; Bilgen (2013), Bilgen and Varoğlu (2016) examined the competitiveness of the defense industry by implementing competitive indices that determine the framework of the diamond pattern in the focus groups, Ozgen (2016) analyzed the Turkey's defense industry policy by using the process model method, Ocak et al (2016) examined the elements used in the vision and mission statements of Turkish defense industry companies and the compatibility of these elements with the national defense industry guidance documents, Bayrak, Bakırcı and Sarıkaya (2016) tested the limits of efficiency with data envelopment analysis, Kurç and Bitzinger (2018), Öksüz and Öztürk (2019) conducted a SWOT analysis for the defense industry, focusing on the internal functioning and examining which national or international factors had the greatest impact on defense industry and arms trade policies with case studies and comparative analyzes.

In particular, the rapidly changing environmental conditions, changes in technology, developments in defense and security understanding, and advances in the country's vision make it necessary to update and improve the analyzes. As a matter of fact, it is understood that

the analysis levels of the studies mentioned above are organizations or clusters, and the sectoral analyzes in the context of contributing to national competitiveness have not been sufficiently made. PESTLE and SWOT analyzes, which are used as a method in planning or indexing studies, are seen to be used predominantly. Turkey recently needs methods to analyze the competitiveness of the interests to the fore. It is necessary to carry out studies to determine the competitive power within the framework of the ecosystem understanding that will comprehensively handle the R&D, design, production, distribution, maintenance and disposal activities of the system, subsystem, component, weapon and equipment, as well as other service procurement.

Porter's diamond model, which deals with the competitive power of the industry with an ecosystem understanding, has been widely accepted and has been discussed in terms of different sectors. For example; Öz (2002) used this model in glass, construction, leather, automobile and steel industries, Gürpınar and Barca (2007) furniture industry, Olcay (2011) ceramic industry, Akdağ et al. (2014) textile and ready-to-wear industry, Bilir (2016) tourism industry, Kuloğlu (2016) benefited from the model in the context of furniture products, fabricated metal products and electrical equipment products manufacturing sectors, Köksoy (2018) dairy products, Öztürk (2018) accommodation sector, Erkahraman (2019) crane sector and Yolcu (2019) boron mining sector.

Porter's diamond model has generally been a preferred model for determining whether clusters can provide competitive advantage (Wickham, 2005; Ketels & Memedovic, 2008; Doegl et al., 2012; Jhamb, 2016). As a matter of fact, the starting point of the model is to reveal the reasons why a country is successful in one industry but fails in other industry clusters (Öz, 2002, p. 510). Because Porter (1998) pointed out the importance of pre-competitive cooperation of local actors in the formation of the factors in the diamond model, and included sectoral actors as well as institutions in the relevant public, university, private or non-governmental sectors to the ecosystem. Accordingly, it is seen that in aviation clusters analyzes are made using the model at micro level (e.g. Yalçınkaya & Adiloğlu, 2014; Leg, 2015; Köroğlu & Eceral, 2018). Based on this understanding; the analysis of the Turkish defense industry, whose exports are increasing, providing technology gains with original product designs,

and which constitutes the backbone of stable economic growth, was made by Porter's diamond model method. The study primarily focused on the concept of sustainable competitive advantage, then the diamond model of Porter was explained, the Turkish defense industry was analyzed in accordance with the model and the results were presented. The aim of this study was to analyze Turkey's defense industry's competitiveness and present a perspective. The reports of the Defense Industry Presidency and the Defense Industry Association, which is the regulatory body of the Defense Industry, have been systematically examined and analyzed. In addition, national and international literature has been used to compare competitiveness.

2. PORTER'S COMPETITIVE STRATEGIES AND DIAMOND MODEL

Businesses, sectors or countries that can produce more economic value than their competitors provide competitive advantage (Barney & Hesterly, 2015, p.45). Especially in sectors where competition is intense, businesses aim for competitive advantage in every strategic move they make or respond to the actions of their competitors (Hitt et al., 2011, p.130). The strategy preferred should be in a way to realize the mission, support the goals, make use of environmental factors with strengths, eliminate threats to weaknesses (Barney & Hesterly, 2015, p.59).

Competition strategy has become an important tool to achieve goals (Ehie & Muogboh, 2016; Kharub & Sharma, 2016, 2017; Olhager & Feldmann, 2018). According to Mintzberg (1967, p. 73), strategy is "the process of making important organizational decisions" and "the sum of all decisions". Strategies are formed in different contexts such as political, sociocultural, economic, technological, military, geographical and historical (Samaras & Hills, 2013). In the strategic management literature, Porter's competition theory has been a more preferred theory in terms of providing competitive advantage in the field with its holistic approach. The main reason for this is; While the previous theories only worked on one or two dimensions, this theory is the first multilevel theory that realistically connects companies, industries and nations (Peng, 2009, p. 125).

According to Porter, competitiveness for a country is the share of a country's products in world markets. This competitiveness is like a zero-sum game, because the gain of one country means the loss of the others (Siudek & Zawojska, 2014, p.93). According to Porter (1998), the main competition takes place between industries. To explain why certain firms in a country can

successfully compete against foreign competitors in certain segments or industries, Porter (1990) developes an analytical framework and as a result of his study based on more than 100 case studies in 10 countries, he points out four factors that contributed to the competitive advantage of businesses. Based on this, Porter (1980) proposes a model called the "Diamond Model" to reveal how an economy gains competitive advantage through the interaction of various endogenous determinants in his study, in which he analyzes the reasons for the differences in the national competition level of countries. The four-factor model developed by Porter is a dynamic model that interacts with all elements supporting each other (Vlados, 2019, p.48). Elements of the model as shown in the figure below are; factor conditions, demand conditions, relevant and supporting industries and firm structure, strategy and competition. Adding chance and state factors to these four basic factors, Porter defines the role of the state as eterminant on four basic factors (Prestowitz 1998; Giap 2004; Budd and Hirmis 2004; Thompson 2004; Fendel and Frenkel 2005; Ezeala-Harrison 2005; Jhamb, 2016) Therefore, it will be useful to consider the role of the state from a supervisory and regulatory perspective.

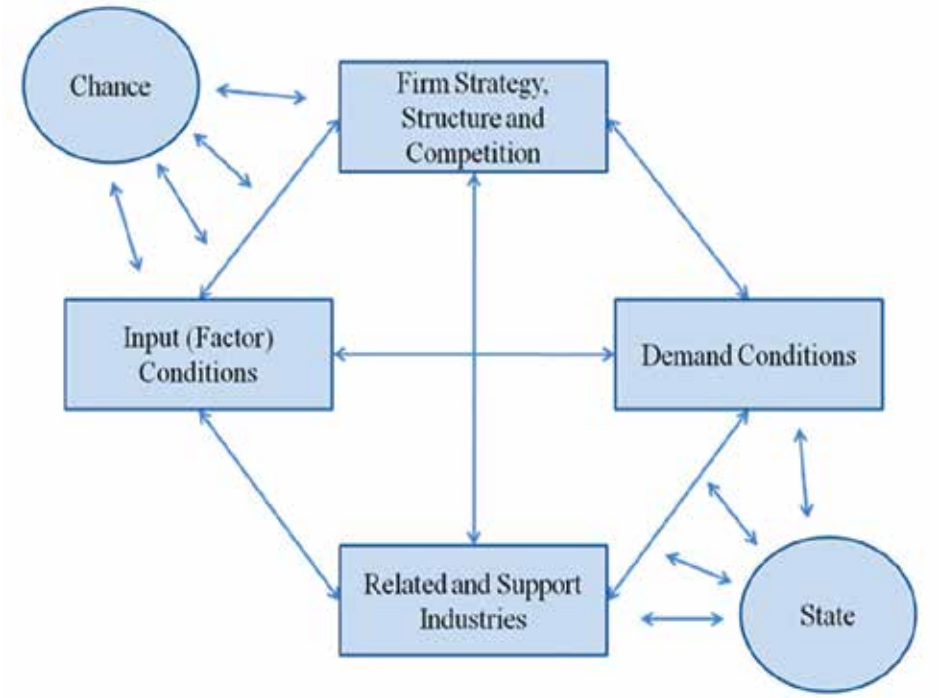

Fig. no. 1 *Porter's Diamond Model Source: Porter, 1990*

The necessary inputs that an organization needs to compete in the market form the factor conditions. Having sufficient factor conditions ensures the correct functioning of the ecosystem (Jhamb, 2016, p.142). Factor conditions, which are the preconditions for competing in a sector, are; human resources, physical resources, information resources, capital resources, and infrastructure resources (Porter, 1990). Among these, modern infrastructure and advanced qualified workforce are seen as developed factors (Öz, 2002, p. 515). According to Porter (1990, p. 211), the existence of developed factors is extremely important in increasing the competitiveness of the cluster.

Human resources include features such as professionalism, specialization and business ethics together with the quality and quantity of the workforce (Bilir, 2016). Within the scope of physical resources, location, geographical features, climate characteristics and water can be considered together with raw materials including energy (Vlados, 2019, p.35). Clustering of actors within the ecosystem in a specific geographic area increases competitiveness (Porter, 1990).

Business intelligence, market knowledge, academic knowledge and technical capacity constitute the sources of information. The presence of advanced enterprises that are aware of new technologies in an industry provides a competitive advantage around the world. Capital resources include financing expenses and the structure of capital markets as well as the size of investments. Although very general, there are transportation, communication, health and education opportunities, carrying capacity and sociocultural elements in infrastructure resources (Porter, 1990).

According to Porter, domestic demand determines the rate of improvement and innovation provided by a country's businesses. The composition of domestic demand shapes the way the business understands, interprets and responds to the needs of buyers. The competitiveness of the sector increases if local demand can provide a clear picture of businesses regarding the users' needs. If the composition of the demand includes international needs in addition to local needs, this is a factor that supports national competitive advantage. If the domestic demand for products is high, investments are made in new technologies to improve products and production capacity, which ultimately increases the competitive power (Karkkainen, 2008, p. 24). The sophistication of the domestic demand will help local companies to increase their production capacities. As a result, a developed market will force the industry to produce

products worldwide (Fainshmidt et al., 2016, p.84). In addition, the intensity and complexity of the demand will provide competitive advantage by producing higher value-added products (Munshi et al., 2019, p. 341).

Relevant and supporting industries are organizations that regulate and determine activities in the value chain while producing and competing with complementary products. The presence of supplier companies that can compete internationally in the industry also creates advantages for sub-industries. Such suppliers provide timely, fast and sometimes preferential access to the most cost-effective inputs (Munshi et al., 2019, p. 342). In addition, it can lead the technological developments in the sector.

The presence of strong suppliers in an industry is closely related to improved factor conditions and demand conditions (Porter, 1990, p. 162).

Developed, relevant and supporting industries accelerate the innovation process, while increasing the capacity of businesses in the supply chain or value chain. The presence of world-class businesses in the value chain contributes significantly to other businesses with information dissemination, operational efficiency and economies of scale (Furman, et al., 2002, p. 903). The existence of relevant industries increases the chances of other companies in the ecosystem to identify new opportunities, depending on information sharing (Jhamb, 2016, p. 142).

Business structure, strategies and competition determine the way businesses are established, organized and managed. The presence of competitors in the sector leads to innovation and continuous improvement (Porter, 1990, p. 76). The presence of a large number of competitors in the industry motivates all companies to be aware of the actions of others and to adopt the best strategy against competition (Davies & Ellis, 2000, p. 1192).

According to Porter, competition is a dynamic phenomenon and the competitive advantage of the enterprise is not only provided by responding to the environment, but also by shaping its environment in line with its own needs. it makes the surrounding conditions more suitable with its productive and innovative activities (Porter, 1990). The way for a country to gain competitive advantage is through development and innovation. The enterprises that can compete with the best companies in the international market are those that are exposed to intense competition at the local level (Karkkainen, 2008, p. 21). According to Porter, businesses that survive in sectors with intense local competition

show higher performance globally. Because businesses that can survive in an intense competitive environment can develop effective strategies to remain competitive and improve their production capabilities. Conversely, businesses operating under government protection and not exposed to competition perform below average in the global competitive environment (Fainshmidt et al., 2016, p. 84).

Another factor in the strategy determination of businesses is social culture. While determining their strategies, they determine the most appropriate strategy for their business model and culture (Mintzberg et al., 1998). Long-term strategies are determined in countries such as Germany, Japan and Sweden, where planning culture is developed (Porter, 1998). Oz (2002) in his review for Turkey's construction firms has revealed that cultural proximity will also be important in terms of international competition.

According to Porter, the role of the state in competition is to affect the other four factors. The existence of a sensitive, effective and organized public sector helps to create effective cooperation (Porter, 1990). According to Porter, national and local governments play an important role in promoting a pre-competitive cooperation. Because the state must interact with businesses in order to increase the industry's export revenues and innovation capacity and to create a sustainable international industry (Porter, 1990, p.127). In this direction, the state can support the industry by creating suitable conditions for competition and encouraging the entrepreneurial spirit (Porter, 1998). In evaluating the performance of exporting firms in Turkey Robust empirical study (2019) it has identified the role of state regulators.

The state is the main actor that determines and regulates the product and quality standards, which are the key for businesses to operate effectively in a competitive environment. To increase exports in the industry, innovative approaches are directly related to the government's perspective on the industry. For example, tax exemptions to be applied by the state to an industry will make a significant contribution to the development of the industry (Vlados, 2019, p. 36).

Porter defines events that develop outside the control of businesses and the state and cannot be intervened as "chance". These events can change the structure of the industry and offer opportunities to improve the competitive position of the business. Chance is the possibility that external events such as natural disasters and war may affect or benefit a country, an industry or a cluster. But these events are completely beyond the control of the

State and industry managers (Jhamb, 2016, p.143). Following events can be considered as an example of luck factor; major technological discontinuities, changes in global financial markets or exchange rates, increases in international or regional demand, political decisions of foreign governments (Porter, 1990, p. 192). There are also studies describing this factor as global developments instead of chance (Akdağ et al., 2014). Sağlam (2019) found that the luck factor plays a regulatory role in the effect of demand conditions and factor conditions on export performance.

3. EVALUATION OF TURKISH DEFENSE INDUSTRY WITH PORTER'S DIAMOND MODEL

One of the main elements of defense management is the armament planning of countries to support their political and military goals. In armament planning; determining the procurement strategy, developing the defense industry base and armament cooperation are of great importance (Öztürk, 2005). For this reason, the needs arising from the changes and developments in the operational concepts and the technological developments on a global basis should be transferred to weapon systems quickly, conveniently and with little cost (Meydan & Polat, 2017, p. 70). Accordingly, the importance of allocating national resources for defense planning becomes clearer. With the development of defense planning and defense resource management understanding, it is possible to increase the cooperation of stakeholders in the defense ecosystem and to prevent the waste of resources such as workforce, technology, infrastructure and information that will provide sustainable competitive advantage.

In this context, it is possible to come across studies showing that strategic management tools are used in defense planning. For example; Bilgen (2013) and Bilgen and Varoğlu (2016) tried to make the competitive structure more understandable by obtaining a composite competitiveness index using the diamond model. Yalçınkaya and Adiloğlu (2014) conducted an analysis specific to the Eskişehir aviation cluster and concluded that the cluster should increase cooperation with educational institutions in order to increase qualified workforce. Leg (2015) examined aviation clusters in the samples of Germany, France and Canada according to Porter's diamond model. Köroğlu and Eceral (2018) found that innovation ecosystem and social capital were effective in competitiveness as a result of the survey they conducted in Ankara clusters. Meydan and Polat (2017) discussed the applicability of the balanced scorecard in defense

planning. In addition, Demirtaş (2013) analyzed the aviation sector and Öksüz and Öztürk (2019) analyzed the development of the defense industry using SWOT analysis.

The strength of Porter's diamond model compared to other models is that, it gives more effective results in determining the sectors that contribute the most to the national competitiveness and high productivity (Akdağ et al., 2014, p. 330). Porter's model has been a generally accepted and frequently used model in terms of presenting a more systematic and disciplined perspective in the context of competitive strategies, encouraging the creation of value chain on a sectorial basis and supporting national competitiveness. It was used for the first time in this study in the context of the competitiveness of the defense industry. For this reason, the defense industry was briefly summarized in the study and analysis was carried out on the determinants of the model.

3.1. Overview of the Defense Industry in Turkey

Since the end of the cold war, the global defense industry has been in an important transformation and according to academics, this change takes place on two main axes as "globalization integration" or "self-sufficiency". On the axis of globalization; Mergers, acquisitions, partnerships and collaborations, export-based production, free markets, and integrative defense industry policies are included due to increasing R&D and system costs. On the axis of self-sufficiency, there are countries that are newly entering the market and whose main objectives are to reduce the influence of the supplier states on their foreign policies and to become independent, powerful and wealthy.

Global changes such as; the pressure on defense spending, difficulties in international cooperation, regional conflicts, humanitarian aid gaining importance and the doctrine of protection responsibility, increasing the effectiveness of regional formations, and global powers not approaching technology transfer, experienced after the 2000s have also been reflected in the defense planning approach and led the countries to use internal resources. In line with these developments in the defense industry, internationalization aimed at breaking the American sovereignty, catching the economy of scale while moving away from integration and increasing the participation of the industry in the supply chain have increased with the orientation to domestic markets (Hooke, 2005).

In this context, the need for an advanced defense industry for the

Republic of Turkey, which is adjacent to the world's most problematic regions, is of particular importance. The idea of domestic and national defense industry has always been on the agenda since the Ottoman Empire. The embargo on Turkey's Cyprus Peace Operation was a turning point for the defense industry. This process resulted in the emergence of domestic defense industry companies such as ASELSAN (1975), İŞBİR (1979), ASPİLSAN (1981), and HAVELSAN (1982). The "Turkish Defense Industry Policy and Strategy" published in 1998 with the establishment of the Undersecretariat for Defense Industry with Law No. 3238 in 1985 were the most important step in restructuring the defense industry. On the basis of these steps, there is always an effort to create a domestic and national defense industry.

International pressure Turkey faced after 2016 has created a new momentum in defense industry. With the policies determined at the end of the 1990s, a certain level was reached in the defense industry, the export orientation began to manifest itself in the Tenth Development Plan, and efforts to develop completely national and domestic systems with original designs have intensified. The number of projects carried out by SSB (2019) has reached 667 and a portfolio of 60 billion dollars. The turnover value reached 8.761 billion USD including 2.188 billion USD export. In addition, considering that the budget allocated for R&D is 1.448 billion USD, the value attributed to original design and technology gain becomes more meaningful. As a matter of fact, as a policy and measure in the Eleventh Development Plan; It is envisaged to focus on projects that will reduce external dependency, to strengthen the educational infrastructure to strengthen the defense ecosystem, to support SMEs, to increase and export cooperation, and to focus on multiple use by providing technology transformation. In this direction, it is aimed that the localization rate of defense industry products will be 75% in 2023, the turnover will reach 27 billion USD, the exports will exceed 10 billion USD and the employment will approach 80 thousand (Eleventh Development Plan, 2019).

Current policy and strategy documents now mention the competitive power in the international arena with the localization and nationalization of defense products. For this reason, it has become more important to strengthen all actors in the value chain with a more integrated approach. For this reason, the correct description of the defense ecosystem is critical in assessing the competitiveness of the Turkish defense industry. Because it also determines the level of analysis and the context of the analysis. The figure below shows the ecosystem of the Turkish defense industry.

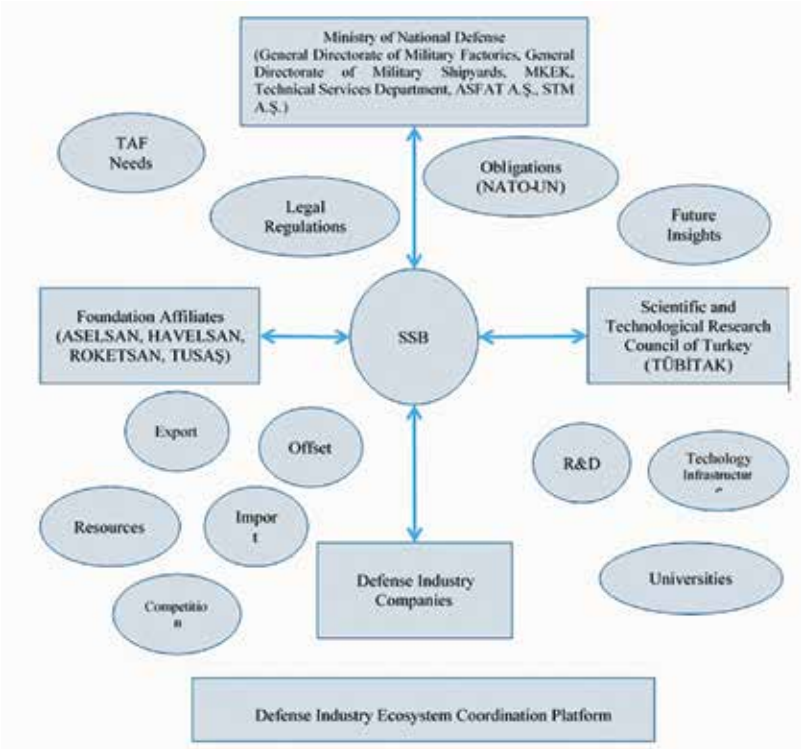

Fig. no. 2 *Turkish Defense Industry Ecosystem*
Source: SSB 201-2023 Strategic Plan

Located at the center of the ecosystem, SSB reveals the vision of the sector, guides the sector and ensures coordination between the actors in the system. Turkish Armed Forces and other security forces are customers of the sector within the framework of their duties, future predictions and international obligations. Foundation companies and other businesses in the current competitive conditions; They are the actors that continue their activities within the framework of resources, export, import, offset variables. The association and clustering efforts of businesses strengthen the ecosystem. TÜBİTAK, on the other hand, is the science and technology-focused actor of this system, which provides science and technology coordination and while doing so, it is in contact with universities and related organizations.

3.2. Evaluation of Turkish Defense Industry with porter's diamond model

Although the effort to create a domestic and national defense industry is a desirable situation

in terms of national security, the globalizing world economy and increasing system costs make it necessary for defense industries to be strong enough to compete in order to survive. It is possible for companies to preserve their production lines and maintain their competitive power by selling their products outside their own state though the only buyer of many systems produced is the state. In other words, competing in the international market is very important to sustain production line. Defense industry enterprises that want to compete in the market have to develop strategies accordingly. However, as Porter states in the diamond model, this will be possible with the collective effort and government support of the defense industry altogether rather than the effort of a company independently (Porter, 1990). Therefore, in this study; by using Porter's diamond model, the current status of the resources providing competitive advantage to the Turkish defense industry has been determined and presented to the attention of field experts, academics, researchers and policy makers.

3.2.1. Evaluation of the Factor Conditions of the Turkish Defense Industry

3.2.1.1. Assessment of Human Resources of the Turkish Defense Industry

One of the strongest elements of the Turkish defense industry is the well-trained young labor force. The number of employees in the defense industry is 73,771 as of 2019 (SASAD, 2019). Compared to the previous year, the number of employees has increased by 10%. Table-1 below contains data on employment in the defense industry since 2015. 24% of the employees are engineers, 48% technicians/ operators, 18% administrative personnel, and approximately 64% of these personnel work in departments directly related to production (SASAD, 2018, p.18).

Table 1. Defense Industry Employment Figures

Year	Engineer Rate	Technical Staff Rate	Total Employment	Change Rate	Per Capita Turnover	Change Rate
2015	34%	40%	31.375	- 0,4%	156.403 $	- 4,4%
2016	30%	30%	35.502	13%	168.103 $	7,5%
2017	31%	37%	44.740	26%	149.600 $	- 11%
2018	24%	48%	67.239	50%	130.304 $	- 13%
2019	-	-	73.771	10%	147.539 $	13.23%

Source: SASAD 2014-2019 Reports

When the table above is examined, the fact that around 70% of the personnel are engineers and technical personnel is interpreted as a sign of the intensity of technological production, design and development activities. However, the turnover rate per capita, which was 130-170 thousand $ in the last five years, remains at a very low level compared to the world average of 350 thousand dollars (Deloitte, 2018, p.6). Although the rate of personnel working in the production area is high, the turnover per personnel is less than half of the sector average. turnover per capita, an indicator of labor productivity and sectors remain at very low levels of average pitch is a significant problem in terms of Turkey's defense industry.

The number of personnel employed in the sector has been increasing over the years and the most important increase was experienced in 2018 with 50%. It is expected that the effect of this increase on the sector's turnover will be felt better in the coming years. In particular, the fact that the wages of technical personnel are well below the international companies cause the skilled workforce gaining experience in the sector to move abroad (SASAD, 2018, p.22). At the end of 2018, 272 people, mostly senior engineers, left the country to work in defense companies abroad. A survey of these people by the SSB have shown that the most important causes of brain drain were; limited professional development and career opportunities, lack of equal opportunities in the promotion system, low salaries, discrimination and mobbing in the workplace (Defense News, 2019).

The Turkish defense industry is currently working on a wide range of systems, from intelligence satellites to guided missiles, from unmanned vehicles to helicopters. Such a complex system and product range requires the vertical and horizontal integration of technical knowledge, technology and experience infrastructure supported by a strong academic infrastructure. Employment in the sector is critically low compared to the number and content of many development and production projects, most of which are controlled by SSB (Mevlütoğlu, 2017, p.11). The number of personnel working in the defense industry is 850 thousand in the USA and 2 million in Russia in 2014 (Toydemir, 2017).

3.2.1.2. Assessment of Physical Resources of the Turkish Defense Industry

60-70% of the defense industry companies in Turkey is located in Ankara clustered. In addition, 6 out of 11 companies (MKEK, ASELSAN, HAVELSAN, TUSAŞ-

TAİ, ROKETSAN and FNSS), which are the main contractors in many projects in the defense industry, and the headquarters of many companies operating as subcontractors of these companies are located in Ankara (Köroğlu & Eceral, 2018 , p. 141).

The positioning of defense industry companies in locations close to each other constitutes an important competitive power. However, one of the most important problems of the sector in terms of physical resources is that domestic prime contractors carry out their activities with higher operational costs compared to international examples. It is inevitable that the high operational costs will force companies that want to compete in international markets in price competition (SSM, 2017, p.3).

3.2.1.3. Evaluation of Turkish Defense Industry's Information Sources

"Technology Roadmaps" are used to quickly access the information needed by the defense sector, to get rid of foreign dependency and to develop the necessary technologies. In this roadmap, with a systematic approach, operational needs are evaluated and prioritized according to competence level and Technology Readiness Level within the scope of national capabilities, and the acquisition of relevant technologies is tied to a schedule. However, the transformation of technology in production with traditional methods still cannot occur at the expected pace (SSB, 2019). In addition, Defense Industry Technologies (SSTEK A.Ş.), which was established to support companies operating in the sector and 100% owned by SSB, has a strong legal infrastructure to develop and support the fields of defense, aviation, space and homeland security (SSM, 2017).

The success criterion in the development of defense industry products is the ability to reflect user feedback on designs by using field experience. The know-how formed in this respect in the Turkish defense industry is a positive development for the sector (SSB, 2019). Armed and unarmed unmanned aerial vehicles, which are one of the most important information sources of the defense industry, have become the most important systems of the sector with the successes achieved in recent years. These systems are seen as the most important architects of the tactical achievements in counter-terrorism and cross-border operations. However, some authorities state that these systems are not a panacea and strategic game changers, and that the biggest threat to them is the developments in anti-hydrone technologies (The Arab Weekly, 2020). In the upcoming period, the developments in the antidrone systems should be closely followed and the success of the sector

should be made sustainable.

The key to independence in the defense industry is to produce high-tech and value-added original products. An indicator of the ability to produce original products is the number of patents received in the sector. In 2017 Turkey was ranked in 22nd in the world rankings patents. At the end of 2018, it ranked 13th in the world in the domestic patent application ranking. The number of international patents, which was 1403 in 2018, increased to 2058 in 2019. The ten-fold increase in the number of patents in the defense industry in the last ten years is one of the most important reasons for the rise in this ranking (ITO, 2020). While the upward trend is promising, it may be misleading to say that university-industry cooperation is sufficient, which is the most important root cause of the increase in patents (SSB, 2019).

3.2.1.4. Assessment of Turkish Defense Industry's Capital Resources

Turkish defense industry consists of public and private sector organizations. Public-owned organizations consist of the SSB and the Turkish Armed Forces Foundation affiliates. The capital structure of private sector organizations consists of domestic or international partnerships. When the total asset sizes and sales volumes of the companies are compared between 2012 and 2016, it is observed that the main contractor companies in the sector have achieved a sales volume that is half of their total assets on average. This low rate is due to project-based production, inefficient use of resources and long stock cycle periods (SSM, 2017, p.17).

In the defense sector, 70% of the assets are generally financed by external resources and 30% by companies' own resources (SSM, 2017, p.3). Especially in the shipbuilding sector and land vehicles sector, the lack of equity is noteworthy. These sectors meet their financing needs by short-term borrowing. Electricity, Electronics and Software, Aviation and Space and Weapon Systems sectors borrow predominantly with long-term advances. Subcontractors meet their business financing needs mostly with advances or short-term bank loans. Sector capital resources create financial difficulties for companies (SSM, 2017, p.3).

3.2.1.5. Evaluation of Turkish Defense Industry's Infrastructure Resources

Since the defense industry is a sector that needs manufacturing infrastructure and investment to a large extent, its fixed costs are very high. Therefore, it needs significant

financial support. When the fixed assets and sales volumes of the enterprises in the sector are compared; It is observed that the infrastructure investments made are not sufficiently reflected in sales, especially in sub-contractors, idle capacity is created and this has a negative impact on costs (SSM, 2017, p.4).

One of the most effective mechanisms to strengthen the defense industry infrastructure is incentive mechanisms. Following incentives can be listed as the incentives given for defense industry infrastructure; Support provided for qualified product loans, tax exemptions, interest support, investment location allocation, promotion of strategic investments and promotion of priority investments and large-scale investments (SSM, 2017, p. 10-31).

With the "Turkey's Strategic Vision 2023" project, the development of the defense industry is seen as one of the leading sectors in the country. It is aimed to make use of the existing industrial infrastructure, to cooperate with foreigners on technology development issues when necessary investments to produce high-tech products, and to meet all the required systems from within the country as much as possible. As a matter of fact, with the infrastructure investments made within the framework of this vision, an important infrastructure has been established especially in subsystems such as system integration, command control, communication, electronic warfare and firepower. Turkey's strategy followed by the creation of this infrastructure has been cooperating with the countries in the leading position in the sector. In this way, many projects such as MİLGEM, ALTAY, ATAK and UAV projects have been realized (GBR, 2016, p.3).

A country's military operations can only be supported by a strong industrial infrastructure. The most important issue in terms of defense industry infrastructure is to ensure sustainability. This can only be possible by transferring the skills gained in the defense industry to the civil sector. As being the leading power for many years in defense industry, USA made radical changes in the defense procurement strategy in 2017, it started to support the production of defense industry enterprises for both military and civilian uses. However, it is seen that double-use opportunities are not evaluated for the Turkish defense industry, which continues to be foreign-dependent in some critical technologies (SSB, 2019). Although the needs of the Turkish Armed Forces are mostly met, private sector organizations produce more goods and services for civilian use than public affiliates (SSM, 2017, p.17).

3.2.2. Assessment of the Turkish Defense Industry's Demand Conditions

The state is the sole purchaser of many products in industries such as the defense industry. The state, which is the most important customer in terms of the defense industry, is also the main determinant of the demand conditions for modernization activities of the armed forces (Domingo, 2015). In Turkey, the last five years, has been the most requested land platform, in second place came the aerial platforms. The demand for informatics has remained well below expectations (SASAD, 2019: 5). Considering that the IT segment has the largest share in the world defense market, it is obvious that the competitive advantage in this industry depends primarily on producing value-added products that will create demand in the domestic market. The sector sales and composition for the last five years are given below.

When the defense industry demand in the last five years is analyzed, it is seen that the demand composition is largely domestically sourced. The ratio of foreign sales in total sales varies between 30% and 40%. It is seen that total sector sales are increasing every year. In 2019, the highest number and the highest increase in international sales was achieved. The most exported countries in 2018 are the USA, Oman and the European Union, respectively. However, it is one of the most important problems of the sector that exports to the USA and the EU are mostly realized within the framework of meeting offset obligations. Another point to be taken into account at this point is the comparison of the defense industry imports and the foreign sales revenues of the sector. The table below contains this comparison for the last five years.

Table 2. Defense Industry Sales

	Total Sales (Mil $)	Change (Yearly %)	Domestic Sales (Mil $)	Change (Yearly %)	Foreign Sales (Mil $)	Change (Yearly %)	Domestic to Foreign (%)
2015	4.908	3,78	2.979	- 8,22	1.929	3,99	60/40
2016	5.968	21,60	4.015	34,77	1.953	1,24	67/33
2017	6.693	12,14	4.869	21,27	1.824	-6,62	72/28
2018	8.761	30,90	5.706	17,19	2.188	20,02	65/35
2019	10.884	24,23	7.816	36,98	3.068	40	71/29

Source: Compiled from SASAD Reports

Table 3. Defense Industry Import and Foreign Sales Rate

Years	International Sales Revenues (Millon $)	Imports (Million $)	Sales to Imports
2015	1.929	1.067	1,8
2016	1.953	1.289	1,5
2017	1.824	1.544	1,2
2018	2.188	2.449	0,9
2019	3.068	3.088	0,99

Source: Compiled from SASAD Reports

The development of the sector requires a force multiplier in the form of technology, and this is only possible with the local knowledge stock. Import is a factor that may prevent the formation of this stock (Bruton, 1998). When the foreign sales and import figures of the sector are examined, it is seen that the balance has deteriorated in favor of imports every year, and although there is an increase in foreign sales every year, the rate of increase in imports is higher than that of foreign sales. This is an important sign that the defense industry has imported a significant amount of raw materials and intermediate products from abroad. The most important expenditure items of enterprises operating in the sector are materials and labor. When import expenditures are analyzed, it is seen that enterprises are dependent on raw materials mainly import (SSM, 2017, p.3).

One of the problems caused by high import-based production is being exposed to embargoes and restrictions. For example, during Idlib operation European countries has stopped selling some of the products they sell to Turkey. These situations, which make the defense industry stronger, cause the development to be connected to the urgent need for action. Meeting operational needs results in a delay in allocating resources to strategic investments.

Especially not having critical technologies such as engine and software may prevent export to third countries, by remaining under the control of the country from which the intermediate product is purchased. For example, not being able to obtain the license from the USA, prevented helicopter exports to Pakistan (Defense News, 2019). Another problem has been experienced

regarding the Storm Howitzer to be made to Azerbaijan. Germany's refusal to allow the engine export license prevented this export from happening (İsmailov, 2015). For this reason, technologies or intermediate goods that are critical in terms of the final product should be guaranteed with domestic production, if this is not possible, the export potential should be guaranteed with long-term contracts.

Demand conditions constitute the weakest factor of the defense industry; therefore, it carries important risks for the future. Excessive dependence on public institutions domestically, the share of exports in the revenues of defense industry companies and the low level of revenues outside the defense field are important problems of the sector (Vakıfbank, 2018, p.13). It is extremely important for the future of the sector that it develops high-tech systems with dual use, that is, both military and civilian use, and decreases its dependence on the public by increasing the share of exports in sales. One way to increase the share of exports in sales is to use political and political relations effectively. Especially, it is extremely important to develop relations with countries that have good relations that will ensure defense industry exports.

Another problem in Turkey's defense industry is, customer diversity in terms of exports cannot be created. When the countries that have been exported since 2010 are analyzed, it is seen that all of them consist of Muslim countries with good relations and it is seen that there is no significant export to NATO countries other than offset. The expansion of the export base and the development of the range of countries to which the export is made are important for the sustainability of the sector, as well as the ability to export main system exports to NATO countries in terms of competitiveness. Exporting systems to NATO countries will contribute to the competitiveness of the defense industry. System exports to NATO countries will also determine the development and competitiveness of the defense industry.

Another problem area in terms of demand conditions of the defense industry is the lack of coordination between industry representatives and demand authorities. While the agency of need sets forth the Strategic Target Plan (SHP), which is the plan for the next twenty years, it does not get the sufficient support of the industry and carries out the process of determining the needs within itself in a tactical-based manner. However, shaping the force structure and modernization are processes that have technical, sociological, economic and cultural aspects. This approach neglects these and makes the operational doctrine the main determinant of the needs analysis (Mevlütoğlu, 2017). In addition, the vision of the needs authority in the coming period is

not known by the industrialists and this may cause them to be unable to predict the future.

3.2.3. Assessment of Turkish Defense Industry Related and Supporting Industries

One of the most important deficiencies of Turkey's defense industry is not having sufficient number of suppliers competing in the international market that may help meeting the critical needs and having access to raw materials. As a matter of fact, one of the main reasons for the 60% increase in import figures in 2018 is the effort for creating stocks due to hidden embargoes affecting the sector (SASAD, 2018, p. 14). Lack of strong suppliers that can support domestic production at a sufficient level led the sector to make stocks in the accessible amount.

Defense industry companies operating in Ankara procure 19.1% of their raw material, intermediate and electronic component needs from abroad and 23.7% from another city (Köroğlu & Eceral, 2018, p.144). As a result of the increase in awareness towards the defense industry, there is an increasing trend in entering the sector. However, it is a fact that SMEs in the defense industry cannot be adequately specialized (SSM, 2019). Industrialization and self-sufficiency in sub-systems and critical systems require long-term technology management strategies. Technology management is the key to sustainability in the defense industry. The dependence of the Turkish defense industry on foreign suppliers in terms of subsystem, technology and material creates an important sensitivity for the sector.

In addition, the proximity of the locations has also accelerated the clustering efforts, there are two clusters each in Ankara and Istanbul, one in Bursa, Eskisehir and Izmir. Resource sharing, diffusion of innovation, career and talent management of qualified workforce, university-industry, public-industry, industry-industry collaborations strengthen the ecosystem by increasing social capital. Deployment of authorized institutions in the same province, the existence of non-governmental organizations for advocacy activities, and the excess of universities and educational institutions to cooperate to increase the quality of human capital are among the factors that strengthen the sector.

3.2.4. Evaluation of the Turkish Defense Industry's Business Strategy, Structure and Competitiveness

The defense industry consists of companies mostly supported by the Turkish Armed Forces Strengthening Foundation or public subsidiaries focused on specific areas of expertise rather than businesses operating

in the same fields that compete intensely with each other. Foundation firms represent approximately 50% of the defense sector on a turnover basis. Considering the turnover distribution according to the defense industry sector report; It is seen that the main contractors have a share of 72%, subcontractors 19% and the sub-industry 9% (SSM, 2017, p.3). The fact that the main contractors are mostly TAFF companies is a product of the defense industry policy. Although this structure of the sector creates an important advantage for an industry that is in the establishment and initial stages, it may create significant problems in terms of competitive advantage in the international environment in the long term.

In addition, in sectors other than shipbuilding and vehicle production, there is almost no competition between enterprises and most contracts are given to TAFF companies, which can be made in advance, which significantly reduces the motivation for innovation in the sector (Mevlütoğlu, 2017, p.291). Although Turkey develope systems that can compete in the international arena, the countries having established customer bases will perceive it as a threat and they may use export licenses as a tool to prevent the powerful actor in Turkey's defense industry (Mevlütoğl 2017, p. 12)

One of the most objective evaluations in terms of international competition is the evaluation of defense industry companies. In 2007, ASELSAN was the only Turkish company to be on the list of "The Largest Defense Industry Company in the World" and it was in the 97th place in the list. Four Turkish companies entered the list in 2018. ASELSAN ranked 52nd, TUSAŞ 69th, STM Defense Technologies Engineering and BMC 85th, and ROKETSAN 89th (SSM, 2017, p.21). Increase in the number of companies entering the world ranking is an important indicator of the increase in the international competitiveness of the defense industry companies in Turkey. However, considering the sector data and the dependence of the sector on foreign suppliers in terms of subsystems, equipment and technology, it is evaluated that this increase is due to the growth based on imports.

3.2.5. Evaluation of the Turkish Defense Industry in the Context of the Chance Factor

Since chance is an external factor for the defense industry, it is very difficult to control. Turkish foreign policy and defense industry are directly linked to each other, so the sensitivities of the defense industry should be taken into

account in foreign policy decisions. For example, the variation in international relations can affect the exports of defense products faster and more than expected. Military activities carried out in Syria and Libya have caused some countries to apply embargoes and this has caused significant problems in both raw material/intermediate product and system procurement processes. The recent problems experienced in the JSF 35 strike aircraft project have created uncertainty in both supply and subcontractor companies. In terms of large companies operating abroad, such as ASELSAN, deterioration in political relations with the countries operating abroad will bring significant risks. On the other hand, the increase in restrictions stemming from international relations creates an opportunity for the defense industry to turn to domestic resources.

Another factor affecting operational costs is that the depreciation of the Turkish lira against foreign currencies due to production based on raw material and intermediate product imports increases the costs of raw materials and intermediate products. If the sector supplies the raw material or intermediate product domestically, the loss of value of the TL may turn into an advantage in terms of exports, since the system costs will be cheaper than international market prices.

3.2.6. Evaluation of the Role of the State in the Turkish Defense Industry

The State is the most important power affecting the defense industry with its policies, incentives or obstacles, and political approaches. The evaluation of the defense industry in a political context can be considered from two perspectives, namely the consistency and stability of the policy (Domingo, 2015, p.163). The fact that the defense industry is included in the development plans and has been declared as a priority sector in recent years is very valuable in terms of these criteria.

The state has a key position in the sector both in meeting the high R&D costs and as the customer purchasing the final products (Köroğlu & Eceral, 2018, p. 148). Defense industry companies, whose capital financing structure is quite fragile, stand by state supports and legal regulations. Currently, incentives given to the defense industry are not given to any sector in the country.

One of the most important indicators of government support to the sector is product and technology development expenditures. The share of project incentive expenditures, which reveal the state's contribution to product development expenditures, in total has gradually increased in recent years and reached the level of 80%. The state supports the defense

industry product development activities intensively. Despite the increase in the state's share, there was no significant increase in the expenditures of the sector representatives, and a significant decrease was observed compared to 2016. It is extremely important for enterprises operating in the sector to increase their product development expenditures in terms of developing value-added original products.

Table 4. Product Development Expenses

Years	Equity (Million $)	Project Incentive	Total (Million $)	Project Incentive Share
2015	287	616	904	68%
2016	513	741	1.254	60%
2017	295	942	1.237	76%
2018	288	1.160	1.448	80%
2019	331	1.340	1.671	80%

Source: Compiled from SASAD Reports.

The state can positively affect the defense industry with its regulations or international relations, as well as negatively affect it with the political environment or tension it creates. As a result of military operations conducted by Turkey, some countries have increased their embargo it affected import figures in 2018. The policies implemented by the government can encourage economic activities by increasing the uncertainty and confidence environment in the country, as well as directly reduce the economic activities by creating uncertainty and pessimism among the public and thus, may affect the sector negatively. Political instability carries significant risks, especially in terms of long-term contract provisions (Pelletier and Bligh, 2006). In such turbulent times, the state should encourage economic development with persuasive and plausible commitments. When politically instabilities are possible, the market actors make allocation of resources in this direction (Huang et al., 2015). In Countries open to political and economic turmoil such as Turkey the political conjuncture may affect the defense industry and it should be considered as part of it. It should be used as a positive leverage. As a matter of fact, when we look at the examples of the USA and France, it is seen that very important agreements regarding the defense industry were signed as a result of the visits made at the level of heads of state (BBC, 2017; AA, 2020).

Another important effect of the state on the defense industry is in the protection of property rights. A strong protection system based on the rule of law will reduce transaction costs and encourage investment. Property rights are the driver of competitive advantage in technologically developed countries (Williamson, 2000). Turkey is a country situated in relatively backward in terms of copyright (Pepper, 2017, p. 75). It is important for the Turkish defense industry to support technology investments by taking the necessary steps to protect intellectual property rights in order to produce more unique products with higher added value.

4. CONCLUSIONS

Recently, with the impact on Turkey's political and military incursions, the defense industry has gained momentum experienced a similar dynamic in the mid-1980s. It has become increasingly critical to determine the strategies to make the contribution of the defense industry sustainable to the national competitiveness, which started in the Tenth Development Plan period and reinforced its importance by taking it among the priority sectors in the current period and determined as the locomotive of the national technology move. With the decisions taken at the end of the 1990s, the principle of meeting the defense needs domestically to the maximum extent within the scope of Vision 2023 studies in the defense industry increased the efforts for localization. In addition to these, the concentration on the export of defense products in the Eleventh Development Plan draws attention.

Defense industry is one of the priority sectors that requires top-down planning approach. The appropriate policy and strategy can be determined by the interactive and shared participation of all elements of the state in the decision-making process. The Philippines 'modernization move failed due to policymakers' desire to reduce defense spending, inconsistency in resource allocations, the devaluation of the Philippine currency, and the priority of action against dissidents in the strategy, resulting in greater attachment to foreign powers rather than modernization (Domingo, 2015). Kurç (2017) argues that the fundamental errors of Turkey's defense industry strategy are; errors in planning, prioritization, external dependence to technology transfer and American pressure. He sees them as an obstacle to Turkey's goal. Similarly, Mevlütoğlu (2017) emphasizes that the import substitution strategy reduces efficiency in the defense industry, and mentions the lack of skilled labor.

Different models contribute to the determination of strategy road maps for the defense industry. In particular, the rapidly changing environmental conditions, changes in technology, developments in defense and security understanding, and advances in the country's vision make it necessary to update and improve the analyzes. As a matter of fact, it is understood that the current analysis levels are organizations or clusters, and the sectoral analyzes are not sufficiently made in the context of contribution to national competitiveness. PESTLE and SWOT analyzes, which are used as a method within the scope of planning or indexing studies, are seen to be used predominantly. Turkey's export oriented approach to the defense industry needs the methods of competitive analysis. For this reason, in this study, analyzes are made with Porter's diamond model, which is a method for determining competitiveness within the framework of ecosystem understanding.

Porter's four factor model created on the basis of strategy and competition is a dynamic model and the factors support each other. Adding the chance and state factors to these four basic factors, Porter defines the role of the state as a determinant on four basic factors. These factors, which are the key to sustainability of competitiveness; is created and developed through innovation and re-investments. The absence or lack of any factor leads businesses to make innovation (Smith, 2010). In cases such as shortage of raw materials, lack of workforce and lack of infrastructure, businesses either start to use their resources effectively or begin to develop new designs, new methods and new products. Each country has strengths and weaknesses in terms of factor conditions, but competitiveness can be achieved through effective use of factors (Jhamb, 2016, p.142).

According to Porter, the factors that are vital for the growth and productivity of developed economies required to achieve competitive advantage in many industries are not inherited or bestowed on the past, but are created within the nation over time. In order for Porter's model to be functional, the industry must have sufficient resources, sectoral know-how, the actors in the ecosystem, including the employees, must be conscious and environment must be created in which innovations are encouraged with investments (Timuçin, 2010). Porter (1990) argues that the development of competitive advantage occurs in four steps. These are; factor, investment, innovation and welfare-oriented stages, respectively. Porter's model expresses a systematic that goes through certain stages in an evolutionary way rather than the

developed industries that emerged suddenly. In this respect, it is possible to state that the Turkish defense industry displays an outlook that shifts from investment to innovation.

The results of the analysis made using Porter's diamond model are compiled in Table-5 below.

According to the Cognitive School approach, one of the strategic management schools, strategies are facts learned through direct experiences. These learned facts determine what to do, and new results are learned with the applied strategy. According to the Learning School, another school, the strategy formulation process is learned over time. Organizations, like individuals, learn how to solve the problems they encounter over time. According to the planning school, strategy is the result of a conscious and controlled formal planning process, divided into certain stages and detailed. When we look at the basics of Turkey's defense industry strategy, it has received its roots from learning school and cognitive school. Planning approach shapes his current strategy with its past experiences. However, according to the power school, it is the power and politics that shape the strategy formation. The strategy formulation is not the product of a single architect. The strategy is shaped to reflect the interests of the strongest structure in the environment rather than the opinions of everyone. According to the power school, the concepts of "coalition", "political games", "collective strategy" are extremely important for an effective strategy, and policy is very important in achieving strategic change (Mintzberg et al., 1998, p. 176). The sanctions that Turkey faces in every strategic step it takes, such as the Cyprus peace operation, the southeastern operations, and the Idlib operation, reveal that the power school's approaches should also be given importance in the defense industry strategy. Turkey should use defense strategies as a powerful leverage when determining the friends and relationships with allied countries and should increase the diversity of customers. It should always be kept in mind that the key to independence in the defense industry is to be able to produce high-tech value-added original products. Turkey should take the necessary measures in advance by foreseeing the negative effects that foreign policy moves may create in the defense industry.

The common point of the strategies determined for the defense industry is to have a "domestic and national" defense industry. The system in which all stakeholders operating in the defense industry take part is called the ecosystem, and in order to achieve this goal, synergy should be created with all stakeholders in the defense ecosystem towards the same goal.

Table 5. Evaluation of the Turkish Defense Industry within the Framework of Porter's Diamond Model

Factor	Sub Factor	Advantages	Open to Development
Factor Conditions	Human Resources	-Increase in the number of employees -Engineering and technical staff ratio -Inverse brain drain study	-Turnover rate per employee -Professional development, promotion and career opportunities -Discrimination and mobbing at work -Total number of people working
	Physical Resources	- The proximity of businesses - Knowledge and experience sharing	-Intensity of intermediate product supply from abroad -High operational costs
	Sources of Information	- Technology road maps - Establishment of SSTEK A.Ş. - The knowledge and experience on the UAV - Experiences from field applications	-Advances in Antidrone technologies -High-tech and value added product manufacturing - Number of patents
	Sources of Capital	- Capital support provided to businesses in need	- Lack of equity of the companies in the sector - Need for financial support and access - Long stock cycles and inefficient use of resources
	Infrastructure Resources	- Supports provided for infrastructure creation - Reaching the infrastructure to realize important projects	- Infrastructure investments not being reflected in sales sufficiently - Dual use (military and civilian) possibilities are not evaluated.
Demand Conditions		- Total sales increase every year - High demand in land and air platforms	- Low demand for information - Demand composition is predominantly domestic - The rate of increase in imports is higher than the rate of increase in exports - Being subject to sanctions and import quotas - Export-barrier license agreements - Excessive dependence on public procurement - Offset-dependent export - Lack of customer diversity - Using International relations as a leverage for export - Not enough export to NATO countries - Lack of coordination between industry and demand authority

Factor	Sub Factor	Advantages	Open to Development
Related and Supporting industries		- Know-how related to reengineering	- Lack of suppliers in raw materials and intermediate products - Scale of economies production
Business Strategy, Structure and Competition		- Companies operating in certain areas of expertise - Foundation firms constitute 50% of the sector - Four companies ranked among the world's largest defense industry companies	- No competition other than shipbuilding and vehicle manufacturing -The use of dependency in terms of subsystem, technology and materials by countries with a customer potential to prevent competition
Chance		- International restrictions increase awareness of the national ecosystem	- Negative effect of international relations on the defense industry - Considering defense industry sensitivities in foreign policy moves - Due to the dependence of raw materials and intermediate products, the depreciation of TL increases the system costs
State		- R&D costs are largely covered by the state - Legal regulations reduces the fragility of the sector - Incentive mechanisms support new product development	- The tense political environment created by the state causes instability in the sector and an increase in system costs. - Inadequate protection of intellectual property rights

In addition, by improving the understanding of defense planning and defense resource management, it is possible to increase the cooperation of stakeholders in the defense ecosystem and to prevent the waste of resources such as workforce, technology, infrastructure and information that will provide sustainable competitive advantage. However, the defense industry has recently started to deal with the ecosystem as a whole. In the 2019-2023 Strategic Plan prepared by the SSB, the defense ecosystem approach was adopted, planning was made within the framework of more holistic and comprehensive concepts such as program management, innovation management and cooperation management, and sectoral depth was expressed. In this direction, it becomes important to analyze the defense industry infrastructure first and urgently and to determine the strategies in this context. The planning

approach should now change and a risk-oriented perspective should be adopted. The risk-focused approach is an important approach that can both improve the factors in the diamond model and ensure rapid development in line with the vision and turn the luck factor in favor of the industry. The risk management approach is a powerful tool to prevent the sector from being unprepared for the risks it may encounter. Sectors that cannot manage their risks with a proactive approach will have to manage their crises reactively.

In order to become the owner and the producer of critical technologies with unique designs and to come to the position that exports them, Turkey should; increase its technology ownership, by increasing the firms' R & D and innovation management capacities in this direction, should manage and improve the competition and the development of skills and work-based learning approach, should reconsider university-industry cooperation. Especially the presence of main contractors may restrict entry to the market and reduce the innovation motivation of SMEs and other contractor companies. On the other hand, prime contractors determine the number and density of ties within the ecosystem. For this reason, there is a need for mechanisms that increase cooperation between industrial companies. It is considered that the state and the industrialists should work more effectively in order to increase the cooperation between the security forces in the position of customers and the industry, to ensure the product variety in line with the demand conditions and to increase the advanced qualified workforce.

In our opinion the main problem of Turkey's defense industry is heavily dependent on imports of raw materials. Most of the aspects open to improvement mentioned above are due to this addiction. Even if defense infrastructure can compete in the world with systems such as ATAK, FIRTINA and UAV's, the intense need for intermediates that are needed in the production of these systems and that can be obtained from abroad and under the control of international actors is an important handicap for the defense industry. In addition, althoug Turkey develops advanced systems that can compete international markets, the developed countries may see this as a threat to their customer base, and they may use export licenses as a means prevent international competition. The actors that direct the defense industry should create suppliers that can meet the critical needs of the sector and compete in the international market. These suppliers may provide advantages in accessing raw materials and intermediate products to defense industry and support them in terms of international competition.

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GEO-POLITICAL FACTORS INFLUENCING KENYA AND TANZANIA FOREIGN POLICY BEHAVIOR SINCE 1967

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Abstract: *The question regarding the extent to which foreign policy influences regionalism is subject to debate. This issue is still emotive, fluid, speculative and anchored on conjecture. The study assessed geopolitical factors influencing Kenya and Tanzania foreign policy behavior since 1967. The study was guided by Two-Good theory, Neoclassical Realism and Neo-functionalism theories. Historical, cross cultural and descriptive research designs were used. The study area was Kenya and Tanzania and the population was citizens of the two states with the target population being cross border business community, government officials in Ministries of EAC and Foreign Affairs, and EAC organisms - the Secretariat and Legislative Assembly on which purposive sampling was used. A sample size of 384 respondents was created from the total population using the Gomm (2008) formula. The study utilized both primary and secondary data. Instruments of data collection were : questionnaires, interviews and focus group discussions. Findings revealed that geopolitical factors influencing Kenya's and Tanzania's foreign policies are to a large extent similar and that they have direct impact on the foreign policies of both states. That strategic location of both states as a geo-strategic factor affects both, though with significant differences. Kenya's location astride the volatile Horn of Africa has complicated its security, thus influencing its foreign policy behavior. The study recommends that in view of the similarities in geopolitical factors that influence Kenya's and Tanzania's foreign policy behavior, the two states should cooperate and harmonise their foreign policies to avoid unnecessary misunderstanding and naked and open rivalry that can thrust the region into political and economic paralysis.*

Key words: *Foreign Policy, policy behavior, regional integration*

1. INTRODUCTION

Geopolitics as discussed by scholars of international relations is the combination of geography and politics in structuring foreign policy of a given state. The fundamental geopolitical factors that have been central in shaping Kenya's foreign policy posture since independence are: the Indian Ocean and the struggle of the big powers; Kenya's location near the volatile and strategic Horn of Africa; the Nile River basin and Egypt's ambitions; great powers struggle for resources and influence in Africa; war on terror; instability in the Great Lakes region; and discovery of fossil fuels in East Africa.

The fervor for regionalism is etched in the minds of the political class globally. Some advocate for continental integration while others call for regional groupings that consist of few states whose defining criterion is territorial contiguity. The success story of European regionalization experiment has been cited as a factor that has inspired the recent wave of regionalism [1]. The European Union (EU) is considered as the centerpiece of resurgent regionalism. Today, neither economics nor peace serves as the main buttress for justifying further integration [2].

States around the globe are coalescing into regional blocs dictated by domestic national and foreign interests. The degree and intensity of integration vary according to defined interests and scope. The regional integration projects thereof vary in functional scope, institutional set up, size of membership and impact [3]. The success of regional integration relies on a reasonable amount of certainty that favorable, stable conditions will continue in the future [4].

While other regions have successfully used their integration mechanisms to improve their economic welfare, Africa lags behind with respect to GDP growth, per capita income, capital inflows, and general living standards [5]. The challenges and complexities of promoting effective regional cooperation and integration are not unique to Africa however [6]. The deadlines to implement certain provisions of the Customs Union, Common Market, Monetary Union and Political Federation have largely been missed and even the implementation of the Customs Union and the Common Market is facing challenges of monumental proportions. The Customs Union was established in 2005 and Common Market in 2010, while the Monetary Union and Political Federation remain open in the sense that despite long talks and negotiations, they are still unfinished [7]. It is also characteristic that the EAC does not speak with one voice and the relationship between Partner States

may be described as asymmetric [8]. Among member states of EAC, free mobility of skilled labor has not been effectively sustained [9]. Critical steps including cross border movement of capital, free movement of labor, the rights of establishment and residence are yet to be realized in full. According to the Schedule on the Removal of Restrictions on the Free Movement of capital, Partner States committed to fully liberalize the free movement of capital in the EAC by 31 December 2015. However, the reality on the ground suggests otherwise. Therefore there is need to assess geopolitical factors influencing Kenya and Tanzania foreign policy behavior.

1.1. Statement of the Problem

The question regarding the extent to which foreign policy influences regionalism is subject to debate. This issue is still emotive, fluid, speculative and anchored on conjecture. The academic discourse in this area is unfortunately scanty. Ogunnubi, [10]. For example, focuses on foreign policy of Nigeria as a regional hegemonic power, while Kanat [11], and examines Turkey's foreign policy and its relations with the European Union (EU). On the other hand, Liao [12], focuses his paper on China's use of regional multilateralism as a distinctive element in its regional security diplomacy. Regionalism is now an acknowledged phenomenon ensconced in international politics and encapsulated in international legal instruments. Regional integration can be defined as a grouping of states bonded together by a common set of objectives based on geographical, social, cultural, economic, and political ties and possessing a formal structure provided for in formal intergovernmental agreements [13].

As states march on into labyrinths of regional projects, the role of foreign policy and diplomacy tends to be regrettably an afterthought. There is scanty if not limited research in this area. It has to be reaffirmed that at the heart of states' interaction in regional and global settings, foreign policy occupies a significant position. Okoth [14]defines foreign policy as the sum of the principles, interests and objectives which a given state formulates in conducting its relations with other states. Foreign policy is thus understood as 'a set of goals, directives or intentions', formulated by persons in official or authoritative positions, directed at some actor or condition in the environment beyond the sovereign nation-state, for the purpose of affecting the target in the manner desired by the policymakers' [15]. It's on this ground that the study endeavored to assess geopolitical factors influencing Kenya and Tanzania foreign policy behavior.

1.2. Objective of the Study

The objective of the study was to assess geopolitical factors influencing Kenya and Tanzania foreign policy behavior since 1967.

1.3. Research Question

Which geopolitical factors influence Kenya's and Tanzania's foreign policy behavior since 1967?

1.4. Justification of the Study

1.4.1. Academic Justification

The importance of geopolitics in structuring foreign policy became unambiguous in academic discourse. A mature foreign policy that embraces the regional ethos can be the agentive foundation upon which other integration endeavors can be realized. The study, therefore, sought to underscore the importance of foreign policy in enhancing regional economics and politics. The findings will be useful in informing an academic discourse on the vitality of foreign policy in creating or deconstructing the narrative that has been around for a while that developing countries though possess the penchant to integrate, are inherently incapable of developing a common foreign policy platform to grant political wherewithal in multilateral settings. Further, international scholars will learn the importance of foreign policy as a leverage in coalescing regional groupings and conferring on such states the necessary international political legitimacy.

1.4.2. Policy Justification

The study will serve as an important source of knowledge undertaken to examine the influence of member states' foreign policy behavior on a regional grouping and its proclivity in coalescing states to collectively pursue mundane national interests in the external environment. Policymakers will draw lessons on the most suitable and appropriate framework that can be beneficial in pursuing a coordinated regional foreign policy platform that comprehensively carries with it national interests of participating states that has longevity and elasticity.

1.4.3. Philosophical Justification

Regional integration and foreign policy are products of social interactions and are constructed and formulated iteratively based on subterranean impulses that define their foundational tenets. Foreign policy is conceptualized, influenced and shaped by society. It is also a product of conceptualization by the ruling class to effect desired philosophical thrust in the external environment. Therefore, to understand the principles that characterize conceptualization of political choices by actors, it becomes imperative to investigate their worldview to sensationally appreciate the logical basis that inform subtle maneuvers that lie at the core of decision making processes.

2. GEOPOLITICAL FACTORS INFLUENCING KENYA'S FOREIGN POLICY BEHAVIOR: KENYA AND THE HORN OF AFRICA

The Horn of Africa strategic area makes it attractive to global powers. Its importance in international politics cannot be overlooked since it is an intersection between Africa and the Middle East. In defining the security dynamics of the Horn of Africa, the region reveals an overlap of differing, sometimes conflicting governance systems, reinforcing the interdependence of the security system as well as posing critical challenges to regional peace [16].

Without doubt, there are specific politico-security strategic issues regarding to the Horn that are directly related to Kenya which shape Kenya's foreign policy orientation. The Horn is synonymous with domestic and interstate instability. This state of affairs has direct impact on Kenya's foreign policy calculations. The instability in Somalia, Ethiopia (up to 1991) and South Sudan with consequences on her security has been a source of concern in Kenya. The consequences of refugees pouring into Kenya from Somalia, South Sudan and Ethiopia continues to be a major security challenge in Kenya. With the advent of terrorism in the Horn of Africa associated to a greater extent with the refugee issue, Kenya became exasperated and began viewing them as a security challenge. Mogire's [17] argument regarding the changing status of refugees seems to reinforce the fear that the Kenya Government has been having regarding the place of refugees in her national security calculations. He posits that the discourse regarding the status of refugees has continued to preoccupy the thinking of scholars of international relations. With time there has been a shift in the perception of refugees. Whether the refugee issue should be purely seen in humanitarian terms or security paradigm has been at the center of the discourse. This assertion is what has influenced the debate in Kenya and the matter has not been helped by the emergence of terrorism in the region and the accusation that some of the terror activities are planned and executed from some refugee camps. In a nutshell, the debate on the status of refugees will not disappear soon; it will continue to occupy a central position in international politics now and in the future.

Mogire [18] submits that Kenya and Tanzania are two of the major refugee hosting states in Africa. Their relative political stability, geo-strategic location in the Horn of Africa and Great Lakes region- Africa's major conflict and refugee producing zones has placed on them the burden of hosting the

refugees. He observes that Kenya has hosted refugees since the 1970s when Ugandans and Ethiopians fleeing political persecution and civil conflicts sought refuge in the country. It may be understood that since then, Kenya has continued to be the haven for refugees from Somalia, South Sudan, Ethiopia, and DRC among others. The refugee challenge continues to shape Kenya's foreign policy predisposition. Kenya is an avid advocate for peace and stability in the region. It has participated in the mediation efforts particularly in the Horn of Africa**,** including in Somalia and Sudan. The objective here is to help make peace in the two neighboring states so that the refugees can have the confidence of going back to their countries. It is believed that this will not only relief the country of the economic burden of looking after the refugees but will also secure the country's borders. Kenya is a member of IGAD and through its structures and in collaboration with other member states**,** Kenya has been proactive in peace mediation efforts [19].

2.1. Geopolitical Factors Influencing Tanzania's Foreign Policy Behavior Since 1967

Following the Arusha Declaration, Tanzania changed course and pursued the foreign policy that sought to further her socialist-self-reliance ideals. Therefore, from 1967, Kenya and Tanzania pursued dichotomous foreign policies; with Kenya maintaining her conservative-Western oriented foreign policy and Tanzania reveling in her new-found socialist-self-reliance ideology foreign policy posture. In this regard, the fundamental geopolitical factors that have been central to shaping Tanzania's foreign policy posture since theits independence are: Tanzania's strategic location between East Africa and southern Africa; instability in the Great Lakes region; discovery of fossil fuels – natural gas; Nile River Basin politics; the Indian Ocean and the struggle of the big powers; big powers struggle for resources and influence in Africa; and North-South global politics.

2.2. Comparative Analysis: Geopolitical Factors Influencing Kenya's and Tanzania's Foreign Policy Behavior

There is a strong and resilient nexus between geopolitics and foreign policy. The two influence and shape each other in the international system. Geopolitics as earlier defined by Owens [20] imposes distinctive constraints on a nation's foreign policy and strategy while at the same time providing distinctive opportunities. Geopolitics has have direct influence on foreign policy formulation and projection and is an important parameter in approximating a state's ability to assert itself in the external environment. There are similarities and differences with respect to geopolitical factors that exert influence on Kenya's

and Tanzania's foreign policy orientations. The similar factors that influence the two EAC Partner States are the issue of the Indian Ocean, the Nile River politics and the position of Egypt on its water use, instability in the Great lakes Region, discovery of fossil fuels and the influence of great powers**,** particularly China. Assessing these similarities of geopolitical influencers, it is imperative to note that due to the proximity of the two states to each other, the majority of the geopolitical factors have direct bearing on both of them. However, there are some nuances regarding how each state projects its foreign policy or reacts to these influencers. The Indian Ocean has a significant impact on the foreign policy behavior of the two states. Kenya and Tanzania are littoral states situated on the western coast of the Indian Ocean.

The geopolitics associated with great powers and their ambition to control the Ocean has direct bearing on the two states. This fact is well acknowledged by the two states and it is in that regard that together with other littoral states, they have campaigned over the year**,** to rid the Ocean of weapons of mass murder. Kenya and Tanzania are cognizant of the security threat the Ocean poses to their survival if they allow it to be militarized and controlled by great powers. However, it is important to note that over the years, Tanzania has been more vociferous in her activism against militarization of the Indian Ocean than Kenya. The politics of the Nile River and the unfair advantage that Egypt and Sudan have enjoyed for decades is another area of convergence with respect to geopolitical factors that influence the two states' foreign policy behavior. The two are upstream riparian states in the Nile Basin. The unfair treaties that were rooted in the colonial epoch that gave Egypt and Sudan exclusive right over the use of the Nile River water are the source of concern for upstream states. Egypt often proclaims its historic right to utilize the waters of the Nile citing that diabolical and illegal treaty, and regularly threatens armed action to stop the ambitions of upstream countries in encroaching the Nile water [21]. However, Kenya and Tanzania among others through the Nile Basin Initiative are adamant that each riparian state has the right to access a fair share of the Nile River waters. This historical injustice has continued to influence how foreign policies of the two states are structured.

3. CONCEPTUAL FRAMEWORK

According to Wasike and Odhiambo [22], in their article, *A critique of the usefulness of theories in explaining socio-political phenomenon*, they state that: e*veryone uses theories, whether they know it or not. One cannot analyze data without resorting to causal explanations. But theories often lack the specificity needed to make and*

implement decisions. As a result, policy-makers are often dismissive of the value of theories. No single theory captures the complexity of contemporary world politics. Theories of international relations seek to explain what states try to achieve in the external realm and when they try to achieve it. Theories have several components. They diagnose, predict, prescribe and evaluate. Nevertheless, Smith [23], believes that not all theories predict nor simply explain. They tell us what possibilities exist for human action and intervention. They define not merely our explanatory possibilities but also our ethical and practical horizons. For example the theory of international relations maintains that war was partly the result of international anarchy and partly the result of misunderstandings, miscalculations and recklessness on the part of politicians who had lost control of event.

3.1. Neoclassical Realism Theory

Realism theory is not per se embellished in foreign policy analysis**,** rather it seeks to offer predictable explanations of international politics from state-centric standpoint. Realism is based on three core assumptions about how the world works: groupism; egoism and power-centrism [24].

Neoclassical realism central argument is that relative material power establishes the basic parameters of a country's foreign policy. It avers that "the strong do what they can and the weak suffer what they must" [25]. The proponents share a common assumption that foreign policy is best understood as the product of a country's internal dynamics. To understand why a particular country is behaving in a particular way, therefore, one should peer inside the black box and examine the preferences and configurations of key domestic actors [26]. The argument here is that foreign policy is influenced by domestic politics and vice-versa.

3.2. Neo-functionalism Theory

According to O'Neill, the Neo-functionalists theorized that as they were currently constituted, nation-states were principally concerned to perpetuate social and ideological divisions along existing faultiness they themselves had been responsible for creating social order. States were also too culturally insular, as such, incapable of meeting the more expansive functional or welfare needs of modern citizens. In this regard these needs could only be met by international cooperation. The Neo-functionalists saw regional integration as an intrinsically political process involving the need to reconcile social diversities and to balance the conflicting interest that exist in all societies, within a community framework. The introduction of a tone of politics by Neo-functionalists firmed up this school of thought and served to strengthen the argument that integration is a political process.

Chazan *et al.*; [27]; submit that Neo-functionalists believe that all political action is purposively linked with individual or group perception of interest, and thus cooperation among groups can only be the result of convergence of separate perceptions of interests.

3.3. Two-Good Theory

The Two-Good theory of foreign policy as propounded by Palmer and Morgan [28] seeks to explain the intrinsic reasons that motivate states to pursue specific foreign policy goals. It provides a general approach of foreign policy that can offer an integrated explanation for all of the events and show that the decisions leading to them are interconnected. This theory assumes that states essentially pursue two things**,** namely *change and maintenance* through their international behavior and that they allocate foreign policy resources as efficiently as possible to maximize their utility. According to Palmer and Morgan [29], the basic elements of the theory are that the political universe can be viewed as consisting of issues that at least one state cares about. The world can be modeled as a multidimensional issue space. The status quo at a particular time is the existing outcome of all those issues. States will be happy with some of the outcomes and unhappy with others in the political universe. All states want to protect aspects of the world they like that serves their core national interests.

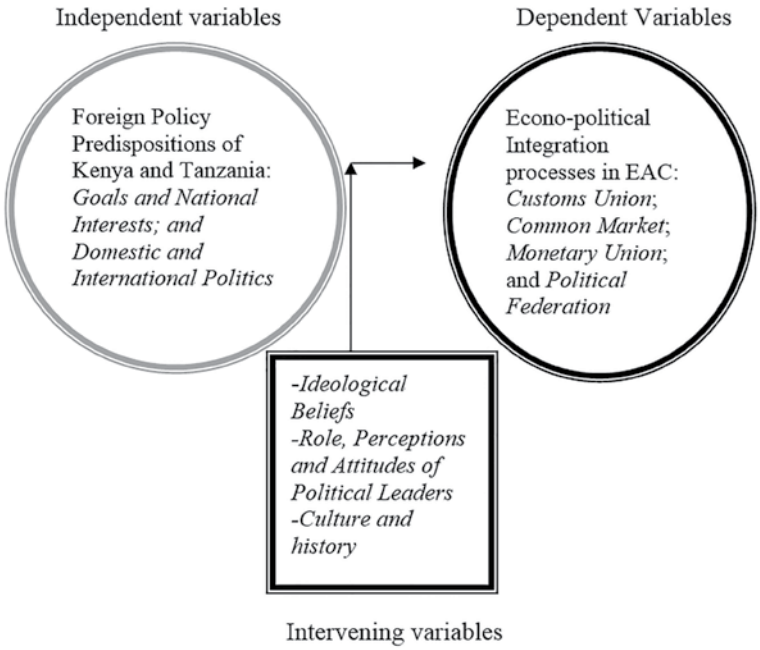

Fig. no. 1 Conceptual Model Framework Showing Interaction of Variables
Source: Researcher, 2020

4. RESEARCH METHODOLOGY

4.1. Research Design

Cross-cultural design was used in the study to compare and contrast foreign policy pillars of the two states and evaluate how they have influenced EAC econo-politcal integration process. This study sought to discover the underlying factors that influence both the independent and dependent variables hence the exploratory design was chosen as ideal in attaining this goal. Kumar [30] further reinforces the value of adopting qualitative designs by opining that the main focus in qualitative research is to understand, explain, discover and clarify situations, feelings, perceptions, attitudes, values, beliefs and experiences of a group of people.

4.2. Study Area

The study was carried out in Kenya and Tanzania. The two are member states of the East African Community and are its core founder members with shared historical, political and social heritage making them ideal for the research. They share contiguous ethnic compositions, cross border social affiliations, geography, cultural affinity, colonial heritage and trade relations.

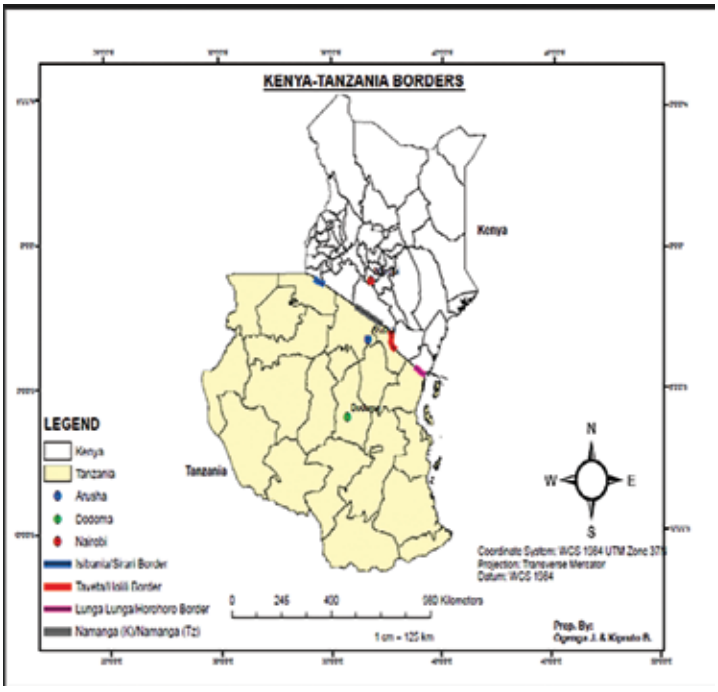

Fig. no. 2 Study Area-Kenya and Tanzania
Source: Researchers, 2020

These states wield preponderant influence in EAC compared to the other four, namely Uganda, Rwanda, Burundi and South Sudan and, therefore, the findings accruing from the study can generally be applied across the board. In view of the complexities involved in collecting, collating and interpreting data, the other four member states of EAC were not covered in the study and this did not in any way affect the reliability or validity of the findings.

4.3. Sampling Strategy

The study adopted a purposive sampling strategy due to the nature of interpretive paradigm denoting the necessity of seeking respondents' opinions and corroborating them to examine insights and issues that are critical and pertinent to the study's objective. The justification for purposive sampling is aptly captured by Patton [31] who argues that the logic and power of purposeful sampling lie in selecting information-rich cases for study in depth.

4.4. Sample Size

The study population as already noted were citizens of Kenya and Tanzania. Given the massive combined population of the two states which is approximately 103 millions, it was not possible to practically cover every one. In this regard, the researcher adopted the recommendation provided by Gomm [32]. Gomm [33] prescribes a formula of determining appropriate sample sizes. He proposes that for a population of 50,000 individuals, the required sample size is 381 items. He goes on to propose that for a population of size of 1,000,000 or more, the ideal sample size is 384. The same recommendation is made by Mugenda and Mugenda [34]. It was established that persons and entities that have direct stakes in the EAC integration process and who could be valuable to the study are government officials working in Ministries of Foreign and East African Community affairs, officials in the EAC Organs, the Secretariat and East African Legislative assembly and cross border business community who operate at the borders and in Partner States. In this regard, the study purposefully covered cross border business community at major points of entry between Kenya and Tanzania; government officials in the two states which perform diplomatic and administrative duties in Ministries responsible for EAC and Foreign Affairs; and EAC Secretariat and the Legislative Assembly.

4.5. Data Collection methods

Questionnaires, interviews and observations, government documents, video, tapes, newspapers, letters, and books were used [35]. Data was collected from two sources in the two countries. Primary data which

was instrumental in answering the objectives of the study were obtained from the respondents in Kenya and Tanzania including key informants in government ministries and EAC organs. Secondary data formed an integral part of the study. Secondary data were obtained from sources in Kenya and Tanzania including the EAC Secretariat's Library, books, newspapers, government documents, journals, articles and archival materials.

5. DATA ANALYSIS AND PRESENTATION

Qualitative data were first processed, summarized and categorized into appropriate themes. Content analysis was used to determine which themes occur most frequently, in what contexts and how they are related to each other [36]. Data collected through questionnaires, interviews and focus group discussions were triangulated to ascertain their efficacy. On the other hand, quantitative data which are numeric in nature were analyzed through descriptive analysis which comprises statistics describing, aggregating and presenting the constructs of interest. Inferential statistics arising from the findings were interpreted to reach conclusions about associations among variables. Charts, graphs, tables were used to project and compare scenarios and any other piece of information that can be best presented quantitatively.

6. RESULTS AND DISCUSSIONS

6.1. Geopolitical Factors Influencing Kenya and the Horn of Africa

The Horn of Africa is associated with violence and conflict. It is synonymous with instability of interstate and intra-state nature. In view of this Kenya's stability is at risk. It is in this regard that 65.8 per cent of the respondents submitted that Kenya has serious security interests in the Horn and that indeed the geopolitics associated with the Horn of Africa shape Kenya's foreign policy predisposition. Some of the 34.2 per cent of the respondents who did not consider the Horn of Africa as a geopolitical factor that influences Kenya's foreign policy behavior thought that its instability is none of Kenya's concern. They also argued that since trade interactions between Kenya, Ethiopia and Somalia are not significant, the Horn cannot shape how Kenya relates in the international system. However, one respondent among those who identified it as a serious geopolitical factor for Kenya, made a moving remark during interview by stating:

It is obvious, we are part of the Horn of Africa in every sense of it. The instability in the Horn is our cause of concern. We continue

to monitor events in the Horn and if possible we influence them in our favor. We participated in the Sudan and Somalia peace processes to secure ourselves. However, you may note that due to the same instability big powers see Kenya as a stabilizing force and the gateway to East Africa. Consequently some have set up military bases in Kenya (29 July 2020, Nairobi).

This poignant statement is valid and affirms the geopolitical significance of the Horn of Africa in structuring Kenya's foreign policy behavior. Burgess [37] examines stabilization, peace and sustainability in an unstable and famine-prone region like the Horn of Africa. He observes that the Horn combines high levels of environmental stress and interstate conflict, civil wars, and communal clashes. This is what has been the orthodoxy view of scholars and practitioners. This is the case despite the fact that the Horn is an area of geopolitical interest to super and middle powers. It remains transfixed in the international system as the vanguard of global rivalry and egoism. In 1977 a US House of Representatives' Facilitating Mission to Egypt, Sudan, Ethiopia, Somalia and Kenya returned to the US espousing the view that the Horn of Africa is the area on the African continent with the greatest potential for East-West confrontation. It is the Horn's proximity to the Middle East oil fields and the Indian Ocean and Red Sea trade routes which elevates its strategic importance [38]. The Lefebvre submission asserts the strategic interests that the superpowers have had over the Horn. That this sub-region is strategically located next to the volatile yet important Middle East. The international politics has have revolved around the Middle East because of its abundance of natural fuels and the juxtaposed importance of the Gulf in global geopolitical calculations.

6.2. Geopolitical Factors Influencing Kenya's Foreign Policy Behavior: The Nile River Basin

The Nile River Basin is an important geopolitical factor that shapes foreign policies of regional states. The Nile River since history continues to exert significant influence on how the riparian states especially between the upstream and low stream ones relate among themselves and with external actors. Since the end of the twentieth and the beginning of twenty-first century, the realm of international relations has been characterized by resource geopolitics – the potential for conflict as a result of the scarcity of vital resources that cross political boundaries [39]. Given the reduced water availability due to population growth, degradation and depletion

of the Nile River and its uneven distribution, fierce competition over the already diminishing water resources increases the potential for an inter-riparian conflict in its basin [40]. This postulation is true and speaks to the brutal truth that confronts the Nile Basin. The Nile River has the implication on the very survival of so many people whose livelihoods depend on it in the riparian states. This reality has the potential to raise tensions in the riparian states if some of them feel that there is no fairness in the sharing of the most important resource – the waters. The issue of sharing the Nile River waters among the riparian states and the unjust claims that Egypt asserts over the control of the use of the waters appear to have not been considered by a significant number of the respondents as an important geopolitical factor that influences Kenya's foreign policy behavior.

The study established that only 42 per cent of the respondents felt that the Nile River Basin geopolitics influences Kenya's foreign policy. The 58 per cent who did not regard it as such were vividly influenced by the fact that the Nile River Basin has never occupied the political psyche of Kenya. It has never been a hot political issue that ever generated serious public discourse to the extent that political and social groups could deeply get involved. One respondent made the following submission:

I think the sharing of the Nile Basin water has never become an issue for public discourse and has never been prosecuted in the media or other public forums to the extent that passions and even the sense of patriotism is awakened. The majority of Kenyans come into contact with the Nile water issue in class, where it is extensively written about how the natives of the East African territories under the British colonial regime were not involved in the negotiations that led to the 1929 treaty that over their heads allocated all the Nile waters to Egypt alone (15 August 2020, Nairobi).

This statement, as articulated by the respondent is true. The issue of the Nile water use has never influenced the direction of politics in Kenya. This is not to say that it does not matter as a strategic national interest issue. Indeed it matters to a large extent and this is the reality. Despite the fact that Kenya has been active in opposing the unfair treaty, it has not sought to whip the public to focus on it as an important issue that occupies its top priority and becomes an influencer of national discourse. It is true that imperial Britain committed an unpardonable injustice by crafting an illegal treaty and secretly signing it with Egypt, to deny East African states the right to

access their own resources. Adar [41] supports this assertion. He submits that the main concern in regard to the Nile River water use by the riparian states of the Nile, emanates from the unfair and illegal the 1929 Nile River treaty which provides that Kenya, Uganda, Tanzania and Sudan cannot use the waters of Lake Victoria and the Nile without the acquiescence of Egypt. He cites paragraph 27 of the illegal treaty, which for examples stipulates in part that:

Save with the previous agreement of the Egyptian Government, no irrigation or power works or measures are to be constructed or taken on the River Nile or its branches or on the lakes from which it flows, so far as all these are in the Sudan or in countries under British administration, which would, in such manner as to entail any prejudice to the interests of Egypt, either reduce the quantity of water arriving in Egypt, or modify the date of its arrival, or lower its level [42].

He argues that Kenya's interest in the Nile River water is as a result of the fact that it is a water scarce country. In this regard, the Nile water question has direct implications for Kenya's national interest. Adar [43], observes that Kenya's interest in Nile River Basin goes beyond water use, it has to do with the need to maintain regional stability which is central to its economic interests. He notes that Kenya is one of the dominant trading partners in the Nile Basin region, which makes the issue of stability a major concern for the country's foreign policy-making establishment. He avers that Kenya has not constructed a policy on the Nile water and he views this lacuna as regrettable. Adar's submission somehow supports the assertion by the respondent who pointed that the Nile water issue has not been at center of national conversation in Kenya. It has not influenced national debate so passionately to the extent that groups with divergent opinions emerge. In view of the lack of a clearly defined policy position which is unambiguous and direct with respect to the Nile water use despite strong opposition that Kenya normally express, Adar [44], persuasively argues that as a sovereign independent state, Kenya has the right to question the validity and relevance of treaties entered into by the colonial administrations that hold the potential of undermining the national interest and creating instability in the region.

The question of the Nile River and the politics that surrounds it can be traced to the colonial epoch. Tesfye [45] lucidly posits that although the Nile River has been associated with Egypt since antiquity, that association

has short-shifted upstream states – particularly Ethiopia, from which Egypt gets 86 per cent of her water and tons of soil every year, without which ~~she~~ it cannot survive. He goes on to argue that the Egyptian control of the Nile River and its tributaries was initiated by Britain while it exercised colonial rule through the imposed regime of the 1929 Agreement, which was modified in 1959 with a bilateral agreement, to the detriment of Ethiopia and the newly independent upstream African states. Tesfaye's argument paints an image of colonial injustice that deprived the riparian states of their rights to use the waters of the Nile River. The illegal agreement which was engineered by Britain created a hegemon in the name of Egypt to preside over the waters of the Nile River as though other states who are the real owners of the waters that flow into the Nile have no legal rights to access their own natural resource.

In summary, the geopolitical factors that influence Kenya's foreign policy as submitted by the respondents are summarized in Table 1 and Figure 3. Kenya's geopolitical factors are shown in percentages based on the findings as presented in Table 1. The percentages of the foreign policy pillars were calculated and are presented in figure 3.

Table 1. Geo-political Factors that Influence Kenya's Foreign Policy (percentage scores)

1.	**Indian Ocean and great power rivalry.**	**75%**
2.	Horn of Africa geopolitics	68%
3.	Kenya's war on terror	71%
4.	China Vs US Rivalry over Africa	91%
5.	Instability in the great lakes region	77.5%
6.	Discovery of fossil fuels	56%
7.	The Nile River basin politics	42%

Source: Field Data, 2020

Figure 3 provides a summary of geopolitical factors that influence how Kenya structures its foreign policy. Geopolitical factors have an overwhelming influence on formulation and projection of foreign policy. The Indian Ocean and the rivalry of superpowers, the Horn of Africa, war on terror originating from the Horn, China and US rivalry, the instability in the Great Lakes region, the discovery of fossil fuels in Kenya and the Nile Basin are well articulated as the geopolitical factors that must be taken into account regarding Kenya's foreign policy formulation and projection.

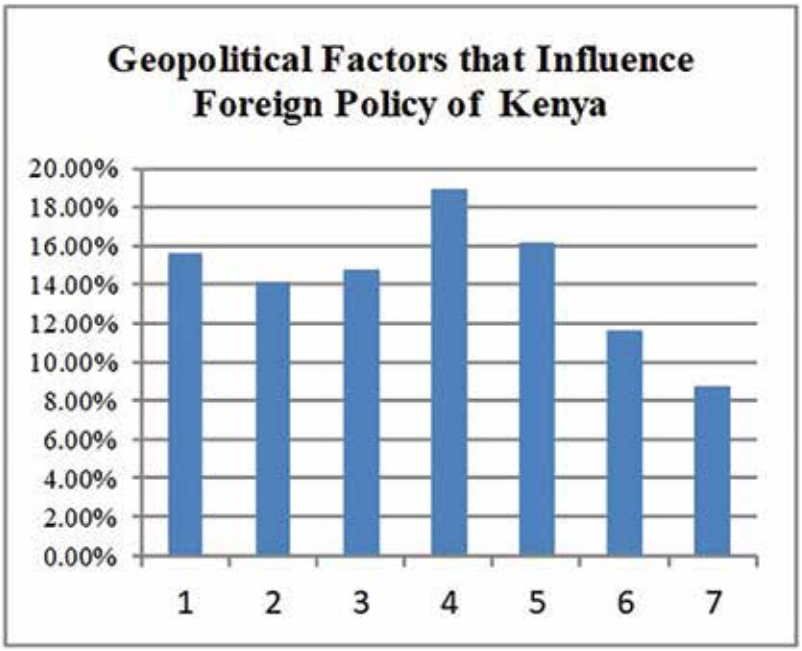

Fig. no. 3 Geopolitical Factors that Influence Kenya's Foreign Policy Behavior Since 1967
Source: Field Data, 2020

6.3. Geopolitical Factors Influencing Tanzania's Foreign Policy Behavior: South-South Global Politics

The south-south cooperation can be traced back to the historic Asian-African Conference, or the Bandung Conference, held in Indonesia on April 18-24, 1955, to promote political self-determination, mutual respect for sovereignty, non-aggression, non-interference in internal affairs, and equality, as well as the establishment of the Non-Aligned movement in 1961 – at the height of the Cold War – by third world countries [46]. South-South cooperation was the coalescing of weak states majorly found in the southern hemisphere to advance their interests in the face of cut-throat competition by the superpowers.

The objectives of the cooperation went beyond mere momentary reactions to global events. It was a forum through which third world countries advocated for fairness in global trade and political transactions. Tanzania was a strong and active member of the south-south grouping. This claim was supported by 70 per cent of the respondents who submitted that indeed Tanzania's foreign policy was

influenced by the North-South and South-South cooperation politics. They argued that Tanzania's foreign policy since independence has been based on principles that underpin fairness and justice in the global economic and political systems. The 30 per cent of the respondents did not regard south-south cooperation as an important geopolitical factor that influences Tanzania's foreign policy. With commercial diplomacy being the centerpiece of Tanzania's foreign policy, south-south activist diplomacy appear to have taken a back banner.

Scott [47], argues that south-south trade has become a core component of the contemporary trade debate, but the idea of using preferential trade agreements among developing countries to foster industrialization and diminish dependence on the North has a long history. The logical argument that can be drawn from Scott's submission is that due to sharp divisions arising from mismatched interests between the two halves, the North-South cooperation became untenable hence the creation of the so called south- south cooperation. Unfairness in global trade transactions that Tanzania was against, for example was ably amplified by President Nyerere in his address in London in November 1975 at the height of the oil crisis:

But rich countries do not only increase the price of a tractor to the extent of the extra oil costs directly involved in producing it. They also make the new prices compensate the workers and the owners for the higher oil prices involved in producing the goods which they want to consume. For the workers in wealthy countries get 'cost of living' increases to prevent their standard of living from falling. And the owners seek to arrange that their profits should not go down in real terms. Both these costs are covered by additions to the price of goods they sell. As a result we do not only pay from our poverty for the extra wealth acquired from us by the oil producers. We also compensate the people in the wealthy countries for any loss which they experienced through a transfer of wealth from their economies to the oil producers [48].

This statement confirms structural and administrative bottlenecks the developed countries situated in the north have imposed on developing countries found in the southern hemisphere. As Nyerere puts it, these injustices have denied developing countries an opportunity to transform themselves and embark on a sustainable path of economic

development. The global north has the capacity to control, disrupt and even stifle processes aimed at assisting poor countries in the south. Nyerere's postulation with respect to the exploitative behavior of the wealthy states of the North conjures a state of immorality on the part of these powerful states in their determination to subjugate poor states from global south to ignominious exploitation and abuse. It is in this regard that Tanzania's foreign policy was structured around south-south cooperation politics with strong and vibrant anti-imperialism and anti-exploitation tinge.

Tanzania's remonstration against global systems that proffers exploitation and injustices was to a large extent motivated by her domestic scene. Frangonikolopoulos [49] argue that Tanzania adopted the anti-Western politics, the Arusha Declaration and self-reliance policy due to the dependence syndrome created by the British metropole and the fact that in early 1960s her economy was dominated by the British investments and manufactured goods. Tanzania's foreign policy behavior in regard to north-south politics and south-south cooperation was resilient, vociferous and rigid. The objective was to assert her independence against geopolitical forces controlled by the big powers. Such a strategic region with a big population is susceptible to geopolitical aggression from global powers. If this is allowed to happen, then EAC can become a mere satellite region of global actors. States or regions that depend on one or the other global actors politically and economically cannot engender home-grown economic development. It is therefore, the solemn duty of EAC member states to entrench economic and political safeguards in their foreign policies to ensure that EAC remains independent and can do business with global actors without undue influence. The respondents (68 per cent) advised that EAC should be an independent entity able to pursue its own strategic objectives without external interference. The geopolitical factors that influence Tanzania's foreign policy behavior as submitted by the respondents are summarized in figure 4. In summary, the geopolitical factors that influence Tanzania's foreign policy as submitted by the respondents are summarized the table 2 and figure 4. Tanzania's geopolitical factors are scored in percentages based on the findings as shown in table 2. The percentages of the foreign policy pillars were calculated and are presented in figure 4.

Table 2. The Geopolitics Factors that Influence Tanzania's Foreign Policy (percentage scores)

1.	Tanzania's strategic location and involvement in Southern Africa liberation struggle	98%
2.	Instability in the great lakes region	82%
3.	Discovery of fossil fuels	74%
4.	Nile River basin politics	63%
5.	The Indian Ocean geopolitics	93.5%
6.	China's influence in Africa	97%
7.	South-south global politics	70%

Source: Field Data, 2020

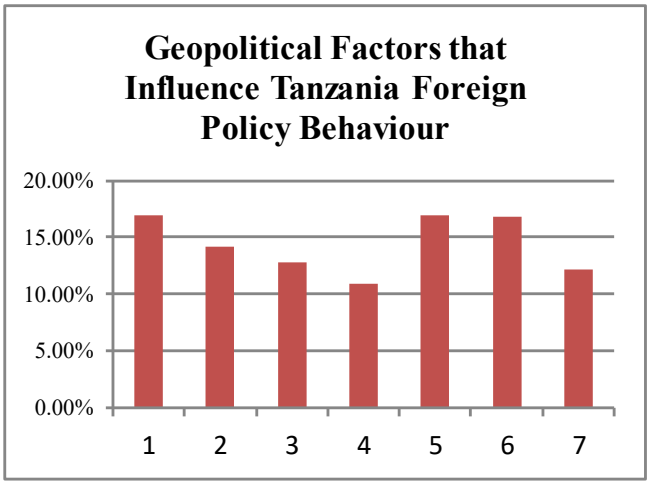

Fig. no. 4 Geopolitical Factors that Influence Tanzania's Foreign Policy Behavior (total percentages).
Source: Field Data, 2020

Figure 4 provides a summary of the geopolitical factors that influence Tanzania's foreign policy. The most conspicuous geopolitical factors that have an overwhelming influence over Tanzania's foreign policy posture are**:** its strategic location between East and Southern Africa, the Indian Ocean geopolitics and North-south China's influence in Africa. These three geopolitical factors were considered by the respondents to have significant influence over Tanzania's foreign policy behavior since 1967. The second tier of geopolitical factors

that influence how Tanzania conduct its foreign policy are the instability in the Great Lakes region, discovery of fossil fuels and North-South global politics. The last tier of geopolitical factors is only one and this is the Nile River Basin politics.

7. SUMMARY AND CONCLUSIONS

It was established that geopolitical factors that influence Kenya's and Tanzania's foreign policies are to a large extent similar and that they have direct impact on the foreign policies of both states. In this regard, it is necessary that the two EAC member states develop a mechanism to coordinate their foreign policies in order to promote the welfare of EAC and defend the region's interests. However, it was established that the strategic location of both states as a geo-strategic factor affects both though with significant differences. Kenya's location astride the volatile Horn of Africa has complicated its security, thus influencing its foreign policy behavior.

8. RECOMMENDATION

This study recommends that in view of the similarities in geopolitical factors that influence Kenya's and Tanzania's foreign policy behavior, the two states should cooperate to limit the negative influence of these factors. The two states should cooperate and harmonize their foreign policies to avoid unnecessary misunderstanding and naked and open rivalry that can thrust the region into political and economic paralysis. It is not necessary to work at cross purpose on common issues of mutual interest between the two countries.

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THE RELATIONSHIP BETWEEN MILITARY EXPENDITURE AND ECONOMIC GROWTH IN MIDDLE EAST AND NORTH AFRICA (MENA) COUNTRIES

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Abstract: *The Middle East and North Africa (MENA) region is composed of countries with a shared heritage that are at various stages of economic growth and are home to extremely diverse natural resources. There have been military or civil wars in the majority of the countries in the region. There were wars that caused extreme human misery, economic displacement, and many development opportunities were lost by the nations of the region. Therefore, a substantial proportion of national budgets is used for military expenditure. In addition, for the economy, military investments produce both costs and profits. This study investigated the correlation between military expenditures and growth in MENA Countries by applying panel data over the span 2009-2019. As a result, we found a positive and significant impact of military expenditure on economic growth.*

Key words*: Military expenditures, MENA countries, Economic growth, Dynamic panel data*

1. INTRODUCTION

For a prolonged period of time, the effect of military expenditure on growth has been the topic of economic analysis. The argument on the impact of increased military expenditure on economic development and welfare was revived by improved defense expenditure as a part of the state inexpensive approach and the connected interests of the weapons manufacturing.

The short and long term consequences of defense expenditures have been scrutinized by many scholars. Defense expenditure has an effect beyond the resources it absorbs, especially conflicts are triggered or encouraged by these expenses. Thus,

it may have important economic implications. Moreover, military spending may have an economic effect that is both positive and negative. At the end of World War II, military government spending was a global issue and there were both industrialized and emerging countries that had an opportunity to reduce their defense expenses. Usually, the rise in spending on defense is a political response to national turmoil and may be a result of the world race of arms. In addition, industrialized nations may be worried about the detrimental impact of unregulated military expenditure on developing countries (Haseeb: 2014).

Since the 1990s, the bulk of the least developed countries and western economies have witnessed civil or military clashes. Some of them were domestic, however others were global, but all triggered similar and wide human misery, economic problems, and wasted opportunities for progress.

MENA is an economically different area that comprises nations that part a common heritage, are at various phases of economic growth and benefit from various incomes. Most of them have witnessed one degree or another of military or civil wars, on the other hand. Fair and substantial human misery, economic difficulties and missed opportunities for growth were exacerbated by these conflicts. Consequently, a large proportion of these nations' budgets were allocated for military expenditure. The armed forces in the MENA countries play a vital role in maintaining the radical regime. Therefore, the military receives a huge share of national revenues, primarily based on their view of these nations as masters of politics. (Shahid & Saba, 2015).

In addition, rising defense spending has resulted in security challenges that are among the most distinctive issues in MENA countries.

Continued increases in the proportion of defense spending in national budgets and the goals investment in the arms sector have reinvigorated debates on the effect on development and welfare of increased military spending. Several researchers took part in this discussion and investigated the short- and long-run effect of defense spending on the economy. According to the Keynesian theory, military spending raises aggregate demand and leads to economic growth through the construction of infrastructures such as highways, houses, bridges, etc., contributing to technological advances that could be used by private industries.

On the other hand, the neoclassical approach suggests that defense spending has a negative impact on economic development by moving capital from private sector to defense and associated industries. Moreover, if a country does not have a strong defense budget, defense goods need to be imported, which will contribute to a rise in the transition of national resources to foreign countries. (Künü et.al., 2016).

The aim of this study is to empirically evaluate whether defense expenditure in MENA countries is related to economic development or not. This analysis was therefore intended to fill the gap; the basic objective of the research is to estimate the effect of defense spending on growth in the MENA states. The study has been conducted on MENA countries over the period 2009 to 2019. Furthermore, we have used the random and fixed effect with system GMM to investigate the impact of defense spending on growth in the sample countries. Section 2 discuss the defense spending and growth in MENA nations. Section 3 presents a related literature. Section 4 illustrates data sources and methodology. Section 5 discusses the results. A conclusion is given in Section 6.

2. MILITARY EXPENDITURES AND ECONOMIC GROWTH IN MENA COUNTRIES

Defense expenditure is a large part of a nation's national budget. Defense expenditure is characterized as national defense expenditure based on state economic fiscal policies. (Islam: 2015). Since 2011, political tensions of various forms have been seen in the MENA countries. The underdeveloped existence of these countries and insecurity have been the main reasons for these conflicts. There is a continuing civil war in Syria, Iraq, Libya and Yemen in the MENA region, resulting in extreme human casualties and the devastation of Physical facilities**:** 15 million refugees, the majority of them in countries with economic and political turmoil such as Tunisia, Djibouti, Lebanon, and Jordan are displaced, contributing since the World War II to the greatest refugee crisis. It is predicted that the present instability in Yemen will result in the damage of years of growth. Under the obstruction and danger of aggression, Gaza has one of the world's top joblessness rates, and GDP stands at 40% of its potential. Oil exporters and relatively prosperous countries like Iran, Algeria, and the

Gulf Cooperation Council (GCC) countries. These countries are facing now problems such as low oil prices and persistent youth joblessness and undiversified resources (World Bank 2020). While after the Cold War, there was a global decrease in military expenditure, the Middle East was an exception to this pattern, where there was an increase in military spending. Economics, demographics and security issues have also been essential to the stability of the region (Yildirim et al., 2005). As of 2016, global defense expenditure rose to USD 1.616 trillion for the second consecutive year the first continuous yearly increase since 2011, the year when defense spending hit an all-time peak of USD 1.699 trillion. Defense expenditure patterns and trends vary greatly across regions. Military spending continues to grow in Oceania, Central and Eastern Europe, North Africa, and Asia, for example, although decreasing in the countries of the Caribbean, the Middle East and Sub-Saharan Africa, Central and South America (SIPRI 2020). In 2016, worldwide military costs accounted for 2.2% of worldwide GDP. This rate was the highest in the Middle East, with an average rate of %6.0 in 2016 (in countries where data was available).

The military expenditure, especially in the Middle East, has been seen as a reliable tool to assist political regimes. Scarce resources have been diverted to military spending, justified by political instability, radical Islamist fundamentalism and external challenges, and investment in economic and social development has been adversely affected in these nations as a result. It is therefore necessary to identify the impact of military expenditure on development. (Yildirimet al., 2005). According to the Keynesian theory, defense expenditure stimulates total demand and rises the use of resources, jobs and income, thus stimulating a surge in investment and thereby having a positive effect on economic development. It could also stimulate development by investing in infrastructure, such as constructing highways, bridges, buildings, etc., and by encouraging technical innovations that could also be used by the private sector. However, the neoclassical perspective suggests that defense expenditure discriminates against the private sector by directing expenditures that might be more lucrative for military companies in private hands and associated firms, thus having a negative effect on economic development.

National defense in nations without modern armed powers industries is heavily reliant on imports. Increasing foreign debt and shifting capital to foreign countries may adversely impact the economy (Künü et. al., 2016). It may also have detrimental consequences if defense spending were funded by increased supply of cash or domestic and international borrowing or depletion of stocks of foreign currencies. Moreover, because of the import of advanced technology items needed by the military manufacturing, military spending may also have a negative effect on foreign debt. (Günlük Şenesen: 2004). Military expenditure is an aspect of monetary policy and has several possible theoretical consequences for the economy.

Depending on the particular perspective, these results may be considered as positive or negative. Increased spending on defense may decrease unemployment due to low consumption or disinvestment. Research and development of the defense industry could have a beneficial impact on private investment by spin-offs and technology transfers. Some methods apply to the developing nations. It could also be argued that defense expenditure could improve overall social infrastructure and other public domain goods and services. Military investment may also develop the social skills developed through the training of military personnel. Defense expenditure supports a healthy market atmosphere which**,** by providing security, facilitates foreign investments. Defense costs, however**,** could divert private sector assets from where they could be used more effectively. The balance of payments could be adversely affected by weapons imports. Increased defense orientation might redirect needed private sector R&D investments where the production might be used for extra realistic objectives. To fund military expenditures that could limit economic growth, governments could increase taxes (Islam: 2015).

3. LITERATURE REVIEW

There are many investigations on the effect of defense expenditure on economic development. Several research studies have indicated that defense expenditure may have had a positively and negatively economic impact, while other research in the field have also shown that it has little impact on economic growth. The connection between military

expenditure and growth has also been examined empirically by studies in the literature of defense economics since the important study by Benoit. According to Benoit (1973). He shows that defense expenditure is positively linked to growth in the Least Developed Countries (LDCs). He founds the argument on the conceptual basis that military organizations in LDCs are more effective in delivering non-military welfare services to vulnerable citizens than their bureaucratic counterparts. Moreover, Hassan et al. (2003) examine the correlation between defense spending and growth in five out of 7 South Asian Association for Regional Cooperation (SAARC) countries from 1980 to 1999. In their investigations they find that the correlation between military spending and growth is positive, suggesting that military spending may have a positive impact on economic. In addition, Anwar et al. (2012), in an empirical investigation, examine the relationship between military spending and growth in Pakistan over the 1980-2010 span. They find that there is a long-run link between defense expenditure and growth, while defense spending is triggered by economic growth. Furthermore, Sezgin (2000) examines the correlation between military expenditure and economic development in Turkey and Greece. Study results showe that economic growth in these two nations is positively influenced by defense spending. Farzanegan (2012) explores the correlation between economic and defense expenditure in Iran.

The results indicate that growth in defense expenditure (its share of total spending) clarifies Iran's potential economic growth. Halicioğlu (2004) studies the association between economic and defense expenditure in Turkey from 1950 to 2002. The modern macroeconomic theory and multivariate co-integration approach were used in the analysis and a long-run and positive correlation between aggregate military spending and total production in Turkey was empirically confirmed.

Furthermore, according to DeRouen (2000) investigation, when technological development was employed as leverage, short-run rises in defense expenditure contracted the growth in Israel. The non-defense spending promoted growth was decided by the same report. Hirnissa et al. (2016) examine the causality of defense expenditure and economic in 20 developed states, and find that military expenditure and growth are co-integrated in all sample countries.

The panel model used in the analysis highly suggests that during the study periods, there is a long-term correlation between military spending and growth in these countries. Nevertheless, the findings show that the long-run impact is unidirectional and defense expenditures are affected only by economic growth. Consequently, it could be argued that growth in the twenty developing nations examined in the study had a positive effect on the growth of the defense manufacturing on average, but vice versa was not true. Some studies have shown that the relation between military spending and economic has been negative.

Moreover, Stroup & Heckelman (2001) investigate the impact of defense expenditure on growth in Latin American and African nations over the period 1975-1989 by using a panel data for 44 African and Latin American countries. The results indicate that low levels of military spending have enhanced economy, but higher levels of military spending have had a negative impact on economy. In a study done by Pan et al. (2014) based on cross-sectional dependency to assess the correlation between defense expenditure and economic in 10 Middle Eastern nations. They found that there was a unidirectional relationship in Turkey from defense spending to growth, a unidirectional causality in Lebanon, Kuwait, Syria, and Egypt from growth to defense expenditure, and a bidirectional causality in Israel, and it was found that there was no link in Jordan, Oman, and Saudi Arabia between defense expenditure and development of economy. Moreover, Smith (1980) used data from 1954-1973 for 14 large OECD nations and examined the hypothesis that decreased expenditure in the post-war era was a significant opportunity cost for military spending. The findings showed that military spending has a direct negative impact on investment. Lebovic & Ishaq (1987) found that Higher defense expenditure hampered economic growth in the Middle East. Khalid et al. (2015) investigated the correlation between defense expenditure and economic growth in the USA by applying the boundary testing approach and co-integration test over the period 1970 to 2011. Their findings indicated that the relationship between military spending and economic was negative.

In addition, Agostino et al. (2013) investigated the correlation between military expenditure and economic development in an African nation by applying panel data from 1989-2010. Their results showed that

military expenditure has an effect on development. Dunne & Nikolaidou (2011) used panel and time series data, and the Solow-Swan model was used to find empirical evidence about the economic impacts of military spending from 1961 to 2007 in EU15 countries. Both the panel data and time series approaches presented clear indication and showing that defense expenditure in these countries did not stimulate economic development. Furthermore, Al-Jarrah (2005) used two models to examine the causal correlation between military expenditure and overall real growth in Saudi Arabia from 1970 to 2003. Their founding indicated that a bidirectional causal correlation existed between defense expenditure and growth, and a unidirectional causal correlation existed between non-oil growth and defense expenditure, with a negative and strong short-term effect of military spending.

Moreover, Apanisile & Okunlola (2014) examined the long and short run impact of defense expenditure on output in Nigeria. Their findings indicate that defense spending had a significant and negative impact on short-term growth, but the same impact was significant and positive in the long-term, as both long and short run capital and labor had significant and positive impacts. While, in the long run, labor had the highest coefficient.

Furthermore, Dunne (2012) investigated the cross-country panel data from 1988-2006. The study focused on countries located in an area with wide conflicts during that time, namely Sub-Saharan Africa with different income levels and classified into subgroups. The findings indicated that defense spending had a substantial short-term negative impact and had a marginal long-run effect on GDP growth, and that the effect was not consistent across different income classes. Aizenman & Glick (2006) have been examined the long-run impacts of defense expenditure on economic development. They reported that defense expenditure would stimulate growth because of external threats, but defense spending would reduce growth to gain personal interest because of corruption. Dunne & Tian (2013) used balanced panel data model over the period 1988-2010 data for 104 countries, the effect of defense spending on growth was studied. The effect of defense spending on growth for the entire sample was documented to have been

significantly negative, and the impact was stronger in African countries.

Korkmaz (2015) investigated the impacts of defense spending on growth and unemployment variables were examined in 10 Mediterranean states, which were considered to be important in the region over the period 2005-2012, the study was performed with panel data. The findings indicated that while defense expenditure had a negative impact on development in these states, unemployment grew.

In a study conducted by Künü et al. (2016) on the effect of defense expenditure on growth over the span 1998-2012, in 12 Middle Eastern nations, the findings show that defense spending had a detrimental impact on development, which improved in periods of the study. Yang et al. (2011) investigated and indicated that there was a strong negative association between defense spending and growth in 23 nations with a primary income, that economic improvement in these 23 nations was found to decrease when the threat level deteriorated. However, military spending encourages development in cases where a serious danger exists.

In addition, Wijeweera & Webb (2011) investigated the correlation between financial expenditure and economic development by using a panel data approach for five South Asian countries with data from 1988-2007 for Bangladesh, India, Sri Lanka, Nepal and Pakistan. They found that a 1 % rise in financial expenditure only raised the real GDP by 0.04 percent, so it could be argued that substantial public spending in the military sector in these states had a marginal effect on economic development. Moreover, Islam (2015) studied the correlation between military expenditure and growth in 41 developing nations over the 2001-2010 span and examined the connection between military expenditure and GDP. They found that in various nations, the effect of defense expenditure on GDP growth was either negative or positive.

4. DATA AND METHODOLOGY

4.1. The Data

A balanced panel data was constructed to analyze the defense-growth correlation in the MENA states over the span 2009-2020. The data set is balanced and all cross-section units have the same time periods available. The data is taken from the Military Budget Yearbooks (SIPRI) and the data for population and GDP are taken from the WDI.

Table 1. Variables descriptions: Annual data: (2009-2019; N=18)

Variable	Explanation	Source
ME	Military expenditure	SIPRI (2020)
RGDPC	Real Gross domestic product per Capita	WDI (2020)
IM	Import of Goods and Services	WDI (2020)
EX	Export of Goods and Services	WDI (2020)
Govex	General government expenditure	WDI (2020)
POP	Population	WDI (2020)

Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Sudan and Turkey.

4.2. Econometric methodology

The purpose of this research is to understand the connection between the defense expenditure and growth in the MENA states. Therefore, the econometric analysis used during the study is the following:

$$ME_{it} = \alpha_1 + \alpha_2 ME_{it-1} + \alpha_3 RGDPC_{it-1} + \alpha_4 IM_{it-1} + \alpha_5 EX_{it-1} + \alpha_6 Govex_{it-1} + \alpha_7 POP_{it-1} + \lambda_i + \varepsilon_{it}, \quad i = 1, \dots N; t = 1, \dots T \qquad (1)$$

Equivalently, Eq. (1) may be written as follows:

$$ME_{it} = \alpha_1 + \alpha_2 ME_{it-1} + \alpha_3 RGDPC_{it-1} + \alpha_4 IM_{it-1} + \alpha_5 EX_{it-1} + \alpha_6 Govex_{it-1} + \alpha_7 POP_{it-1} + \lambda_i \varepsilon_{it-1}, \quad i = 1, \dots N; t = 1, \dots T \qquad (2)$$

Where *ME* is military expenditure, *RGDPC* is real gross domestic product (GDP) per capita, IM is import of goods and services, EX is export of goods and services, Govex is general government expenditure, *POP* is population, and the subscripts *i* and *t* index countries and time, respectively. Furthermore, the specification also contains an unobservable country-specific impact μ and error-term ε.

Moreover, in this paper, we have used the Generalized Moment Method (GMM), which is a semi-parametrically effective model of estimation, and since Hansen (1982) developed its large sample properties, GMM has obtained abundant attention in the field of economics. The GMM approach starts from a list of over-identified population moment conditions and attempts to find an estimator that minimizes them.

The resulting estimate has been shown to be reliable and asymptotically normal under many conditions. However, the GMM first differential estimator suffers from a significant weakness. Blundell and

Bond (1998) found that lagging levels of these variables are weak resources for the regression equation when the independent variable persists over time, expressed in initial differences. In addition, Blundell and Bond (1998) have found that the instrument variable used for the first-difference GMM method (i.e. the endogenous variables lagged two or more times) is less informative in models where the variance of the fixed effects is mainly proportional to the variance of the transitory shocks. This is likely to contribute to skewed coefficients, and issues in small samples.

In addition, this technique effectively incorporates the first-difference with the same equation expressed in levels in a system. The instruments of differential regression are the same as those labeled above, while the lagged differences of the associated variables are the lagged differences of the instruments of the level equation. The main advantage of the SGMM method is that, unlike the first differential (between or within), it uses the level estimate for estimation, and not only does this take advantage of the difference in results, but also between countries. It therefore enables the storage of further data to identify the parameters of interest. Arellano and Bond (1991), based on the Monte-Carlo simulation, show that this additional information results in a significant gain in the accuracy of the estimates.

5. THE EMPIRICAL RESULTS

Our study focuses on 18 MENA states for which we have access to data for the 2009-2019 period. We have applied the panel data for the pooled regression model, cross-section results, and REM models of random effects, between and within the models of fixed effects. Furthermore, we are going to use the Blundell and Bond (1998) systems GMM approach (SGMM) in which the parameters are simultaneously calculated in the first-step GMM, second-step GMM with robust SE of the variables.

To decide if a fixed and random effects model is sufficient for our study, we performed the Hausman test, which is distributed as x2, where the degrees of freedom are equal to the number of regressors. The results show that the fixed effects model is rejected, and this outcome is consistent with Murdoch et al. (1997), as random effect models are considered more fitting. Therefore, the fixed-effects model is not necessary in our case. Estimates

of the random effect and fixed effect parameters are listed for the MENA countries in Table 2 and Table 3. For the results obtained we used a pooled regression model based on a balanced data set provided in Table 4, similar to Smith and Dunne (2001), who have a clear and significant relationship between economic growth and military, and the result shows that the relationship between military expenditure and economic growth is positive and statistically significant.

In addition, the results of this analysis, provided in Table 5, are estimated by the GMM model system and show that there is a positive relationship between defense expenditure and economic growth in the rest of the sampled countries and statistically significant growth, while population is not directly linked to economic growth**.** That means it does not lead to increased military spending in the MENA countries as the population increases. All diagnostics in each table are satisfactory for the models. In this analysis, GDP and general government expenditure are typically positively linked to defense expenditure, and statistically significant at 1%. The findings indicate that the increase in defense expenditure in the sample countries is due to economic growth (GDP) and general government expenditure. In addition, this result shows that amid many problems such as civil war, disputes and border tensions, military spending plays a significant role in the MENA nations, and this finding is confirmed by earlier work for 44 developing countries by Benoit (1973&1978). Additionally, Ali's (2007) findings in developed countries also confirm and help our findings. Moreover, these net positive ties support the assumption that the expansion of total demand in the developing countries is connected to military spending and economic development. In addition, investment in infrastructure and creation of human resources in developing economies operating below full employment have positive spillover effects from defense spending of the Benoit type. There is less evidence that defense expenditure in developed nations is negatively related to economic development in developing countries. The positive results occur as relationships vary from economic growth to defense expenditure and meaning that many developing countries are still at a stage where low-income defense spending is limited and will rise along with the economy. They are not yet in a position to rise less than proportionately with economic growth in defense spending.

Table 2. Random Effects Results (Sample period: 2009-2019)

Variables	Coef.	Std. Err.	T-Ration	Interval
Constant	-13038.71	4848.442	0.007*	-3535.935
POP	.0001961	.0000753	0.009*	.0003437
GDP	.4413887	.0777137	0.000*	.5937048
govex	866.1522	125.2411	0.000*	1111.62
EX	-83.14711	33.28213	0.012*	-17.91533
IM	6.431454	38.14303	0.866	81.19041
Hausman test	0.1139	-	-	-
Observations	198	-	-	-
Countries	18	-	-	-
Min obs	11	-	-	-
Max obs	11	-	-	-
Av obs	11	-	-	-
Rsq within	0.63	-	-	-
Rsq between	0.63	-	-	-
Rsq overall	0.63	-	-	-
Wald chi2(2)	-	-	-	-

*, indicate significance at 1% level.

Table 3. Fixed Effects Results (Sample period: 2009-2019)

Variables	Coef.	Std. Err.	T-Ration	Interval
Constant	-13237.62	3569.055	0.000*	-6193.691
POP	.0001877	.0000946	0.049*	.0003744
GDP	.4703932	.0835192	0.000*	.6352278
govex	874.7386	131.0726	0.000*	1133.425
EX	-89.66944	33.89215	0.009*	-22.77947
IM	9.980485	38.82005	0.797	86.59622
Hausman test	0.1139	-	-	-
Observations	198	-	-	-
Countries	18	-	-	-
Min obs	11	-	-	-
Max obs	11	-	-	-
Av obs	11	-	-	-
Rsq within	0.63	-	-	-
Rsq between	0.63	-	-	-
Rsq overall	0.63	-	-	-
Wald chi2(2)	-	-	-	-

*, indicate significance at 1% level.

Table 4. Results of Pooled OLS estimations (Sample period: 2009-2019)

Variables	Coef.	Std. Err.	T-Ration	Interval
Constant	-17015.64	5219.615	0.001	-6720.488
POP	.0001934	.0000467	0.000	.0002855
GDP	.0985769	.0769428	0.202	.2503387
govex	1166.943	184.6439	0.000	1531.134
EX	146.7065	74.61118	0.051	293.8694
IM	-131.9938	87.87698	0.135	41.33443
Breusch-Pagan LM test			(0.000)	135.67*
Hausman test	-	-	-	_
Observations	198	-	-	-
Hetero (χ^2 – stat)	-	-	-	-
Serial Correlation (F-stat)				
R-squared	0.6481	-	-	-

*, indicate significance at 1% level.

Table 5. One-Step System GMM Results (Sample period: 2009-2019).

Variables	Coef.	Std. Err.	T-Ration	Interval
Constant	-14837.96	3635.649	0.000*	-7712.214
POP	.0000153	.0000885	0.862	.0001887
GDP	.3753839	.0822609	0.000*	.5366123
govex	913.5987	155.5431	0.000*	1218.458
EX	-12.61819	29.90853	0.673	46.00146
IM	29.54036	34.62042	0.394	97.39514
Observations	162	-	-	-
Countries	18	-	-	-
Min obs	9	-	-	-
Max obs	9	-	-	-
Av obs	9	-	-	-
Wald chi2(2)	192.13	-	0.0000	-

*, indicate significance at 1% level.

In addition, the effects of the two-step GMM system and the two-step GMM system are robustly demonstrated in Tables 6 and 7. The results of these estimates suggest that there is a positive association between military spending and economic growth and that there is a statistically insignificant correlation.

Table 6. Two-Step System GMM Results (Sample period: 2009-2019).

Variables	Coef.	Std. Err.	T-Ration	Interval
Constant	-7561.703	123366.7	0.951	234232.6
POP	-.000164	.0015593	0.916	.0028923
GDP	.2119623	2.238385	0.925	4.599117
govex	585.0987	10629.96	0.956	21419.44
EX	99.6059	634.8617	0.875	1343.912
IM	-74.54759	72.27418	0.302	67.1072
AR (1)	-.33384			0.7385
AR (2)	-.60014			0.5484
Observations	180	-	-	-
Countries	18	-	-	-
Min obs	10	-	-	-
Max obs	10	-	-	-
Av obs	10-	-	-	-
Wald chi2(2)	3321.70	-	0.0000	-

*, indicate significance at 1% level.

Table 7. Two-Step with vice (robust) System GMM Results (Sample period: 2009-2019)

Variables	Coef.	Std. Err.	T-Ration	Interval
Constant	-7403.462	94542.33	0.938	177896.1
POP	-.0000998	.0010369	0.923	.0019325
GDP	1912067	1.079756	0.859	2.30749
govex	437.0571	617.1646	0.479	1646.677
EX	100.5182	280.3367	0.720	649.968
IM	-44.31274	1224.91	0.971	2356.467
AR (1)	-.33384			0.7385
AR (2)	-.60014			0.5484
Observations	180	-	-	-
Countries	18	-	-	-

Variables	Coef.	Std. Err.	T-Ration	Interval
Min obs	9	-	-	-
Max obs	9	-	-	-
Av obs	9	-	-	-
Wald chi2(2)	3321.70	-	0.0000	-

*, indicate significance at 1% level.

6. CONCLUSIONS & REMARKS

The relationship between military and growth has been a topic of keen interest in defense economics and there is a significant amount of literature exploring the relationship between military spending growths in developing countries. Nevertheless, due to the application of various theoretical models, different analytical methods and different samples, the current literature is inconclusive about the military-growth relationship. This paper explores the correlation between military expenditure and growth in 18 MENA countries. By applying more recent econometric models such as the pooled regression model, Random, Fixed and SGMM model. Moreover, our panel regressions present rational and robust outcomes.

The findings of the empirical panel indicate that military expenditure in the sample countries has a significant and optimistic relationship with economic development. The empirical estimates therefore support the positive relationship between military expenditure and development, and Kollias (1997) and Alia (2012) are in line with our findings.

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SISHANKAMRATA DEVELOPMENT STRATEGY IN MAINTAINING THE SUSTAINABILITY OF INDONESIA'S STRATEGIC INTERESTS

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Abstract: *The development of that strategic environment can create both opportunities and threats for Indonesia. The integration of the main components, reserves, and support is the key to the success of Total People's Defense and Security System (Sistem Pertahanan dan Keamanan Rakyat Semesta; Sishankamrata) in defending Indonesia's strategic interests from all threats. For this reason, efforts are required to direct the development and fostering of the main components, reserves, and support planned in a state defense posture and guided by the concept of Sishankamrata. This study aims at developing a strategy for the Total People's Defense and Security System to face the development of the 21st century strategic environment. In this study, the SWOT analysis method, Interpretive structural modeling (ISM), and Balanced Scorecard (BSC) approach were used. Based on the results of the SWOT analysis on the development of Sishankamrata, there were 18 (eighteen) sub-strategies. Based on the results of the Interpretive structural modeling (ISM), it was discovered that the ST-1 sub-strategy, the formulation of defense policies expected that they do not overlap and be in line with the world maritime axis policy program, was the beginning of determining the development of the Sishankamrata strategy. Based on the implementation plan of Balanced Scorecard (BSC), it was uncovered that the financial perspective consists of 4 (four) sub-strategies; the internal process perspective consists of 5 (five) sub-strategies; the Growth & Development perspective consists of 6 (six) sub-strategies, and the Customer/User perspective consists of 3 (three) sub-strategies.*

Key words: *Sishankamrata (Total People's Defense and Security System), Strategic environment, SWOT analysis, Interpretive structural modeling (ISM), Balanced Scorecard (BSC)*

1. INTRODUCTION

The development of this strategic environment can generate both opportunities and threats for Indonesia which must be addressed by the state defense system (*sistem pertahanan negara; sishanneg*) being able to take advantage of Indonesia's opportunities and advantages to maximize the achievement of Indonesia's strategic interests and ward off all threats to Indonesia's strategic interests arising from the dynamics of the development of the strategic environment (Ministry of Defence: 2015).

The integration of the main components, reserves, and support is the key to the success of Total People's Defense and Security System (*Sistem Pertahanan dan Keamanan Rakyat Semesta; Sishankamrata*) in defending Indonesia's strategic interests from all threats (Sundari: 2019). For this reason, efforts are required to direct the development and fostering of the main components, reserves, and support planned in a state defense posture and guided by the concept of *Sishankamrata*. *Sishankamrata* can be understood as the consistency and suitability of the results of the implementation of the *Sishankamrata* in carrying out its function to prevent all threats to Indonesia's strategic interests from time to time.

Based on these conditions, this study aims at developing a total people's defense and security system to face the development of the 21st century strategic environment having the potential to threaten Indonesia's strategic interests. For this reason, this study will discuss the development of a strategic environment that affects Indonesia's strategic interests as a basis for developing a valid and reliable *Sishankamrata*-based state defense posture. In this study, the SWOT analysis method, Interpretive structural modeling (ISM), and Balanced Scorecard (BSC) approach were used. The SWOT Analysis method is used to formulate a *Sishankamrata* development strategy. The ISM method is used to design the mapping between sub-strategic components. The BSC method is used for strategy implementation planning.

There are several previous studies as a reference. Those researches, among others, are Navy Ability Development Strategy using SWOT Analysis-Interpretive structural modeling (ISM) (Susilo, et al., 2019). Maritime Strategy Development To Encounter The Threat of National Sea Security In Indonesia Territory (Susilo, et al., 2018). Development of SWOT-ISM based Reliability-centered maintenance (RCM) (Gupta, et al., 2018). The Development of

a Cleaner Production Model and Applied Management Solutions for the Pharmaceutical Industry (Zadeh, et al., 2018). Analytical Network Process in the Framework of SWOT Analysis for Strategic Decision Making (Case Study: Technical Faculty in Bor, University of Belgrade, Serbia) (Živković, et al., 2015). SWOT - AHP Model For Prioritization of Strategies of The Resort Stara Planina (Nikolića, et al., 2015). SWOT Analysis Application for Indications of The Strategy Action Chosen Enterprise In The Construction Sector (Czajkowska: 2016).

Other researches on ISM and BSC, including Interpretive Structural Modeling (ISM) of Travel and Tourism Enablers (Roy & Misra, 2016). Institutional development strategy through Interpretive Structural Modelling (ISM) for gillnet fisher group in Barsela Aceh, Indonesia (Rizal, et al., 2016). Using Interpretive Structural Modeling to Determine the Relation between Youth and Sustainable Rural Development (Panackal & Singh, 2016). Developing a Robust Strategy Map in Balanced Scorecard Model Using Scenario Planning (Jafari, et al., 2015). The Impact of the Implication of Balanced Scorecard Model (BSC) in Performance of the Post Company (Iranzadeh, et al., 2017). Using the Balanced Scorecard for Performance Evaluation: Empirical Evidence from the Listed Corporations in the Palestine Exchange (PEX) (Saad & Daraghma, 2016).

This study is limited to the security strategy in the development of the national defense posture. It is also limited to the strategy model with the SWOT-ISM-BSC business approach. This study is expected to provide input on the development of a national defense posture model. Moreover, it is also expected to be a reference in the context of defense strategy management.

This study consists of several parts. Section 2 describes the materials and research methodologies related to strategy theory, strategic management theory, total people's defense and security system (*Sishankamrata*), SWOT analysis theory, Interpretive Structural Modeling (ISM) theory, Balanced Scorecard (BSC) theory. This section also describes data collection and analysis, as well as flowchart diagrams. Section 3 describes the results and discussion of the study related to the development of the *Sishankamrata* model strategy, prioritization and mapping of sub-strategies, and implementation plans. Section 4 describes the conclusions from the study on the development of the *Sishankamrata* strategy in the context of the sustainability of Indonesia's interests in facing the dynamics of the 21st century strategic environment.

2. MATERIAL/METHODS

2.1. Strategy

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). According to Ansoff (1969) in (Athapaththu: 2016) strategy is a guideline for decision making based on market scope, growth rate, competitive advantage, and synergy.

Currently, military forces face many challenges around the world. The five-step strategic risk assessment process should focus on several key issues such as (CSIS: 2013): 1) Understanding the strategic and operational environment and utilizing information; 2) Establishing strategic and operational conditions; 3) Projecting power; 4) Employing the power and ability to achieve strategic and operational objectives; 5) Protecting and maintaining power that is consistent with operational conditions; 6) Stopping military operations that are consistent with strategic and operational objectives.

2.2. Strategic Management

Strategic management is a set of managerial decisions and actions determining a company's long-term performance. It includes environmental scanning (both external and internal), strategy formulation (strategic or long-term planning), strategy implementation, and evaluation and control. Therefore, strategic management research emphasizes monitoring and evaluating external opportunities and threats by considering the company's strengths and weaknesses (Wheelen & Hunger, 2012).

Strategic management can be defined as the art and science of formulating, implementing, and evaluating cross-functional decisions enabling an organization to achieve its goals. This definition implies that the strategic management focuses on integrating management, marketing, finance/accounting, production/operations, research and development, and information systems to achieve organizational success (David: 2011). The strategic management process consists of three stages: (1) Strategy formulation; (2) Strategy implementation; and (3) Strategy evaluation. Strategy formulation includes developing a vision and mission, identifying external opportunities and threats to the organization, determining internal strengths and weaknesses, setting long-term goals, generating alternative strategies, and selecting specific strategies to pursue. (David: 2011).

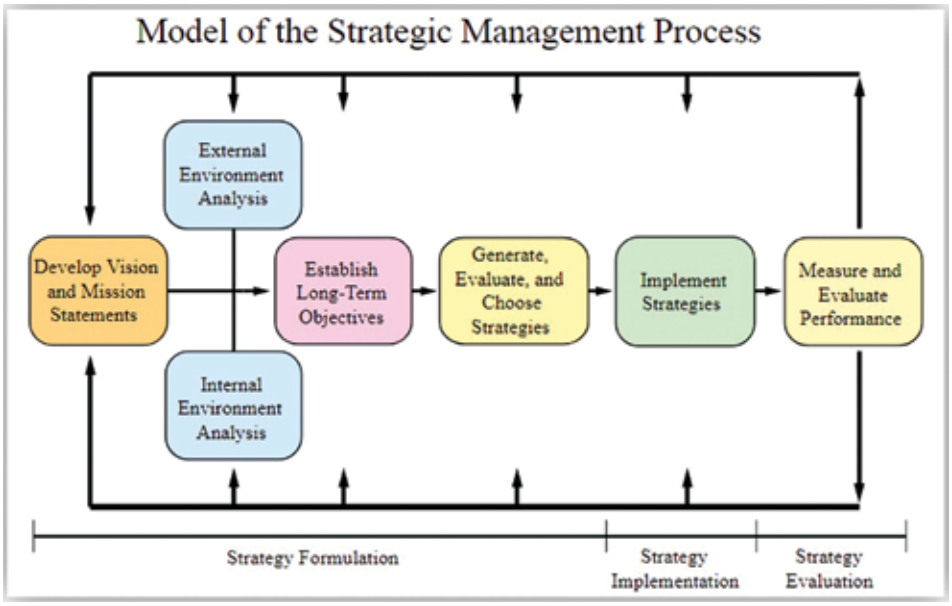

Fig. no. 1 Strategic Management Process
(David: 2011)

2.3. Total People's Defense and Security System *(Sishankamrata)*

When Indonesia claimed its independence, Indonesia has adhered to a total people's defense and security system *(Sishankamrata)* involving all components of the nation in fighting for and defending its independence from the invaders (Rinakit: 2005). The necessary capital to the success of *Sishankamrata* in achieving and maintaining Indonesian independence is the spirit of self-sacrifice and the integration of all components of the nation based on the Pancasila's noble values and love for the country to mobilize all of its resources as a defense force capable of warding off colonial powers. This concept is still clearly relevant to be applied in the current context in responding to various developments in the strategic environment possessing the potential to threaten Indonesia's strategic interests (Fatgehipon: 2017).

Sishankamrata is contained in the 1945 constitution of the Republic of Indonesia (UUD 1945) article 30, paragraph 2 stating that "State defense and security efforts are carried out through the total people's defense and security system conducted by the Indonesian National Army and the Indonesian National Police as a prime force, and the people are as a supporting force" (Reza: 2017). In its development, Law Number 3

of 2002 concerning State Defense Article 1 explains that "The national defense system is a comprehensive defense system involving all citizens, territories and other national resources, and is prepared beforehand by the government and is carried out in a total, integrated, directed, and continuous manner to uphold state sovereignty, territorial integrity, and the safety of the entire nation from all threats." Law Number 3 of 2002 further describes the Indonesian National Armed Forces (*Tentara Negara Indonesia; TNI)* as the main component and other national resources as a reserve and supporting component in increasing the strength and capability of the main components in confronting the military threats (Rabasa & Haseman, 2002). Meanwhile, further regulations regarding the reserve and supporting components of state defense in implementing the total people's defense and security system are regulated in Law Number 23 of 2019 concerning National Resource Management.

2.4. Strategic Environment

The strategic environment is an internal and external situation, both static (*Trigatra*) and dynamic (*Pancagatra*), influencing the achievement of the national goal. The aspect of *Trigatra* is a natural aspect, namely the geographic position and location of the country, the state and natural resources, the condition and the capacity of the population (Ramda & Supandi, 2020). Meanwhile, the aspect of *Pancagatra* is the social aspect /Ipoleksosbudhankam, ideology, politics, economy, socio-culture, as well as defense and security (Priyono, et al., 2017).

The discourse concerning the concept of a nation-state and Indonesian nationalism is currently in a dilemma between the two great forces of globalization and ethnic nationalism being something that must be recognized as a change in the strategic environment (Priyono, et al., 2017). This change also needs to realize that globalization with its free-market is a form of transnational neo-capitalism, or contemporary imperialism, and the tyranny of globalization which always tries to intervene in national policies and sovereignty. The biggest potential threat to the nation as a modern political community is when there is national disintegration by the weakening of the collective memory and the dysfunction of state institutions and decreasing the legitimacy of the nation's elite (Ministry of Defence: 2015).

The development trend of the strategic environment is increasingly unpredictable, thus placing upcoming developments full of uncertainty. The distance between countries is now no longer a barrier, while the nature of interdependence between countries

is getting bigger. The phenomenon or desire of separation within the country on the grounds of welfare and efforts to improve one's destiny will arise. The dynamic development of this strategic environment will directly or indirectly affect the shift in the national interests by the predicted threats to be faced by each country (Priyono, et al., 2017).

SWOT analysis is an analysis of the internal and external conditions of an organization which will then be used as a basis for designing strategies and work programs. The internal analysis includes an assessment of the factors of strength and weakness. Meanwhile, the external analysis includes opportunities and threats.

the organization to soften the external threat and even then turn the threat into an opportunity.

c. WO Strategy (Divestment/ Investment)

This cell represents the interaction between organizational weakness and outside opportunities. This kind of situation provides an option in an ambiguous situation. The opportunities available are very convincing but cannot be exploited because the existing strengths are not sufficient to work on them. The choice of decisions taken is (releasing existing opportunities to be used by other organizations) or forcing to work on those opportunities (investment).

Table 1. SWOT Matrix Analysis

SWOT Analysis Opportunity (O)		**External Factors**	
		Threat (T)	
Factor Internal	**Strength (S)**	SO Strategy	ST Strategy
	Weakness (W)	WO Strategy	WT Strategy

(Susilo, et al., 2019)

Informations:

a. SO Strategy (Comparative Advantages)

This cell is a meeting between strength and opportunity elements so that it provides the possibility for an organization to develop more rapidly.

b. ST Strategy (Mobilization)

This cell is an interaction between threat and strength. Here, the efforts must be made to mobilize resources which are the strength of

d. WT Strategy (Damage Control)

This cell is the weak condition of all cells because it is the meeting between organizational weakness and external threats, and therefore a wrong decision will bring catastrophic disaster to the organization. The strategy that must be taken is Damage Control (controlling losses) so that it does not get worse than expected.

2.5. Interpretive Structural Modeling (ISM)

Interpretive Structural Modeling (ISM) is a technique used in modeling that can synchronize the opinions of experts in providing a concrete picture of the hierarchical structure of the sub-elements of each system element and in finding key sub-elements and the character of each sub-element, as a useful knowledge base for planning an integrated and cross-sectoral agro-industrial development strategy (Abdullah, et al., 2014). ISM is a structuring tool in descriptive modeling techniques used primarily for assessment by a team but can also be used by a researcher (Gorvett & Liu, 2007). Structural models are generated to capture complex matters of a system through patterns designed using graphics and sentences. The contextual relationships between the sub-elements of the ISM technique can be grouped into several types and their interpretations (Sandbhor & Botre, 2014).

This 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 needing to be done in the ISM analysis is to determine the elements corresponding to the existing problems (Attri, et al., 2013). Furthermore, sub-elements are arranged for each selected element. Selection of elements and arrangement of sub-elements are 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) based on the VAXO system, namely (Jadhav, et al., 2015):

V if eij = 1 and eji = 0
A if eij = 0 and eji = 1
X if eij = 1 and eji = 1
O if eij = 0 and eji = 0

The matrix is then converted into a closed matrix. It is done to correct the matrix to meet the transitivity rule, namely if A affects B and B affects C, A must affect C. The value 1 means that there is a contextual relationship between the ith element and the jth element, while eij = 0 means that there is no contextual relationship between the ith element and the jth element. Then, the SSM is converted into a reachability matrix by changing the VAXO to 1 and 0. Furthermore,

testing the transitivity rule was carried out until a closed matrix occurs. The matrix having met the transitivity is continuing with its process to obtain the reachability matrix, to obtain Driver Power (DP) and Dependence (D) (Panackal & Singh, 2016).

2.6. Balanced Scorecard (BSC)

The concept of the Balanced Scorecard has long been developed by Robert S. Kaplan and David P. Norton. The concept of the Balanced Scorecard was developed to complement financial performance measurement (also known as traditional performance measurement) and as an essential tool for corporate organizations to reflect creative thinking in the era of competitiveness and organizational effectiveness (Isoraite, 2008). The Balanced Scorecard is an integrated performance management system connecting various goals and measures of performance and organizational strategy. The Balanced Scorecard is a strategic management system defining a strategy-based accountability system. The Balanced Scorecard translates the organization's mission and strategy into operational objectives and performance measures in four perspectives, a financial perspective, a customer perspective, an internal business process perspective, and a learning and growth perspective (Kaplan & Norton, 2001).

This concept introduces a company performance measurement system using certain criteria. These criteria are an elaboration of the long-term mission and strategy of the company classified into four different perspectives (Niven: 2003):

1. Financial perspective.

How we are shareholder-oriented.

2. A Customer perspective.

How we can become the most valuable main supplier for our customers.

3. Internal business process perspective

All best business processes must do, in the long and short term, to achieve financial goals and customer satisfaction.

4. Learning and growth perspective.

How we can consistently improve and generate value, especially concerning the ability and motivation of employees. In the Balanced Scorecard, the four perspectives become an inseparable whole. The four perspectives are also indicators of performance measurement complementing each other and have a causal relationship.

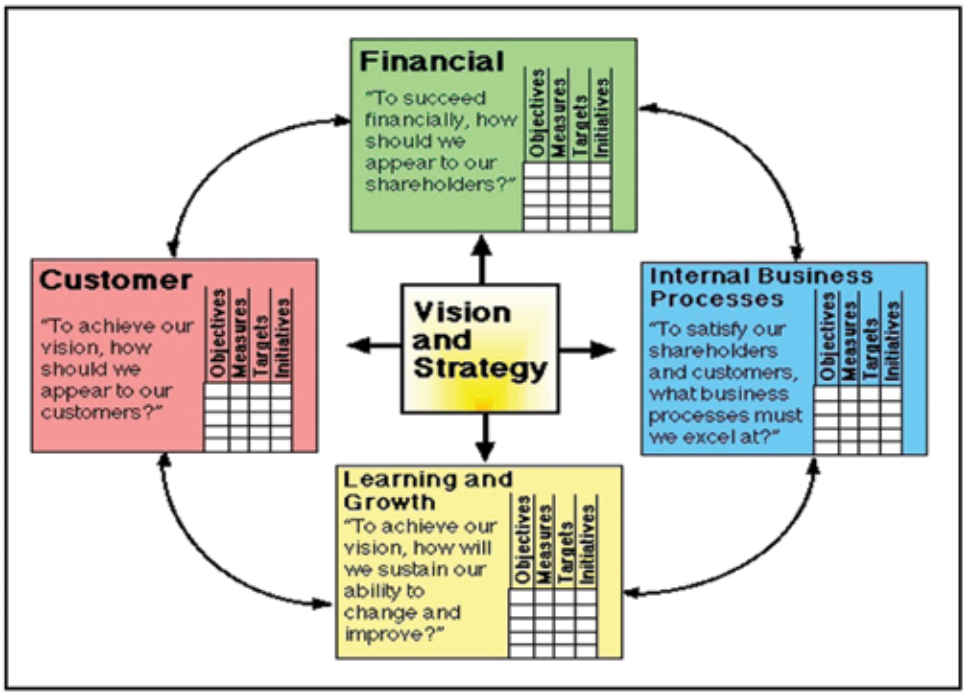

Fig. no. 2 Model Balanced Scorecard
(Kaplan & Norton, 2001)

2.7. PESTEL Analysis

The PESTEL analysis describes a framework of macro factors used in the scanning environment for components of strategic management. This analysis is part of the external analysis when conducting strategic analysis and/or providing a different picture of the macro factors that should be taken into consideration (Rastogi & Trivedi, 2016). PESTEL analysis is an analysis of the external environmental factors of a business covering the political, economic, social, technological, environmental, and legal fields. PESTEL is used to assess the market of a business unit or organizational unit (Song, et al., 2017). The direction of PESTEL analysis is a framework for assessing a situation, strategy or position, company direction, marketing plans or ideas. The factor of PESTEL plays an important role in creating profit value for a strategy usually occurring outside the control of an organization and normally taking into account threats and benefits (Strzelczyk & Chłąd, 2017).

The basis of the PESTEL analysis includes four factors (Rastogi & Trivedi, 2016):

1. Political.

These are factors which are basically how the government intervenes in the economy.

In particular, political factors include tax policies, labor laws, environmental laws, trade restrictions, rate, and political stability.

2. Economy.

Factors included in this aspect, such as economic growth, interest rates, exchange rates, inflation rates. These factors greatly affect how businesses operate and make decisions.

3. Social.

The factors included are aspects of culture and health awareness, population growth rate, age distribution, career, and emphasis on safety.

4. Technology.

The factors included technological aspects are research and development, automation, technology incentives, and the rate of technological change. Technological changes will affect cost, quality, and cause and will lead to innovation.

5. Environment/Ecology.

Whatever strategy and responsibility for the environment, it must be obeyed. Although this factor is relatively new, the environment has become a special concern for the last 15 years. Environmental factors can be used when doing strategic planning or trying to influence buyer's decisions such as geographic location factors.

6. Legal.

Legal factors include legal influences such as changes to existing or future laws (Examples: health and safety, job directions, human rights, corporate governance, and environmental responsibility).

PESTEL is used as an analysis of external factors on Green jobs. PESTEL is used to present the decision map. PESTEL is used to identify criteria for information systems research questions. PESTEL is used to evaluate factors as benefits or risks for the organization.

Table 2. PESTEL Analysis of the Development of *Sishankamrata*

NO	PESTEL CRITERIA	FACTOR ANALYSIS
1	Political	Infrastructure
		Government Policy
		Terrorism and Military Consideration
2	Economic	Economic Growth
		Natural Resources
		Wage Rates
3	Social	Demography
		Cultural Norms
		Education

NO	PESTEL CRITERIA	FACTOR ANALYSIS
4	Technological	Emerging Technologies
		Technological Maturity
		R&D Effort
5	Ecological	Pollution
		Workforce Health
		Climate Change
6	Legal	Regional Laws
		Law Environment
		Court System

(Alshaher: 2013); (Rastogi & Trivedi, 2016)

2.8. Method/Stages

The research stage began with data collection by conducting interviews with six expert personnel (E1; E2; E3; E4; E5; E6). The experts becoming experts in the field of strategic environmental analysis and formulation of defense strategy policies are the Directorate General of Strahan of the Ministry of Defense, BIN, BAIS TNI, and Pusjianstra TNI, Defense and intelligence observers, as well as Think Tanks engaged in defense.

Data collection from experts related to the analysis of the development of a security strategy to sustain Indonesia's strategic interests in the future. After all, data are collected, the data are divided into 2, namely external and internal analysis. To find out the strengths and weaknesses within internal conditions related to strategy development of the S*ishankamrata* development strategy, and to find out the opportunities and threats, a SWOT analysis is used.

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. The overall strategy will derive several related sub-strategies. The sub-strategies obtained will be compiled into strategic steps by forming a strategic map using the ISM method. Furthermore, a strategy implementation plan was formed using the Balanced Scorecard (BSC) framework.

2.9. Flow Chart

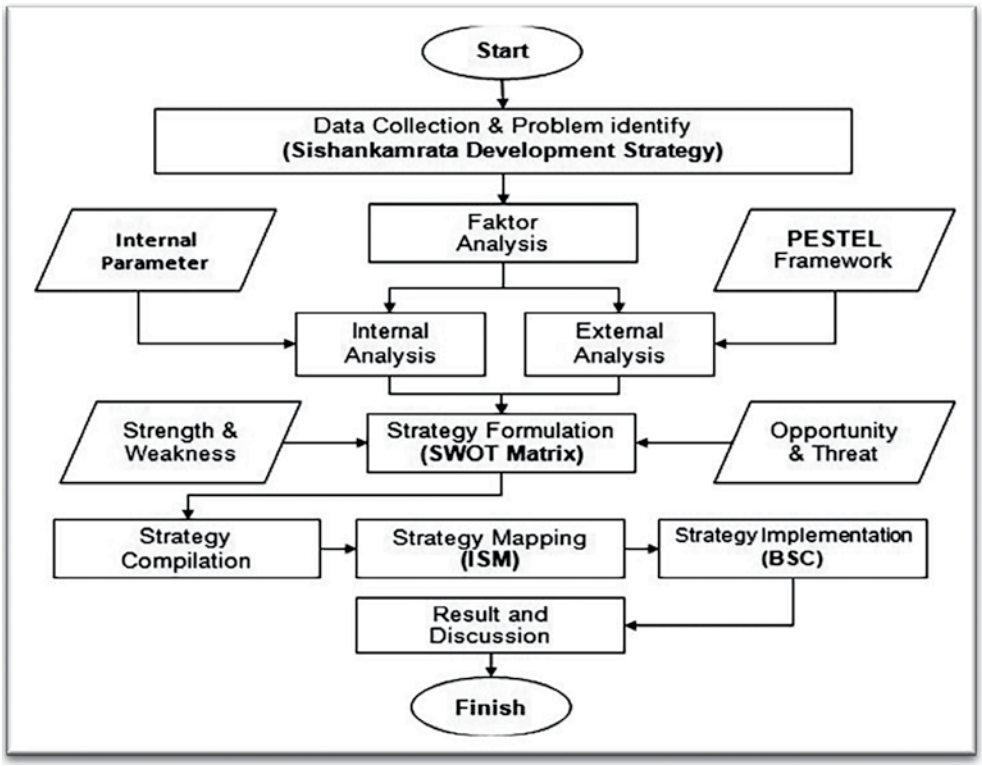

Fig. no. 3 Flowchart of Research

3. RESULT & DISCUSSION

3.1. SWOT Analysis – External Factor Analysis

Analysis of the external environment indicates the opportunities and threats faced in *Sishankamrata* development strategy in the context of sustaining Indonesia's interests in facing the 21st- century strategic environmental dynamics. The external analysis aims at gaining knowledge about new opportunities that can affect the *Sishankamrata* development strategy. The core of this analysis is to be able to provide comprehensive information about external conditions to be used as a form of input in the form of a strategic planning process for the development of a security system.

To analyze external factors, the PESTEL (Political, Economic, Social, Technology, Environment, and Legal) analysis model is used. In PESTEL analysis, several factors are affecting external conditions. These factors are described in the xx table below:

Table 3. Analysis of External Factors of the *Sishankamrata* Development Strategy

No	PESTEL Criteria	Factor Analysis	Opportunity	Threat
1	Political	Infrastructure	O1. Having a good basic infrastructure	
		Government Policy	O2. The state's free and active politics O3. World maritime axis policy	T1. Partial policy
		Terrorism & Military Consideration	O4. Experienced in facing the threat of radicalism and left-wing extremism	T2. The threat of global terrorism T3. Non-traditional threats
2	Economic	Economic Growth	O5. The increase of defense budget	T4.World economic uncertainty T5. China–United States trade war
		Natural Resources	O6. Abundant alternative resources O7. Export some Main Weapon System to Regional	
		Wage Rates		T6. Per capita income is still below standard
3	Social	Demography	O8. Abundant productive age population	T7. Threat of population explosion T8. Threat from the right and left-side ideology
		Cultural Norms	O9. High population militancy	T9. A high rate of social inequality
		Education	O10. The high-enough number of educated human resources	T10. The low level of the population education
4	Technological	Emerging Technologies	O11. Enhanced defense industry capability	
		Technological Maturity	O12. Technology transfer from friendly countries	
		R&D Effort	O13. The dynamic development of national technology	T11. Low R&D ability

No	PESTEL Criteria	Factor Analysis	Opportunity	Threat
5	Environment	Pollution		T12. The threat of a global epidemic
		Workforce Health	O14. The high life expectancy	
		Climate Change		T13. Global climate change
6	Legal	Regional Laws		T14. A Dispute in the Natuna region
		Law Environment		T15. Overlapping legal governance
		Court System	O15. Fairly good cyber human resources	T16. Cyber system and network threats

Based on Table 3 above, there are 15 (fifteen) points for the opportunity analysis factor and 16 (sixteen) points for the constraint/ threat analysis factor identified on external factors.

3.2. SWOT Analysis – Internal Factor Analysis

Analysis of the internal environment aims at identifying several strengths and weaknesses contained in the total people's defense and security system (*Sishankamrata*) in the context of the sustainability of Indonesia's strategic interests. Consideration of the strengths and weaknesses of *Sishankamrata* is used to identify the advantages of *Sishankamrata*, competitiveness, strategic acuity in the context of the sustainability of Indonesia's interests in facing the dynamics of the 21st century strategic environment. Internal factors consist of elements of the world's maritime axis, Trigatra, Nawacita, conditions and demographic aspects. These internal factors provide derivatives in the form of several parameters consisting of 1) Integrative Defense; 2) Defense Force Development; 3) Deployment of Defense Force; 4) Budgeting; 5) International Defense Cooperation; 6) National Resources.

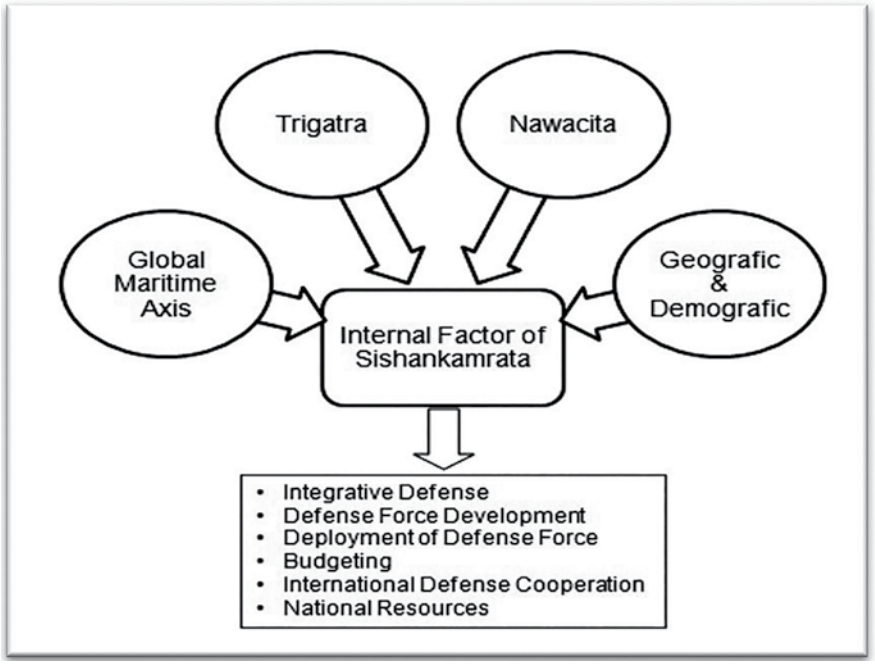

Fig. no. 4 Model Internal Factor Analysis

Table 4. Analysis of External Factors of the *Sishankamrata* Development Strategy

No	Analysis Factor	Strength	Weakness
1	Integrated Defense	S1.Solidity between generations S2.Popular support S3.Policy lines align with government programs	W1.Minimal soldiers' welfare W2.The composition of the soldiers is still *Jawasentris*.
2	Defense Force Development	S4.Abundant spare and supporting components S5.The largest military force in Southeast Asia S6.The synergy between the TNI and the people is quite good.	W3.Defense policies and strategies are still partial W4.Lack of soldiers at the NCO / Enlisted level W5.Inadequate facilities and infrastructure W6.The low utilization of the national defense industry W7.Low R & D aspects

No	Analysis Factor	Strength	Weakness
3	Deployment of Defense Force	S7. Good synergy between TNI and other stakeholders S8. Well combined operability S9. Having high mobility	W8. The existence of non-traditional threats W9. Main Weapon System still depends on non-alternative energy
4	Budgeting	S10. The country's economic capacity is quite good S11. The defense budget continues to increase every year	W10. Defense budget is still below standard (2% of GDP) W11. The defense budget is mostly for routine spending
5	International Defense Cooperation	S12. Joint training with Soldiers of other countries S13. Technology transfer from friendly countries	
6	National Resources	S14. Geographical position on world traffic lanes S15. As the largest maritime country in Asia S16. Having the largest defense industry in Southeast Asia S17. Abundant alternative energy	W12. Geographical position requires more supervision. W13. The geographical position is prone to crime at sea W14. The uneven spread of soldiers W15. Dependence on non-renewable energy W16. The defense industry still depends on foreign countries

Based on Table 4 above, there are 17 (fifteen) points for the strength analysis factor and 16 (sixteen) points for the weaknesses analysis factor identified on external factors.

3.3. SWOT Matrix

In a strategic plan, it is necessary to evaluate both external and internal factors. Analysis of the factors must produce the strength possessed by an organization, as well as find out the weaknesses existing in that organization. Meanwhile, the analysis of external factors must be able to identify the open opportunities to the organization and also be able to know the threats experienced by the organization concerned.

The SWOT matrix is a subjective analysis tool of business information classified into four parts to aid understanding, presentation, discussion, and decision-making. In this study, the SWOT matrix is employed to identify and describe how the opportunities and threats from the external environment in the organization in supporting *Sishankamrata* are anticipated with strengths and weaknesses.

Table 5. SWOT (SO-ST) Matrix Analysis

Strengths	Opportunities
S1. Solidity between generations S2. Popular support S3. Policy lines align with government programs S4. Abundant spare and supporting components S5. The largest military force in Southeast Asia S6. The synergy between the TNI and the people is quite good. S7. Good combined operability S8. Having high mobility S9. The country's economic capacity is quite good S10. The defense budget continues to increase every year S11. Joint training with Soldiers of other countries S12. Technology transfer from friendly countries S13. Geographical position on world traffic lanes S14. As the largest maritime country in Asia S15. Having the largest defense industry in Southeast Asia S16. Abundant alternative energy	O1. Having a good basic infrastructure O2. The state's free and active politics O3. World maritime axis policy O4. Experienced in facing the threat of radicalism and left-wing extremism O5. The increase of defense budget O6. Abundant alternative resources O7. Export some Main Weapon System to Regional O8. Abundant productive age population O9. High population militancy O10. The high-enough number of educated human resources O11. Enhanced defense industry capability O12. Technology transfer from friendly countries O13. The dynamic development of national technology O14. The high life expectancy O15. Fairly good cyber human resources

SO Strategy	
(SO)1. Infrastructure development is in line with government policy. (SO)2. Force solidity in support of the country's free and active politics. (SO)3. Additional productive age figures for the development of reserve and supporting components. (SO)4. A high life expectancy can be used to extend a soldier's productive life. (SO)5. The country's economic capability is supported by the Defense Industry component, and alternative resources can be utilized for the development of defense equipment. (SO)6. Military and economic power as well as free and active politics as balancing power in Southeast Asia in supporting policies on the world's maritime axis.	
Strengths	**Threats**
S1. Solidity between generations S2. Popular support S3. Policy lines align with government programs S4. Abundant spare and supporting components S5. The largest military force in Southeast Asia S6. The synergy between the TNI and the people is quite good. S7. Good combined operability S8. Having high mobility S9. The country's economic capacity is quite good S10. The defense budget continues to increase every year S11. Joint training with Soldiers of other countries S12. Technology transfer from friendly countries S13. Geographical position on world traffic lanes S14. As the largest maritime country in Asia S15. Having the largest defense industry in Southeast Asia S16. Abundant alternative energy	T1. Partial policy T2. The threat of global terrorism T3. Non-traditional threats T4. World economic uncertainty T5. China–United States trade war T6. Per capita income is still below standard T7. Threat of population explosion T8. Threat from the right and left-side ideology T9. High rate of social inequality T10. The low level of the population education T11. Low R&D ability T12. The threat of a global epidemic T13. Global climate change T14. A dispute in the Natuna region T15. Overlapping legal governance T16. Cyber system and network threats

ST strategy
(ST)1. Formulating defense policies to avoid the overlap and being in line with the policy programs of the world's maritime axis. (ST)2. Empowerment of the TNI's ability to face the global threat, traditional terrorism, ideological threats, global epidemics, and cyber system & network threats. (ST)3. The increase in the defense budget to support defense research. (ST)4. Utilizing the ability of the TNI, reserve and supporting components to resolve the disputed area of Natuna.

Table 6. SWOT (WO-WT).Matrix Analysis

Weaknesses	Opportunities
W1. Minimal soldiers' welfare W2. The composition of the soldiers is still *Jawasentris*. W3. Defense policies and strategies are still partial W4. Lack of soldiers at the NCO / Enlisted level W5. Inadequate facilities and infrastructure W6. The low utilization of the national defense industry W7. Low R & D aspects W8. The existence of non-traditional threats W9. Main Weapon System still depends on non-alternative energy W10. Defense budget is still below standard (2% of GDP) W11. The defense budget is mostly for routine spending W12. Geographical position requires more supervision. W13. The geographical position is prone to crime at sea W14. Uneven spread of soldiers W15. Dependence on non-renewable energy W16. The defense industry still depends on foreign countries	O1. Having a good basic infrastructure O2. The state's free and active politics O3. World maritime axis policy O4. Experienced in facing the threat of radicalism and left-wing extremism O5. The increase of defense budget O6. Abundant alternative resources O7. Export some Main Weapon System to Regional O8. Abundant productive age population O9. High population militancy O10. The high-enough number of educated human resources O11. Enhanced defense industry capability O12. Technology transfer from friendly countries O13. The dynamic development of national technology O14. The high life expectancy O15. Fairly good cyber human resources

WO strategy	
(WO)1. A gradual increase in the defense budget to 2% of GDP (WO)2. The acceptance of TNI soldiers by not concentrating on the Java region as the distribution of the composition of the soldiers. (WO)3. Development of domestic defense equipment by prioritizing alternative energy. (WO)4. The increase of the ability of defense equipment through technology transfer from friendly countries. (WO)5. Development of defense infrastructure with priority areas outside Java. (WO)6. Increasing the number of soldiers at the NCO/Enlisted level by taking advantage of the abundant productive age figures	
Weaknesses	**Threats**
W1. Minimal soldiers' welfare W2. The composition of the soldiers is still *Jawasentris*. W3. Defense policies and strategies are still partial W4. Lack of soldiers at the NCO / Enlisted level W5. Inadequate facilities and infrastructure W6. The low utilization of the national defense industry W7. Low R & D aspects W8. The existence of non-traditional threats W9. Main Weapon System still depends on non-alternative energy W10. Defense budget is still below standard (2% of GDP) W11. The defense budget is mostly for routine spending W12. Geographical position requires more supervision. W13. The geographical position is prone to crime at sea W14. Uneven spread of soldiers W15. Dependence on non-renewable energy W16. The defense industry still depends on foreign countries	T1. Partial policy T2. The threat of global terrorism T3. Non-traditional threats T4. World economic uncertainty T5. China–United States trade war T6. Per capita income is still below standard T7. Threat of population explosion T8. Threat from right and left-side ideology T9. High rate of social inequality T10. The low level of the population education T11. Low R&D ability T12. The threat of a global epidemic T13. Global climate change T14. A dispute in the Natuna region T15. Overlapping legal governance T16. Cyber system and network threats

WT strategy
(WT)1. Empowerment of the existing number of soldiers in overcoming the effects of globalization. (WT)2. Maximum use of the budget in supporting the operation of the TNI's Main Duties.

Based on the identification of various internal and external factors on Table 5 and Table 6, for the next step, it can be formulated strategic factors. The existing internal and external factors are then combined to determine an alternative strategy for the development of *Sishankamrata*. Based on the results of the SWOT matrix analysis, the SO Strategy consists of 6 (six) sub-strategies; The WO strategy consists of 6 (six) sub-strategies; ST strategy consists of 4 (four) sub-strategies; and the WT strategy consists of 2 (two) sub-strategies. Furthermore, all the strategic steps will be compiled into one, so that there are 18 (eighteen) sub-strategies of *Sishankamrata* development. The compilation of these strategies is described in Table 7.

Table 7. Formulation and Compilation of the *Sishankamrata* Development Strategy

Strategy Compilation
SO Strategy
(SO)1. Infrastructure development is in line with government policy. (SO)2. Force solidity in support of the country's free and active politics. (SO)3. Additional productive age figures for the development of reserve and supporting components. (SO)4. A high life expectancy can be used to extend a soldier's productive life. (SO)5. The country's economic capability is supported by the Defense Industry component, and alternative resources can be utilized for the development of defense equipment. (SO)6. Military and economic power as well as free and active politics as balancing power in Southeast Asia in supporting policies on the world's maritime axis.
ST strategy
(ST)1. Formulating defense policies to avoid the overlap and being in line with the policy programs of the world's maritime axis. (ST)2. Empowerment of the TNI's ability to face the global threat, traditional terrorism, ideological threats, global epidemics, and cyber system & network threats. (ST)3. The increase of the defense budget to support defense research. (ST)4. Utilizing the ability of the TNI, reserve and supporting components to resolve the dispute area of Natuna.

WO strategy
(WO)1. A gradual increase in the defense budget to 2% of GDP
(WO)2. The acceptance of TNI soldiers by not concentrating on the Java region as the distribution of the composition of the soldiers.
(WO)3. Development of domestic defense equipment by prioritizing alternative energy.
(WO)4. The increase of the ability of defense equipment through technology transfer from friendly countries.
(WO)5. Development of defense infrastructure with priority areas outside Java.
(WO)6. Increasing the number of soldiers at the NCO/ Enlisted level by taking advantage of the abundant productive age figures
WT strategy
(WT)1. Empowerment of the existing number of soldiers in overcoming the effects of globalization.
(WT)2. Maximum use of the budget in supporting the operation of the TNI's Main Duties.

3.4. Interpretative Structural Modeling (ISM)

Prioritization and strategy mapping begin with forming a hierarchical system between previously identified aspects. The formation of a hierarchical system using the Interpretative Structural Modeling approach. This method aims at planning the chosen strategy to be described in the implementation plan based on a hierarchical arrangement.

In the SSAT development strategy, the ISM method steps are as follows:

a. *Structural Self Interaction Matrix* (SSIM).

SSIM is a stage to determine the dominant variables from the results of the SWOT analysis to determine the level of the relationship between the sub-strategies.

b. *Reachability Matrix (RM).*

Furthermore, based on the table about the SSIM matrix, it is then made in the form of a Reachability Matrix (RM) table by replacing V, A, X, O into numbers 1 and 0.

Table 8. SSIM Model in Research

No	Code	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	(SO)1	O	O	O	A	O	O	V	A	A	O	O	A	V	A	O	O	O	-
2	(SO)2	O	A	O	O	O	O	O	O	A	O	A	A	V	O	O	O	-	
3	(SO)3	X	V	X	O	O	O	A	O	V	O	A	A	V	A	A	-		
4	(SO)4	O	V	V	O	O	O	V	O	V	O	V	O	O	O	-			
5	(SO)5	V	O	O	V	A	A	O	A	V	A	V	A	V	-				
6	(SO)6	O	O	O	O	A	O	O	A	X	A	X	A	-					
7	(ST)1	O	V	V	V	V	V	V	A	V	A	V	-						
8	(ST)2	X	X	O	O	A	V	O	A	X	A	-							
9	(ST)3	O	O	O	V	A	V	O	X	V	-								
10	(ST)4	A	O	O	A	O	A	A	A	-									
11	(WO)1	V	O	O	V	V	V	O	-										
12	(WO)2	O	O	O	X	O	O	-											
13	(WO)3	A	O	O	A	X	-												
14	(WO)4	A	O	O	O	-													
15	(WO)5	A	A	X	-														
16	(WO)6	X	V	-															
17	(WT)1	X	-																
18	(WT)2	-																	

Table 9. Reachability Matrix in Research

No	Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	DP	Level
1	(SO)1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	3	16
2	(SO)2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	18
3	(SO)3	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	5	10
4	(SO)4	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	1	1	0	7	7
5	(SO)5	1	0	1	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1	8	5
6	(SO)6	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	3	16
7	(ST)1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	0	14	1
8	(ST)2	0	1	1	0	0	1	0	1	0	1	0	0	1	0	0	0	1	1	8	5
9	(ST)3	0	0	0	0	1	1	1	1	1	1	1	0	1	0	1	0	0	0	9	3
10	(ST)4	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	5	10
11	(WO)1	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	0	0	1	12	2
12	(WO)2	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	4	14
13	(WO)3	0	0	0	0	1	0	0	0	0	1	0	0	1	1	0	0	0	0	4	14
14	(WO)4	0	0	0	0	1	1	0	1	1	0	0	0	1	1	0	0	0	0	6	8
15	(WO)5	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	0	0	6	8
16	(WO)6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	5	10
17	(WT)1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1	5	10
18	(WT)2	0	0	1	0	0	0	0	1	0	1	0	0	1	1	1	1	1	1	9	3

Element structure in Table 9 above shows that the ST-1 sub-strategy, namely the formulation of defense policies to avoid overlap and being in line with the world maritime axis policy program, is the starting point for determining the *Sishankamrata* development strategy. *Sishankamrata*'s policies and strategies constitute unanimity in policies and strategies in the fields of foreign policy, domestic politics, national defense and national security. The deployment and use of defense forces are based on the *Sishankamrata* Doctrine and strategy implemented based on the consideration of threats faced by Indonesia.

The last structural element is the SO-2 sub-strategy, namely the solidity of the force in supporting the country's free and active politics. For the deployment and use of defense forces to be carried out effectively and efficiently, it requires synergy solidity between military elements and other military elements, as well as between military forces and non-military forces. Solidity between military elements is manifested in the integration of Trimatra, namely the integration of land forces, sea power and air power. Meanwhile, the integration between military and non-military forces are realized in the integration between the main components, the reserve components and the supporting components. Such solidity is required in the mobilization and use of defense forces, both in the context of dealing with traditional threats and non-traditional threats.

3.5. Map and Strategy Implementation Plan

The strategy map demonstrates how each performance can support the achievement of the organization's overall strategic goals. The strategy map helps organizations, especially in visualizing what is needed to carry out and support the strategy for developing a total people's defense and security system (*Sishankamrata*). The strategy map will make all organizational actors easier to monitor the progress of strategy implementation. The analysis of the results of the strategic map design connects the Balanced Scorecard with the designed strategy, namely the development of a total people's defense and security system (*Sishankamrata*).

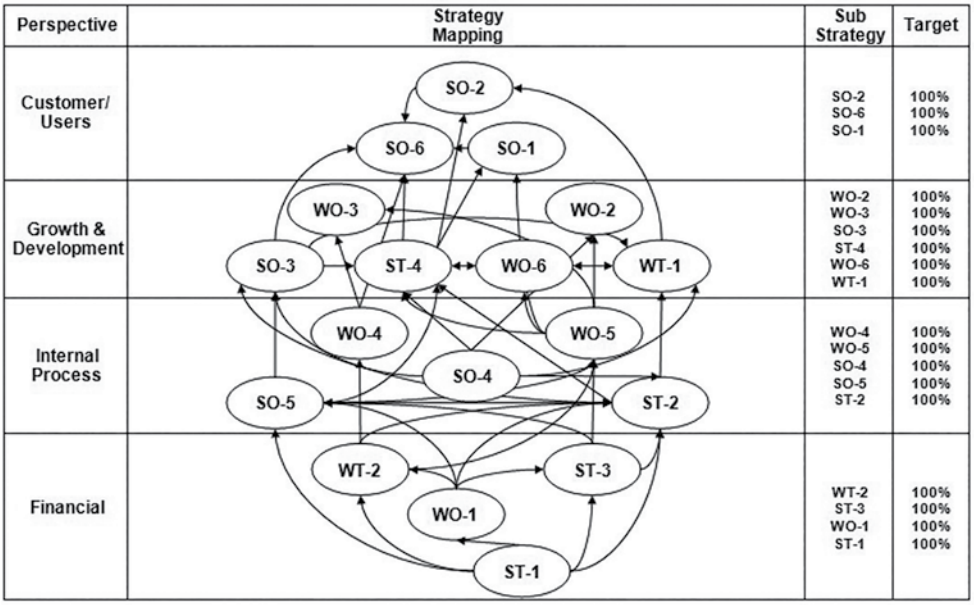

Fig. no. 5 *Sishankamrata* Development Strategy Map

A strategy map is a description of the vision and missions of the organization's goals and the steps needed to achieve the organizational goals. This map allows the organization to delegate responsibilities from the leadership level to individual executors. Strategy mapping is a diagram depicting how an organization creates value by linking strategic objectives explicitly regarding causal relationships with each other grouped under four Balanced Scorecard perspectives. Strategy mapping can also be interpreted as a strategic part of the Balanced Scorecard framework to describe strategies for value creation. In this study, strategy mapping is specifically used to translate the *Sishankamrata* development strategy plan.

Based on Figure 5, Strategy mapping within the balanced scorecard framework consists of 4 (four) perspectives. The financial perspective consists of 4 (four) sub-strategies: 1) Formulation of defense policies to avoid the overlap and being in line with the policy programs of the world's maritime axis (ST-1); 2) Gradual increase in defense budget up to 2% of GDP (WO-1); 3) Utilization of the budget maximally in supporting the operations of the TNI's Main Duties (WT-2); 4) Increasing the defense budget to support defense research (ST-3).

The internal process perspective consists of 5 (five) sub-

strategies: 1) The country's economic capability supported by the Defense Industry component, and alternative resources can be utilized for the development of defense equipment (SO-5); 2) Empowerment of the TNI's ability to face the global threat, traditional terrorism, ideological threats, global epidemics, and cyber system & network threats (ST-2); 3) High life expectancy can be used to extend the productive life of soldiers (SO-4); 4) Development of defense infrastructure with priority areas outside Java (WO-5); 5) Increasing the ability of defense equipment through technology transfer from friendly countries (WO-4).

The Growth & Development perspective consists of 6 (six) sub-strategies: 1) Increasing the number of productive age for the development of the reserve and supporting components (SO-3); 2) Utilizing the capability of the TNI, reserve components, and supporting components to resolve the territorial dispute of Natuna (ST-4); 3) Increasing the number of soldiers at the non-commissioned officer (NCO)/Enlisted level by utilizing the abundant productive age figures (WO-6); 4) Empowerment of the number of soldiers in overcoming the effects of globalization (WT-1); 5) Acceptance of TNI soldiers by not concentrating on the Java region as the distribution of the composition of soldiers (WO-2); 6) Development of domestic defense equipment by prioritizing alternative energy (WO-3).

The Customer/User perspective consists of 3 (three) sub-strategies: 1) Military and economic strength as well as free and active politics as balancing power in Southeast Asia in supporting policies on the world's maritime axis (SO-6); 2) Infrastructure development in line with Government policy (SO-1); 3) Force solidity in supporting the country's free and active politics (SO-2).

4. CONCLUSIONS

The development of this strategic environment can create both opportunities and threats for Indonesia. For this reason, it is necessary to develop a strategy for the total people's defense and security system to deal with the developments of the strategic environment in the 21st century allowing the potential to threaten Indonesia's strategic interests. Based on the results of the SWOT analysis on the development of *Sishankamrata*, there were 18 (eighteen) sub-strategies, distributed into the SO Strategy consisting of 6 (six) sub-strategies; The WO strategy consists of 6 (six) sub-strategies; ST strategy consists of 4 (four) sub-

strategies; and the WT strategy consists of 2 (two) sub-strategies.

Based on the results of the Interpretive structural modeling (ISM), it was discovered that the ST-1 sub-strategy, the formulation of defense policies expected that they do not overlap and be in line with the world maritime axis policy program, was the beginning of determining the development of the *Sishankamrata* strategy. The last structural element is the SO-2 sub-strategy, namely the solidity of the force in supporting the country's free and active politics. Based on the balanced scorecard implementation plan, it is found that the financial perspective consists of 4 (four) sub-strategies, the internal process perspective consists of 5 (five) sub-strategies, the growth & development perspective consists of 6 (six) sub-strategies, the customer/ user perspective consists of 3 (three) sub-strategy.

Future Work (Further Research)

- In further research, in supporting the strengthening of internal factors, Potter 5 Forces strategy analysis can be added.
- In further research, it is necessary to add a sensitivity analysis aspect to the *Sishankamrata* development strategy.
- Further research can add a dynamic system analysis model as a simulation of the implementation of the *Sishankamrata* development strategy.

5. ACKNOWLEDGEMENT

This study was supported by Indonesia Defense University.

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GRAND STRATEGY IN A VOLATILE ENVIRONMENT. THE CASE OF ROMANIA

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Abstract: *Developing a Grand Strategy is never an easy task, as it geared towards building a framework for the use of all the instruments of national power (diplomatic, informational, economic, military) in order to achieve national objectives that ultimately serve to support the national values and interests. The current volatile environment complicates the issue even further, by changing at a fast pace the external and internal conditions in which a country evolves. The aim of this paper is to analyze the main directions of Romania's security and defense approach as outlined in the current Strategy for the Country's Defense and to highlight the degree to which the current strategy is suitable for a volatile environment.*

Key words: *strategy, volatility, risks, threats, ways of action, Romania*

1. INTRODUCTION

A "grand strategy" is defined as "the collection of plans and policies that comprise the state's deliberate effort to harness political, military, diplomatic, and economic tools together to advance that state's national interest" [1]. Although this term is more familiar to Anglo-Saxon readers, I will prefer its use throughout the paper when talking about the generic concept, in order to avoid any confusion, as the corresponding Romanian strategic planning documents have changed their names in time, from the National Security Strategy to National Defense Strategy to National Strategy for the Country's Defense.

In the last two decades, Romania's Grand Strategy changed not only its name, but also its approach. The 2001 National Security Strategy, developed in a more stable and predictable security environment, considered that the "main security problems faced by Romania are economic issues", mentioning as security risks the classical terrorism/ migration/weapons of mass destruction/extremism challenges. The document is mostly a collection of general, political statements, both in terms of the analysis of the security environment, but also in regard to the future ways of action.

The security environment has changed dramatically since then, and Romania's Grand Strategy attempts to keep up with the new developments. It is the purpose of this paper to analyze Romania's strategic approach as derived from the National Strategy for the Country's Defense 2020-2024 and the degree to which it is suited for the current environment, characterized by volatility, uncertainty, complexity and ambiguity.

2. CHALLENGES OF A VOLATILE ENVIRONMENT

In the real world, the development of the strategy is inextricably influenced by constraints, of which the most important are time and information and in the current volatile environment, both constraints are acutely felt by strategic planners.

Time is a crucial resource in planning, as it is the foundation of anticipation, decision making and action in the area of security and defense. Compared to the cold war environment and the relatively predictable environment of 10 years ago, when the time dimension was relatively forgiving as strategies could be created for longer periods of time, the current uncertain environment means that the timeframe has narrowed down significantly. The current security environment is different from the one of 4 years ago, which makes the development of appropriate and realistic strategic planning documents even more important, but at the same time more difficult.

A good strategy relies heavily on reliable intelligence, understanding of the potential risks, threats and vulnerabilities and efficient analysis based on planning assumptions. Romania's 2020 new Strategy for the Country's Defense, focused on the 2020-2024 timeframe was developed in a particular security environment, in which the classical threats of terrorism and actions from state/non-state actors have been accompanied by new problems that gained precedence over the ones identified in the previous years. These problems are related to more "traditional" areas such as proliferation of weapons of mass destruction or terrorist, but also to newer issues, such as health security and economic security, generated by the COVID 19 pandemic. In a way, it is fortunate that timing of Romania's election cycle led to the development of the 2020-2024 Strategy for the Country's Defense after the debut of the COVID 19 pandemic, which meant it could address this pressing issue. But this also highlights the need to make proper assumptions and to identify and envision ways of action even for what appears at first glance an improbable event, but also to adapt the strategy, if need be, to a security environment that can shift with surprising speed.

3. ROMANIA'S STRATEGIC APPROACH

Unlike the previous Strategy for the Country's Defense 2015-2019, which has a more classical

approach in its design (as it debuts with identifying the national interests and security objectives), the current strategic document starts with a chapter highlighting Romania's status as a "NATO and EU member, as a resilient state and a pole of regional stability" [2]. This first chapter does not follow the traditional logic and structure of building a strategic planning document. It presents a mixture of political statements, snippets of analysis of current security challenges and duplicate information that can be found elsewhere in the document. It aims to introduce the concept of resilience, which recently became a buzzword in many areas, including security. The concept is widely used in the context of crisis and uncertainty, and the COVID 19 pandemic only served to amplify its popularity. The inclusion of the concept in Romania's Strategy for the Country's Defense is aligned with its inclusion in the 2016 European Union (EU) Global Strategy for Foreign and Security Policy, where resilience is mentioned 34 times.

Romania's grand strategy defines resilience as "inherent capacity of entities - individuals, communities, regions, state - to resist and adapt in an articulated manner to violent, stressful events, to shocks, disasters, pandemics or conflicts… and… to the ability of these entities to quickly return to a functional state of normalcy" [3]. The concept is further detailed as the need for a collaborative, multi-dimensional approach to resilience is emphasized.

The focus of the concept is the society and critical infrastructure resilience, as outlined in the various instruments proposed in this respect, focused mainly on combating fake news and disinformation at the level of society and the need to "increase the awareness of the population, public central and local institutions and private companies on the importance of critical infrastructure protection". [4]

Although the issues these instruments and their corresponding means of action should definitely make the object of the strategy, it is not clear why they are not highlighted in the chapter detailing the various security dimensions and their associated ways of action, as they clearly relate to the intelligence, counterintelligence and security dimension. The purpose appears to highlight the concept of resilience and present it as a priority, but the result is somewhat redundant, leading to information overload and difficulty in following the main train of thought in the document.

The current grand strategy mainly follows on with the main security threats and risks identified in the previous one (for the period 2015-2019), consequently the security and defense policy approach that can be derived from it does not contain fundamental changes. Nonetheless, there are a few points that are worthy of attention, in respect to the main security threats and risks.

One noteworthy difference concerns the Russian Federation.

Although the Russian Federation was mentioned in the National Strategy for the Country's Defense 2015-2019, it was viewed as an actor that "tries to consolidate its status as a regional power and whose actions influence the regional stability and the European aspirations of Ukraine, Republic of Moldova and Georgia ... by its actions in the Black Sea Region, infringing upon international law, questioning international order, preserving frozen conflicts and the annexation of Crimea."[5]

In the 2020 grand strategy, Russia is perceived as a greater destabilizing factor and a special mention is made regarding the "strengthening the military potential in the vicinity of Romania, including on the Eastern flank and on the NATO border (militarization of Crimea and the Black Sea basin in general by the Russian Federation, conducting military exercises and strengthening capabilities through which offensive and defensive operations can be carried out)". [6]

In other words, Russia's perception as a potential security threat has evolved from a political actor influencing mainly political processes (such as European aspiration of countries in the region) towards a potential military threat. The issue of security in the Black Sea is highlighted, with the Russian Federation seen as a destabilizing force.

Yet, with the exception of another paragraph mentioning the changing positions of certain NATO allies (not specifically identified, although the reference to Turkey and perhaps other countries can be presupposed) regarding their position towards the Russian Federation, no further mention about the Russian Federation is made throughout the document. Russia is not identified outright as an explicit threat, the Strategy preferring the use of generic and ambiguous phrases, that may refer to the Russian Federation or not, depending on the reader's point of view: "the offensive/ aggressive behavior, including in economic terms, of some state entities whose interests are contrary to those of our country, blockages in the European/transatlantic course and/or perpetuation of economic instability may lead to developments with negative security impact in the vicinity of Romania and in Black Sea region."[7]

Another interesting issue that signals a change in the strategic approach is the priority given to the Black Sea region. In the 2007 Romanian National Security Strategy, the Black Sea is viewed as "a connector of strategic importance … requiring a distinct way of action within the Strategy, through actively promoting the need for a Euro-Atlantic strategy for the Black Sea area" [8]. The issue of the Black Sea region was highlighted in an entire chapter of the Strategy, but the main threats identified then were the classic ones: terrorism, organized crime, inefficient governance and separatist conflicts.

Despite President's Basescu's less than friendly statements towards the Russian Federation [9], the Strategy did not explicitly identify Russia as a threat or a risk factor for the Black Sea region.

In the 2015 Strategy issued under the Klaus Johannis administration, the importance of the Black Sea region was somewhat reduced. Ensuring the security in the region is mentioned as a national security objective, but this objective is not linked to very specific and determined lines of action. The Black Sea region was mentioned in the 2015 Strategy just 6 times, in relation to Russia's actions, frozen conflicts and energy security. The lines of action are rather generic, on the general approach of ensuring security in the region by consolidating military cooperation and in promoting the Black Sea's strategic significance and cooperation formats.

In the 2020 Strategy, the Black Sea region is mentioned not only in relation to the threats emerging in the region, but explicitly as an "area of maximum strategic interest … requiring a comprehensive approach, including, besides the military area, relevant aspects from the economic, transport, energy, environment and society resilience". [10]

This leads us to the reason why the Russian Federation had a rather vigorous reaction to the new Strategy. Russia outright accused Romania of "serving other people's confrontational ideas regarding Russia even at the cost of their own interests, which, inter alia, arise from Romania and Russia both being part of the Black Sea region" and stated that the Strategy "will be used to intensify the buildup of the US and NATO military presence in the Black Sea". [11]

The statement is based on the provisions in the Strategy that mention in no uncertain terms that the security of the Black Sea area is to be ensured through increasing the allied presence on Romania's soil and on the emphasis placed on the Strategic Partnership with US: "Romania intends to consolidate the military cooperation with the US, not just as a generic way of action derived from the allied status, but as an operational objective to be implemented on the national territory" [12].

This approach marks a definite change from the more diplomatic tone adopted in the previous strategic documents, which avoided clearly specifying such threats and ways of action and mirrors the increased tensions and volatility of the international environment. Considering that the purpose of a security strategy is not only to provide strategic guidelines for the national decision makers, but also to publicly showcase Romania's security approach, this apparent change in approach may have implications on two distinct directions.

On one hand, it shows Romania's commitment to its EU, NATO allies and its support for the US as a strategic partner, hopefully acting as a deterrent against potential threats. On the other hand, Romania's straight forward and more

ambitious approach differs from the one of its neighbors, which prefer a more diplomatic way of tackling the increased assertiveness of the Russian Federation and it may have the drawback of an escalation of the tensions in the region.

Besides the Russian Federation, three other countries are explicitly mentioned as a source of instability: North Korea, Afghanistan and Pakistan in relation to the security situation in the Middle East and Asia, but they impact is approached on a global level, affecting Romania indirectly through migratory flows and the reconfiguration of the geostrategic situation.

Another issue worth mentioning about the new strategy is the planning assumption it is built upon and which is clearly stated: "the predominance of the US in the international system shall remain uncontested for the predictable future". [13] This planning assumption is a very confident one, considering the high volatility of the international security environment and the fact that the same Strategy is also build on assumptions such as "the international security architecture will be strongly shaped by the redefinition of the security interests of state actors with global interests and by the reconfiguration of the relations between them"[14]. The same paragraph offers yet another apparently contradictory statement "given that there are no significant premises that would generate a paradigm shift in relations between the US and its strategic competitors, the areas of intersection of regional hegemonic ambitions (Europe and Asia-Pacific) will be the most exposed to consistent transformations in the security evolutions" [15].

This apparent contradiction may appear from the use of different time horizons for statements grouped in the same paragraph. Indeed, it is unlikely that the US will lose its role as a hegemon in international relations in the next four years, but the long term trend is clearly in the direction of a change in the international balance of power and the strategy should clarify the timeframe used for its planning assumption, in order to avoid the impression of unclear and contradictory statements.

In relation to the planning assumption mentioned before, the 2020 Strategy also bring another novel view on Romania's approach to China. Although China is by no means mentioned explicitly as a security risk to international security, the mention of the potential vulnerabilities of the 5G networks with serious security implications is in line with the statement that "China's multi-decade doctrine and milestones will increasingly influence ??? and the way the US perceives and respond to the systemic role of this state." ??? [16] The approach that can be drawn from the stipulations in the Strategy is that Romania's strategy towards China follows that of the US and signifies a change from the traditional good relations Romania had with China towards a more cautious approach, especially

in relation to the 5G technology and the Chinese investments.

The issue of the Republic of Moldova is another area that marks a change in tone in comparison with the previous strategies, as a logical follow-up of the changes in the security environment. In the 2007 Strategy, the cooperation with the Republic of Moldova was considered a priority, deriving from "a common history, language and culture". [17]

The 2015 Strategy follows in the same line, albeit in a slightly less enthusiastic manner, considering that "regional instability limits Romania's ability to promote its strategic interests, especially those regarding supporting Moldova's European route" [18].

In the 2020 Strategy, the evolution in the Republic of Moldova is considered a risk to national security, "due to the perspective of counterbalancing the European orientation with the orientation towards the Eurasian direction."[19].

Although the issues of supporting the Republic of Moldova's European approach, the participation in bilateral strategic interconnection projects and the common language, history and identity are still mentioned in the 2020 strategy, the approach is presented as a wish to "contribute to the political, economic and security stabilization of the EU/NATO neighborhood", with less or no emphasis on special relations and of the "single nation – two states" concept put forward in the 2007 Strategy.

3. CONCLUSIONS

As the purpose of this paper was to analyze the main directions of Romania's security and defense approach as outlined in the current Strategy for the Country's Defense in view of the volatility of the environment, numerous other issues have been left out of the analysis (the approach on technology, economy, energy etc).

The current strategy does reflect the main issues and challenges generated by the uncertain environment, and attempts to highlight ways of action to mitigate the identified risks and threats.

It clearly states Romania's Euro-Atlantic direction, perhaps in a way that is considered too determined by other countries (such as Russia) and it touches upon most of the security and defense issues faced by countries in the Central and Eastern Europe, the Balkan area, the EU and NATO.

At the same time, there are still areas that could benefit from improvement, first of all in relation to the clarity and the organization of the document. Secondly, some ideas could benefit from rephrasing and the blunt mentioning of a state as a threat is not always conducive to cooperation. The current phrasing does send a message, but this message should be backed up by clear ways of action and further details, in other strategic planning documents.

Lastly, the planning assumptions base on which the

document is developed should be carefully analyzed and updated if necessary, in order to make the strategy more suitable for a volatile security environment.

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MODELLING THE DEVELOPMENT OF THE AUTOMOTIVE SUPPORT OF THE ARMED FORCES OF THE REPUBLIC OF AZERBAIJAN

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Abstract: *The paper investigates the process of providing automotive technical support for the Armed Forces of the Republic of Azerbaijan by using synergetic-bifurcation theory of system development. Based on expert evaluations and statistical data of the auto-technical support of the Armed Forces during 1991–2019, recorded progress trends of the compound's elements of auto-technical support are recorded. The paper focuses on studying the conceptual model of improvement of the auto-technical support system. The opportunities of development of the auto-technical support of the Armed Forces is investigated based on the phases-time characteristics of system's elements in bifurcation space. In this respect, the bifurcation model of the auto-technical support system is constructed and the functional dependence between elements of functioning system factors are defined.*

Key words: *truck technical support, bifurcation, dependence function, system elements, period of progress.*

1. INTRODUCTION

The creation of the modern army of Azerbaijan dates back to the period when Azerbaijan regained its state independence. During this period, Azerbaijan faced a decline in the military field. In the condition of the termination of all types of economic ties, the absence of military industry and a lack of military personnel made it very difficult to form a new disciplined army of Azerbaijan from the scattered parts and remnants of the Soviet Army. In particular, the auto-technical support (ATS) of the Armed Forces of the Republic of Azerbaijan was faced with great problems and its development underwent trials and tribulations [1]. The study of these phenomena from the point of view of bifurcation transitions and jump points is one of the effective tools for studying these processes.

1.1. Analysis of recent research and publications

In recent decades, many scientific papers have been devoted to new approaches to the study of complex developing systems, including ATS of the Armed Forces, from the standpoint of synergetics and catastrophe theory [2; 3; 4]. In these works, it is noted that in its evolution the ATS system goes through phases of sustainable development, which under certain conditions can be replaced by phases of instability. This happens when the system reaches certain critical parameters: a critical level of security of troops with material resources, technological degradation, a decrease in stocks of material resources, etc. When the material support system experiences stress beyond these critical values, it enters a new dynamic mode. At the transition point, bifurcation occurs, that is, switching from one method of provision to another. Since the critical values of the parameters for complex systems are not known, the very entry of the system into the bifurcation mode is precisely unpredictable.

2. FORMULATION OF THE PROBLEM

In Azerbaijan, the foundation of a professional army was laid between 1993 and 1994. It was during these years that the scientific principles of the creation of the army were laid down, the formation of troops and material and technical support were taken under control. The formation period of the Azerbaijan Army overlapped with the transitional period in the economy of Azerbaijan. The experience of international history has shown that in transitional periods the country's economy is experiencing the greatest difficulties in production forces and in economic relations. For this reason, the problems that arose have a negative impact in the field of automotive support, which is important in the construction of the Armed Forces. From this point of view, the study of the problem of technical support in transition periods based on new approaches is very relevant for military science.

In the present article, the development trend of the ATS of the Armed Forces of the Republic of Azerbaijan between 1991 and 2019 are studied and, on the basis of this, a synergetic-bifurcation model that describes this development is elaborated and proposed.

2.1. Statement of the main research material

The history of the formation of the Armed Forces of the Republic of Azerbaijan in 1991-2019 can be divided into four periods:

- The first period: 1991-1994, years of active fighting;
- The second period: 1995-1998, the strengthening of the defense after the ceasefire;
- The third period: 1999-2005, the improvement of the structure of troops and military service;
- The fourth period is between 2006-2019, the period of comprehensive development of the Armed Forces.

At these stages, all elements of the ATS system, including the automotive service that controls this system, underwent numerous changes. The lack of supply connections and the restoration of some of them by unusual methods caused the branching of the ATS system in some areas, disappearance, etc. [1]. This stimulates the formation of cycles (ups and downs) in the development of the ATO system. Satisfying demand causes the transition of the quality of the ATO system from one form to another. Aging (depreciation) of equipment, a drop in its quality capabilities leads to an increase in quality requirements in ATS troops [5]. The development cycle of the ATS system is due to the demand of the troops and processes in the economic system, such as production and consumption.

Thus, based on the obtained research results for the period of 1991–2019 transitional processes in the national economy, expert evaluations of anti-terrorist operation specialists in the Armed Forces of the Republic of Azerbaijan, experience in a number of foreign countries [6-8], a conceptual model for improving quality (efficiency) of ATS systems is proposed (Fig. 1).

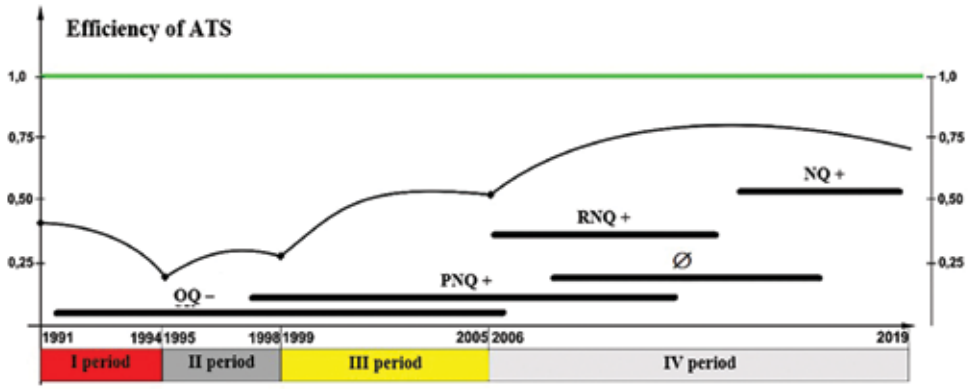

Fig. no. 1 A conceptual model for improving the effectiveness of ATS between 1991 and 2019

Here, solid black lines show: OQ – period of old quality, PNQ – period of possible new quality, RNQ – period of real new quality, NQ – period of new quality, ∅ – period of disappearance of the old quality.

As it is seen from the model, in the first period there is a weakening of the general indicators of the ATS and a gradual loss of the values of old qualities. The main reason for this, was the loss of supply connections and the discrepancy between the new and the required, the need as a result of the war for the intensive provision of equipment, the formation of an ATS control system, a large loss of military equipment and, at the same time, a low possibility of restoration. Despite all this, the remaining untapped reserve from the time of the Soviet troops was used up, and the repairing enterprises worked at full capacity. During this period, the failure of old qualities was associated with the arising conditions.

In the second period, there was a possibility of a new quality of work in the field of restoration of communications, management and capabilities of the elements of the ATS system, and it necessitated the transition to a real new quality. During this period, the implemented process of the system's activities led to bifurcation changes in the ATS system: the creation of new supply chains, the solution of mobilization tasks in a distinctive format, the restoration of failed numerous equipment, the approval of the original full-time management structure, etc.

In the third and fourth period, the following works caused many new qualitative changes in the field of army build-up: innovations in the field of army formation, updating of equipment, bringing guidance documents in line with modern requirements, improving personnel training, supporting friendly states, introducing best practices, etc. However, as can be seen from the model, the effectiveness of the ATS system has not reached its maximum value. The analysis showed that the effectiveness of the ATS system depends on the maximum indicators of the interconnection (correlation) of the elements of the system, impeccable planning and optimal management. The process of changing the elements of the ATS system in the framework of the abovementioned periods was investigated based on the theory of bifurcations.

In the theory of transition processes, along with the concepts of transition and crisis in the military-economic sphere, the concept of bifurcation is the main one. It shows a bifurcation, branching, decomposition, decline and turn in the process of the system [9]. The bifurcation in the field of army build-up should be understood as a qualitative-quantitative event, i.e. division of a single whole (system, process) into several parts, quantitative voids and accumulations, losses and gains (Fig. 1). If we denote the events of losses by the minus sign "–" and the events of acquisitions

by the plus sign "+", then in the bifurcation field one can observe the course of efficiency decline processes ("–" events), as well as stability and growth ("+" events). All "currents" have the nature of trends; their quality is probabilistic. The beginning of each course has the character of possibility – decline, preservation or rebirth.

Places and processes of quality change, indicated by a positive sign, have the character of fluctuations. In these turbulent movements, new qualities are born that create the conditions for reducing the entropy of quality and its transition to a new level, it is possible to complete the synthesis of opposites in them. The new quality is the result of the process of negation-negation of the old quality [10-12]. Bifurcation processes first form favorable conditions for the formation of new qualities in the bifurcation field, and then their formation, i.e. the bifurcation field is an area of qualitative probabilities. Bifurcation crises (transitions) occur periodically and even cyclically, noting small and large historical development cycles: from catastrophe to catastrophe, alternating with stability, development and degradation.

Synergo-bifurcational quality selection can be described as follows: there is an old quality and a new quality (Fig. 1). A new quality is presented in opportunity and in reality. The old quality disappears (falls), i.e. reaches the point of loss of old quality (∅). This point is at the same time a synergetic-bifurcation point from which a new quality begins.

Thus, the synergetic-bifurcation process of interactions and synthesis is a multi-coordinate and system-driven process.

According to Figure 1, the horizontal coordinate reflects the 4 periods described above for the development of army build-up of the Armed Forces of the Republic of Azerbaijan from 1991–2019, which mean the transition from the old quality to the new, and the vertical one – the effectiveness (pairs of opposing qualities) of the army build-up, which is measured in the range of 0÷1. Values characterizing the degree of efficiency are reflected on the corresponding rays of the coordinates. The combination of the coordinate points identified in this way by a common closed line will make it possible to outline the boundaries of the most probable quality formation, as well as its state from the point of view of stability – instability.

Based on expert assessments and statistical data, the development trends of the components of the ATS system were investigated. To this end, the following characteristics of the development of elements ($p_i, i = \overline{1,14}$) were considered:

1) acquisition of new automotive vehicles (AV) (p_1);

2) planned provision of troops with automobile assets (p_2);

3) effectiveness of the interaction of the system elements (p3);

4) indicators of transportation efficiency (p_4);

5) level of the training of engineering personnel (p_5);

6) capabilities of the technical service (TS) and repair crews (p_6);

7) status of the parks (p_7);

8) provision of an untapped reserve and its echelons (p_8);

9) coefficient of technical preparedness of vehicles (TPC) (p_9);

10) completion of drivers and their level of training (p_{10});

11) the capabilities of repair enterprises of the army (p_{11});

12) completion of the service with junior specialists and their level of training (p_{12});

13) mobilization training and resource management level (p_{13});

14) condition of vehicle warehouses (p_{14}).

Fig. 1 summarizes the results of studies of the time dependences of the indicated 14 characteristics of the elements of the ATS system in the bifurcation field. It can be seen from the figure that the dependences are described by the "assembly" type which consistently changes and it is described by the following formula [9]

$$p=x^4+ax^2+bx \quad (1)$$

with points of return (smooth change of development phases). Inside the return points, there are two different values of x, which give local minima of the function p (x) for each pair (a, b).

The return points in the phase space (a, b) near the catastrophe point, showing the geometric location of the "assembly" type bifurcations, separate the region with two stable solutions (development or decline) and the region with one solution (transition points). The geometry of the points of return is usual when studying what happens with bifurcations of the "assembly" type when adding a new parameter b to the control space. By changing the parameters, it can be found that there are points in the space (a, b) at which stability is lost, that is, on this curve a stable solution can suddenly "jump" to an alternative value (also stable) [13-15].

The characteristics of the development of the studied elements make it possible to determine the causes of bifurcation recessions and give a forecast for the future. Let us analyze separately, for example, 8 characteristics of the development of ATS.

1. Acquisition of new automotive vehicles

As can be seen from Figure 1, the Soviet army carried out a planned upgrade of AV and the total number of equipment of the first category

was 50%. However, in periods I–III the small supply of new equipment to the armament of the Azerbaijan Army, losses in battles, an increase in equipment failures as a result of intensive operation, and wear and tear of the equipment caused a drop in the TPC. At the end of the third period and the beginning of the fourth period, the process of equipping troops with new equipment began. This process became more intense after 2010, and a>0 was observed for the indicated period. The start of production of "MAZ" automobiles in the Republic of Azerbaijan has further accelerated the supply of equipment in the armament of the army.

2. Planned provision of troops with automobile assets

In military units remaining from the Soviet army, vehicle bases, repair enterprises, and militarized colonies, automobile assets were taken in an amount close to normal. This includes untapped supplies, repair kits and equipment for the current supply. However, the bulk of these assets was used during the first period. Structural changes in the army, deployment of military units and equipment, necessitated the planned provision of troops with automobile assets. Despite all these, security issues were not effectively resolved in terms of creating a supply chain, as well as in terms of planned deliveries. By the end of the second period, automobile assets stored in warehouses (except for unnecessary spare parts) have been completely used.

3. Effectiveness of the interaction of the system elements

Considering that in the first period the automotive service was not fully formed and the work carried out in this area was in the active phase, a positive trend in the systemic activity of the elements could be noted. However, in 2005-2006, a bifurcation transition point and a degradation process were observed (a<0). This state of bifurcation is explained by the lack of application of new achievements in the field of ICT, the decline in old qualities in the field of repair and maintenance, and the delay in applying new qualities.

4. Indicators of transportation efficiency

At least 3 points of phase change are observed in the characteristic of the progress of this element. Despite the phase of increase in efficiency at this stage in the bifurcation field, this total indicator did not exceed 0.25. The main reason for this low value of efficiency is the delay in the transition to a new qualitative level in the bifurcation process.

5. Level of training of engineering personnel

This quality characteristic in the ATS system is very important. In the absence of a strong personnel potential, the process of developing

a system in a bifurcation field is very difficult. As a result of the involvement of specialists from the Soviet army and civil engineers, a positive trend was observed in the first period. In 1995-2005, the level of training of automobile specialists was high. However, since 2003, for various reasons, there is a shortage of specialists in this field.

6. Capabilities of the technical service and repair crews

In the development of this element, the indicator a>0 continued until 1995. This indicator in the characteristic of the dynamics of development is associated with a sufficient number of maintenance and repair workshops remaining from the Soviet army, as well as a sufficient number of appropriate equipment and machine tools in car parks. Along with this, in 1991-1999, the presence of experienced platoon commanders and warrant officers of technical services, as well as soldiers with special technical education and experience in the Soviet army, had a positive impact on this characteristic.

7. Status of the parks

During the formation of the Azerbaijan army, permanent car parks were located only in settlements. Field automobile parks were improved by 2010, and based on some of them the construction of permanent parks began. For this reason, there is a positive trend in this characteristic.

8. Provision of an untapped reserve and its echelons

In the first period, a sharp decline was observed in this characteristic. In the troops, including the bases, the untapped stock was completely depleted during the fighting.

Based on this analysis, we may come to the conclusion that the characteristics of the development of elements of the ATS system affect the activity of the system as a whole. From this point of view, the task of finding the function of the dependence of the general indicators of the system on the abovementioned parameters is an urgent task.

To simplify the calculations for the indicated elements of m = 4 periods, we consider the values of n = 14 development characteristics. Assume that the dependence of F on variable parameters is linear:

$$F(c,x) = c_1x_1 + c_2x_2 + ... + c_nx_n \quad (2)$$

Here, $x = (x_1, x_2, ..., x_n)$ – is the vector of variables, $c = (c_1, c_2, ..., c_n)$ – is the vector of unknown coefficients.

Thus, c_j parameters in n numbers should be found based on $x_1, x_2, ..., x_n$ values in m numbers. The problem is to find n dimensional c vector. Vector c can be found by the least squares method. From the statistics the $(x_{i1}, x_{i2}, ..., x_n)$, $i = 1,2,...,m$ values of $x_1, x_2, ..., x_n$ variables and $y_1, y_2, ..., y_m$ values of $F(c, x)$ function are known. Then, you can write a multivariables linear dependence:

$$y_i = c_1 x_{i1} + c_2 x_{i2} + \ldots + c_n x_{in}, \quad i = 1,2,\ldots,m \quad (3)$$

We write the vectors Y, c and the matrix X in the form:

$$Y = \begin{bmatrix} y_1 \\ y_2 \\ . \\ . \\ . \\ y_m \end{bmatrix}, \quad X = \begin{bmatrix} x_1, x_2 \ldots x_{1n} \\ x_2, x_2 \ldots x_{2n} \\ . \\ . \\ . \\ x_{m1}, x_{m2} \ldots x_m \end{bmatrix}, \quad c = \begin{bmatrix} c_1 \\ c_2 \\ . \\ . \\ . \\ c_n \end{bmatrix} \quad (4)$$

We introduce a new function:

$$Q(c) = \sum_{i=1}^{n} [y_i - (c_1 x_{i1} + c_2 x_{i2} + \ldots + c_n x_{in})]^2 \quad (5)$$

c vector can be found from the minimum condition for the function Q(c): $\frac{\partial Q(c)}{\partial c} = 0$ (6)

In accordance with the given values of *x* for 4 periods, we can find *c* vector, and as a result of this we determine the analytical form of the $F(c,x)$ function. Given that n = 14 and m = 4, using the Minner function of the Mathcad program, we determine the values of *c* vector:

c_1=0.139; c_2=0.360; c_3=0.532;
c_4=0.001; c_5=0.054; c_6=0.020;
c_7=0.095; c_8=0.045; c_9=0.165;
c_{10}=0.098; c_{11}=0.063; c_{12}=0.053;
c_{13}=0.355; c_{14}=0.016

As a result, the analytical form of the $F(c,x)$ function takes the following form:

$$F(c,x) = 0.139x_1 + 0.36x_2 + 0.532x_3 + 0.001x_4 + 0.054x_5 + 0.020x_6 + 0.095x_7 + 0.045x_8 + 0.165x_9 + 0.098x_{10} + + 0.063x_{11} + 0.053x_{12} + 0.355x_{13} + 0.016x_{14} \quad (7)$$

The analytical form of the function found based on the bifurcation model satisfies the given statistics of these periods. Using this function, you can make a forecast for future periods of the development of the ATS system.

3. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

Studies have shown that in the initial periods (I–III) of the ATS system, because of changes in the organizational and procurement mechanisms, an imbalance in the quality progress was observed. Under transition conditions, independent radical changes in technical support are impossible.

The synergetic-bifurcation model of the ATS system for the Armed Forces of the Republic of Azerbaijan is built in the article. Based on the bifurcation model, an analytical form of the function is found that satisfies the given statistical data for 4 periods of the development of the ATS system.

In the context of the development of the national economy, in order to timely and fully provide the Armed Forces of the Republic of Azerbaijan with equipment and automobile assets, it

is necessary to apply organizational and supply mechanisms. The found function of the relationship between the general indicators of the ATS system and the values of the elements of its activity confirm the importance of developing the system on the basis of new logistics principles.

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THE SYRIAN CONFLICT. NATO'S FRAGMENTARY MIDDLE EAST STRATEGY OR RUSSIA AS A GAME CHANGER

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Abstract: *In 2015, four years after the outbreak of the Syrian conflict, which at the beginning was not on the focus and "interest" of NATO, the new actors were emerged in the campaign. Particularly, Russia's involvement in the conflict has increased the intensity of military operations and decisively changed the course of the conflict on behalf of Syrian Government Forces. Until September 2015, the main players in the theatre have been Assad regime, Free Syrian Army (FSA), ISIS, anti-ISIS Coalition Forces, and the Syrian Democratic Forces (affiliated groups). However, today "surprisingly" strengthening players of the conflict are Syrian regime, Russia, Iran, and Hezbollah that were unimaginable at the beginning of the conflict. Surprisingly – because prior to the Syrian conflict "nobody" anticipated Russian, Iranian and pro-Iranian militia groups hegemony in Syrian territory. On the other hand, U.S., its Allies in Middle East, and most of the NATO member countries backed the Syrian Opposition and the Free Syrian Army, which were struggling to overthrow the Assad regime. At the same time, U.S. and most of its Allies publicly declared the recognition of the Syrian Opposition as a legitimate representative of Syrian people. Despite these support, in fact, the Syrian opposition and the Free Syrian Army were forced to retreat from almost all key areas, inflicting heavy losses. Beside, U.S. and his Allies, who previously projected the settlement of the Syrian conflict in the replacement of the Assad regime, now suggest democratic elections to be held under the auspices of the UN, not mentioning the "regime change". Analyzing these two approaches - previous and current policy of regulation of the Syrian conflict, the considerable differences between them become evident. It seems that, the reason for this U-turn in policy is Russia's entry into the Syrian equation as a game changer.*

Key words: *Syrian conflict, strategic surprise, security, policy change, NATO, Middle East, Mediterranean basin, Free Syrian Army, Syrian Opposition, actor, player, UNSCR.*

1. INTRODUCTION

Syria is located in the Mediterranean basin of the Middle East (ME) and possess a noteworthy geo-strategic importance for the world's leading actors, as well as for the NATO. Because it is the only state which shares a border with the NATO country and has coastline with the Mediterranean Sea.

However, nowadays for many in the Alliance, Mediterranean security has become a pressing concern in light of risks emanating from the Levant especially from Syria. Moreover, as Russia has become actively engaged in Syria and the Eastern Mediterranean, the problem of strategic stability and risk reduction with Moscow has acquired a southern dimension too (Lesser *et al*., 2018, p.14). As noticed in NATO Secretary General Annual Report 2015, Russia continued to pursue more assertive and unpredictable military posture in 2015. It reflects concerns about Russia's recent military build-up in Syria and the Eastern Mediterranean. Report also mentions that Russia began a military operation in Syria, not as part of the Global Coalition to Counter ISIS but in support of the Assad regime (Stoltenberg:2015, p.10). As a matter of fact, despite support from U.S. and its Allies (leading NATO member countries), shortly after Russian intervention, the Free Syrian Army was forced to hand over most of strategically important territories and cities (Hama, Homs, Aleppo and etc.) back to the Government Forces, inflicting heavy losses over time.

In fact, the dramatic defeat of Syrian Opposition was not only due to the military support by Russia but also Iran and Lebanese Hezbollah. However, especially Russian effective reaction to the conflict enabled Russia be a Central Player of the equation while pushing anti-Assad players to adapt new policy by ensuring his current presence as a "strategic surprise".

In our case, strategic surprise refers to the Main Actors who have strategic interest and assumptions related with Syria and Middle East. In a broader context, Syria is the vital part of Middle East. Therefore, this study aims to contribute to the necessary discussion on such a strategic issue by providing an assessment of the main indicators of Russian engagement into Syria before the September 2015, elaborate on whether "Russian strategy in Syria doomed to fail?", and refine the competency of NATO's Middle East strategy. Finally it explores UNSCR 2254 as an evidence of strategic surprise, to respond the above mentioned issues.

2. MAIN INDICATORS OF RUSSIAN ENTRY INTO SYRIA BEFORE SEPTEMBER 2015

According to some analysts, Russia was not expected to enter the Syrian conflict. Ground for this assumption was the fact that in March

2011, Russia had chosen not to veto the United Nations Security Council Resolution (UNSCR) 1973, which authorized "all necessary measures ... to protect civilians and civilian populated areas under threat of attack" in Libya (Charap *et al.*, 2019, p.6). In fact, ever since the end of the Cold War Moscow has manifested discomfort at the prospect of standing alone on a major dispute in the council (Engelbrekt *et al.*, 2013, p.51). However, many in Moscow were outraged when the resolution was used to justify – cynically, in their eyes – NATO's bombing of Qaddafi's forces and provision of decisive support to the rebels to overthrow his government. The episode convinced Moscow that humanitarian intervention was simply an elaborate cover for regime change and largely precluded future UNSCR's on Syria that would have authorized international action to stop the war (Charap *et al.*, 2019, p.6).

Therefore, it was not puzzling to assess that after the pro-Russian regime change in Libya Russia would play more active role in similar conflicts. In this sense, there was no doubt that Russia would engage the Syrian conflict. There were enough indicators and reasons to justify this thesis. The main ones of these indicators and reasons can be summarized as follows:

- Perception of regime changes as a national threat,
- Legal aspects,
- Russian National Security Strategy,
- Military Doctrine of the Russian Federation.

2.1. Perception of regime changes as a national threat

Russian leaders were concerned that Washington would overthrow the Assad regime and replace it with a friendly government. Russian leaders worried about U.S. regime change in Syria based, in part, on the U.S. role in overthrowing regimes in Yugoslavia in 1995, Kosovo in 1999, Afghanistan in 2001, Iraq in 2003, and Libya in 2011. Russia also assessed that the United States and its partners were involved in the Arab Spring and color revolutions in Eastern Europe and other regions (Jones:2020, p.10). On the other hand, Assad was one of Russia's last remaining close partners in the region. Keeping him in power seemed particularly important because Russia had been losing political ground in the region following the Arab Spring (Charap *et al.*, 2019, p.7).

2.2. Legal aspects

By the year 2017 Russia, backed by China, casted its 14th U.N. Security Council veto since the start of the Syrian conflict in 2011 (Nichols:2019). By the time Russia entered the Syrian conflict in September 2015, Russia had already vetoed UNSCR's four times the ones concerned with "condemnation, sanction or punish" Syrian government.

Unlike the Libyan conflict, Russia's such sharp behavior during the voting of UNSC in issues related to Syrian conflict was a clear evidence which demonstrated possible Russian engagement as a Main Actor. Moreover, the official request by the "legitimate" Government of Syria for military aid from Russia against rebel groups would be in accordance with the domestic law of both states and International Law. In another word, Russia could legitimize its military intervention as a formal request from the sovereign Government of Syria.

2.3. Russian National Security Strategy

Russian [1] recently updated basic strategic documents are full of indications about Moscow's world vision and security concerns (Isabella:2017, p.1). Thus, Russia's strategic objectives provide the starting point for understanding its campaign design in Syria. Russia's *National Security Strategy* lists two specific strategic objectives applicable to Syria—the first is security by "strengthening the country's defense," and the second is focused on international recognition and national dignity (Sinclair: 2020, p.2). Russia also views the Syrian conflict in a global context. Much of Russian foreign policy in recent years has been geared to establishing itself as a great power and global player. According to the official Russian National Security Strategy, "A solid basis has been created at this time for further increasing the Russian Federation's economic, political, military, and spiritual potentials and for enhancing its role in shaping a polycentric world." A role in the Middle East is important to achieving that goal (Hicks *et al*., 2017). So, Intervening in Syria would increase Russia's leverage with the West and return Russia to its perceived rightful place at the high table of international politics (Charap:2019, p.7).

2.4. Military Doctrine of the Russian Federation

Russian Military Doctrine (Endowment:2015), a logical continuation of the Russian National Security Strategy providing all domestic legislation for the Russian Federation to intervene in the event of conflicts, and foreign intervention in Syria. Some parts of the military doctrine point to states that sponsor terrorist or radical groups and to these groups themselves. It mentions and underlines the risk of the establishment of regimes in "bordering states, whose policy threatens the interests of the Russian Federation" as well as "activities aimed at forcibly changing the constitutional system of the Russian Federation". All these are direct references to the color revolutions that took place in Georgia (2003), Ukraine (2004), Kyrgyzstan (2005), the Arab spring, and, finally, the Ukrainian "Revolution of Dignity", which Russian officials continuously describe as an anti-constitutional coup supported by the West [8, p.9]. Article 12 of the Military Doctrine

- Military Dangers and Military Threats to the Russian Federation indicates the main external military dangers as:_deployment (build-up) of military contingents foreign states (groups of states) in the territories of the States bordering on the Russian Federation and its Allies, territorial claims to the Russian Federation and its Allies and interference in their internal affairs, the use of military force in the territories of contiguous with the Russian Federation and its Allies, establishment in the States contiguous with the Russian Federation regimes, including as a result of the overthrow of legitimate public authorities and etc.

Each of above mentioned points provides basis for Russia's military intervention in Syria, since Russia regard Syria as a closest Ally in Middle East.

3. IS RUSSIAN STRATEGY IN SYRIA "DOOMED TO FAIL"?

In October 2015, US Defense Secretary Ash Carter stated that Russia has not «thought through very thoroughly» and Russia is «doomed to fail» in Syria (Ferdinando:2015). Another view pointed out Russia's Syria war as a Strategic Trap, revealing that - Russia has been increasingly dragged into "alien war" which adversely affected its capacity for political maneuvering (Souleimanov *et al*., 2018, p.42-50). So it was anticipated that involving in the Syrian campaign Russia would squander its forces and resources, thereby undermining Russia's prestige and weakening its reputation in the world. In short, Russia was likely to sink into a bog in Syria, as the Soviet Union did in Afghanistan. However, a serious (detailed) analysis leads to the conclusion that these allegations are groundless. Because as the U.S. intelligence community's 2018 Worldwide Threat Assessment stated in February 2018, the conflict had by that point "decisively shifted in the" Syrian regime's favor, enabling Russia and Iran to further entrench themselves inside the country (Coats:2018, p.20). As a result, Russia was successful in achieving its main near-term political and military objectives in Syria, including preventing the collapse of the Assad regime (an important regional partner) and thwarting a possible U.S. attempt to overthrow Assad (Jones:2020, p.1). According to the Center for Strategic & International Studies (CSIS), Moscow adopted a strategy that combined airpower and ground maneuver to overwhelm a divided enemy. Instead of deploying large numbers of Russian army forces to engage in ground combat in Syria – as the Soviet Union did in Afghanistan in the 1980s. Instead, Moscow relied on Syrian army forces, Lebanese Hezbollah, and other militias and private military contractors as the main ground maneuver elements. The Russian air force and navy supported these forces by conducting strikes from fixed-wing aircraft, helicopters, ships, and submarines. In developing

this strategy, Russian political and military leaders looked closely at the positive and negative lessons of U.S. campaigns, such as the Persian Gulf War in 1991, Yugoslavia in 1995, Kosovo in 1999, Afghanistan in 2001, Iraq in 2003, and Libya in 2011(Jones:2020, p.9).

When it comes to Russian capacity for political maneuvering after the intervention, in fact, it is also expanded over time gaining more leverages in platforms dealing with Syrian conflict – in UN Security Council, Geneva Pease talks and Astana Process.

Shortly, Russia has been successful in achieving Moscow's strategic military and political objectives at a manageable cost in terms of Russian casualties and finances by successfully applying Lessons Learned from modern warfare in Syria.

4. IS NATO'S STRATEGY ON MIDDLE EAST ADEQUATE TO REASSURE ITS INTERESTS?

Conflicts taking place in the Middle East region have a direct and indirect impact on NATO's security policy. Terrorism, migration, energy security, countering proliferation of weapons of mass destruction and human security are driving policy debates, alongside more conventional concerns over regional stability. Since these threats affect and in some degree shape the security environment of the most NATO member countries, the consequences of the Syrian conflict play a pivotal role for the NATO. Despite agreement on its importance NATO countries and NATO itself never really formulated a coherent strategy for the Middle East. Western European partners approached Middle Eastern problems more from a perspective that protected their local interests, while the United States tended to view the region through the lens of the Cold War (Papascoma *et al*., 2016, p.279).

On the other hand, Russia also sought the practical benefits of strategic air and naval basing on the Eastern Mediterranean Sea as well as expanded diplomatic leverage in the Middle East (Cafarella *et al*., 2019, p.10). As a result, Russia secured forty-nine-year leases from Assad for the Hmeimim Airbase and the Tartus Naval Facility on the Syrian Coast in 2017 and 2019. In doing so, Russia can use these bases to contest NATO in the Mediterranean Sea. Apparently, Russia deployed to Syria to save Assad but also to accomplish wider goals for which Assad's regime is a useful tool. Russia's grand strategic objectives that relate to Syria include:

- Reestablishing its standing as a great power and diminishing the global influence of the U.S. and NATO;
- Disrupting and dividing NATO;
- Expanding Russia's global access to strategic basing;
- Broadening Russia's influence in the Middle East and Europe (Cafarella *et al*., 2019, p.10) and etc.

However, NATO has not maintained forces adequate for both conducting ongoing operations in the Middle East and North Africa (MENA) region and fighting against Russian forces in the Mediterranean. Such additional forces do not exist in the current NATO militaries or any planned expansions (Kagan:2019, p.50). Lacking of compatible and proper Syrian strategy as well as political and diplomatic division between NATO members result in inactivity during strugle over gaining a position in Middle East. And unless the Allies share a common strategic perspective, NATO will be unable to defend Allies' interests in the Middle East (Dempsey:2020).

5. UNSC 2254 AS EVIDENCE OF STRATEGIC SURPRISE

Defense Science Board of the Department of Defense of U.S. defined strategic surprise as an event for which the United States is not adequately prepared and that may result in very high cost (Vitto et al., 2015, p.1). Another definition by The Institute of World Politics defined Strategic surprise - unpredicted development that had a decisive and fundamental, transformative, sometimes revolutionary effect (Jajko:2012). That means we need to adapt our existing policy to respond effectively to an unanticipated development. Here, the word "our" refers to the Main Actors who make strategic assumption and have interests in Syrian Theatre. That is, in this case "strategic surprise" is a term related to only for the players participated in the conflict. Therefore, it would be correct to analyze Russia's current presence in Syria as the key Actor. If have a close look at the ongoing situation in Syria from the point of view of the United States and its Allies' policy, then Russia's intervention in Syria can be considered as a strategic surprise. Because although the policy pursued by the United States and its Allies until the end of 2015 was based on the removal of the existing regime in Syria, later it was changed considerably.

United States President Barack Obama recognized the Syrian National Council (SNC) as the "legitimate representative of the Syrian people in opposition to the Assad regime," he referred to it as a "big step" (Strashun:2013, p.17). Moreover, the European Union's foreign ministers have been formally recognized the SNC as a legitimate representative of the Syrian people in Feb 2012 [2]. Generally the SNC was recognized or supported in some capacity by at least 17 members of the UN, with three of those (France, United Kingdom and United States) being permanent members of the UN Security Council as well as being the leading NATO states. In addition, according to the U.S. Congressional Research Service since 2011, U.S. policy toward the unrest and conflict in Syria has attempted to pursue parallel interests and manage interconnected challenges, with varying degrees of success.

Among the objectives identified by successive Administrations and by many Members in successive sessions of Congress have been "seeking a negotiated settlement that includes a transition in Syria *away from the leadership of Bashar al Assad* and his supporters" (Humud *et al.,* 2020, p.28). Nevertheless, in December 18th 2015, U.N. Security Council Resolution 2254 was adopted which endorsed a "road map" for a political settlement in Syria, including the drafting of a new constitution and the administration of U.N. supervised elections [3]. That is to say, while United States and its Allies policy toward Syrian conflict *was the remove Bashar al-Assad and his supporters from power* in 2011, it changed in late 2015 to *"drafting of a new constitution and U.N. - supervised elections"*.

According to UNSCR 2254, adopted on December 18th 2015, the resolution of the Syrian conflict *is not mentioning the removal of Bashar al-Assad*. On the contrary the resolution reaffirming its strong commitment to the sovereignty, independence, unity, territorial integrity of the Syrian Arab Republic, and to the purposes and principles of the Charter of the United Nations, stressing the "Syrian people will decide the future of Syria". In brief, "anti-Assad coalition" envisaged a political settlement to the Syrian conflict in the UN-led elections.

Therefore, UNSCR 2254 pose the policy shift of the United States and its Allies in the Syrian conflict. The most important event in the AOI between 2011 and the end of 2015 was Russia's rapid and decisive engagement in the Syrian conflict. Russian intervention on September 2015 caused FSA's heavy losses that disabled it to overthrow the regime. This fact can be realized as the only reason for that policy shift mentioned in UNSCR 2254. In other words, Russian intervention created a new reality in the Syrian theatre which demanded adapted policy and anti-Assad coalition reflected their adapted policy in UNSCR 2254.

6. CONCLUSIONS

The continuing Syrian conflict ever since 2011 has fundamentally turned to the Assad side right after Russian intervention on September 2015. Consequently Governmental Forces disrupted Syrian Opposition Forces backed by the U.S and its Allies as well as by the NATO member countries. Anti-Assad player's doubtful activities gave an opening to Russia, enabling his main intend: to restore Russia's influence in the Middle East, while NATO appeared timid. At the end of the day, so called anti-Assad coalition agreed on UNSCR 2254, which reassure Russian dominance in Syria, borders NATO's southern flank and considered geographically and strategically important to the Western Alliance.

Obviously, stability in neighboring regions leads to stability for the Alliance. Therefore it is crucial

for the Alliance to promote stability beyond NATO's borders and to build an understanding of potential threats which might arise in its vicinity. This necessity drive NATO to take steps and in 2010 at the Lisbon Summit Heads of States and Governments of NATO countries decided to enhance its contribution to a comprehensive approach to crisis management, as part of the international community's effort, and to improve NATO's ability to deliver stabilization and reconstruction effects. In accordance with the Strategic Concept approved by NATO in Lisbon Summit, NATO undertakes to take appropriate measures by stating "The best way to manage conflicts is to prevent them from happening". Meanwhile, the Comprehensive Crisis and Operations Management Centre (CCOMC) and Strategic Direction South Hub were inaugurated in order to continually monitor and analyze the international environment to anticipate crises and, where appropriate, take active steps to prevent them from becoming larger conflicts. The motto – "prevention is always preferable to cure" is the idea behind those measures. In order to thinking, planning and acting strategically in multiple crises and operations those activities are inevitable.

Additionally, NATO can collaborate with the partner states in the region under the Mediterranean Dialogue and Istanbul Cooperation Initiative platforms to strengthen security and stability. Since the security challenges and instability in Syria are threating the sovereignty and state interests of those partners, NATO's compatible Syrian strategy can attract and even engage them to contribute peace and order in the region.

Nevertheless, NATO at the beginning of the Syrian conflict neglected weak signals that impede timely and effective response. Therefore, NATO is "tolerating" and swallows undesirable developments not only in Syria but also adjacent of it.

ENDNOTES

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OPEN SOURCE INTELLIGENCE (OSINT). THE WAY AHEAD

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Abstract: *The technological advances have led to an exponential growth in the amount and complexity of open-source information. The weight of this type of information in the collection base has significantly increased and now we have intelligence services that collect more than 80% of their intelligence from open sources. Therefore, in this article, referring to state-of-the-art technologies in an exhaustive approach, we analyze how the new technologies sustain the intelligence services in their actions for collecting open-source intelligence and increase the efficiency of related processes. Moreover, we analyze how these technologies can supplement and enhance one another throughout the phases of intelligence cycle to render the intelligence services' activity more efficient. Finally, analyzing the historical progresses, we will foretell what technologies are expected to support OSINT in the next ten years and how they will be integrated into the phases of intelligence cycle, forecasting how OSINT will advance through technological change.*

Key words: *open-source intelligence, OSINT, technological change, intelligence cycle, new technologies impact.*

1. INTRODUCTION

The process of collecting open-source information is considered and approached differently, depending on the field of activity. From one area to another (academic, business, journalistic or national security intelligence), the strategic vision, the related operations or the tactical steps are distinct when it comes to open sources. The main difference of OSINT – open-source intelligence concerning national security – is the large amount of data and information collected. Another distinguishing feature of OSINT is the huge number of sources, extremely varied sources which also require various collection methods. The mechanisms used by the government intelligence services to process open source data into validated information (from OSD - Open Source Data into OSIF - Open

Source Information into OSINT - Open Source Intelligence into OSINT-V - Open Source Validated Intelligence) are also highly complex (NATO: 2011).

Despite the above-mentioned difficulties, the intelligence services are currently able to provide actionable intelligence collected only from open sources. Also, OSINT can provide support or contextual intelligence. Thus, together with Human Intelligence (HUMINT), Signals Intelligence (SIGINT), Imagery Intelligence (IMINT) and Measurement and Signature Intelligence (MASINT), the intelligence services can ensure, by integration and all-source analysis, the information required by the beneficiaries (NATO: 2011). Along with the other types of sources, OSINT significantly contributes to the collection base.

In order to address the challenges posed by OSINT and not only, due to the volume of data and information, the number and diversity of sources and the complexity of specific processes of intelligence cycle, the intelligence services have always innovated and used state-of-the-art technologies (CRS: 2020).

As the purpose of this article is to estimate what technologies will enhance OSINT in the next ten years and how these technologies will be integrated into the specific processes of information collection, processing, analysis, dissemination, and storage, in section II "OSINT" we will analyze the evolution of OSINT from the early modern period to the present days, establishing the current and future trends. In section III, considering the trends of OSINT and the possible technological advances, we will analyze the technologies that are currently used and will foretell what technologies are to be used in the near to medium future.

2. OPEN SOURCE INTELLIGENCE (OSINT)

2.1. OSINT Evolution

Even if the earliest historic references on open-source collection date from ancient times, its specific processes were defined once the print media appeared.

The first relevant landmark retained when discussing OSINT evolution is the start of systemic and systematic collection from open sources. In their fight for control of the Mediterranean Sea, the Venetian Republic and Dubrovnik Republic (or Ragusa) significantly contributed to the development of intelligence. Thus, in the 15th century, both Venetia and Ragusa held structured (systemic) intelligence networks which were constantly and systematically transmitting information. In the context of this fierce fight for information collection, at the middle of the 16th century, both Venetia and Ragusa

noted "the value of the gazettes that started to circulate" (Huges-Wilson: 2018, 29). This is why the first systematic collection from open sources appeared. "Once the print media appeared, the espionage became more open and systematic". Moreover, "the Venetian agents started to collect market information when the big European fairs were organized" (Huges-Wilson: 2018, 30). As such, around the year 1540, in order to leverage the circumstances promoting the collection of open and semi-open-source information, Venetia had in place an emerging (systemic) network of intelligence about money, markets, trade and the related flows, which was being used in the State's interest (Huges-Wilson: 2018).

The second landmark in OSINT development is the moment when a structured intelligence network influenced and controlled the print media. In 1865 a secret power center was set up in the service of Otto von Bismarck: a network of more than 45,000 spies coordinated by Wilhelm Stieber. The network provided domestic and foreign information and often carried out missions against diplomatic targets. For example, for the 1870 attack against France, Stieber organized the largest intelligence system involving more than 35,000 people and providing more than 1,650 reports for each possible and probable issue (Huges-Wilson: 2018). Moreover, he first started a genuine psychological war with the aim of improving his own army morale and weakening the enemy's morale by publishing the enemy's errors, bad news and losses and emphasizing their own success. Besides the political, diplomatic, or military aspects, it is also relevant to mention that Stieber "was the first head of a national intelligence service that used agents to monitor and control the press" (Huges-Wilson: 2018, 46). From that moment, the intelligence services had to validate the information collected from the press based on criteria such as publication, author, context, etc.

The third landmark is the moment when the intelligence services were turned into government institutions and expanded. Due to the social tensions arisen as a result of the actions carried out by the secret services, the intelligence services became a public obsession and the governments, fueled by these fears, started to set up the first national organizations. Thus, the Secret Service Bureau was formed in 1909, changing subsequently its name in MI5. In 1912 the "Secret Intelligence Service" was formed and was in charge of foreign operations. It subsequently became MI6 (Williams, Blum: 2018) (Herman: 1999). The development of domestic and foreign intelligence services has implicitly led to the development of OSINT.

The approach was now bivalent, the open-source information being collected from domestic sources and from abroad target territories (Herman: 1999).

The fourth landmark would be the rise of radio and television. During the two world wars, intelligence acquired a substantially increased importance. In the US, the Office of Strategic Services (OSS), the CIA predecessor, was founded. Stalin also developed the secret services. In this context of continuously expanding intelligence services, the need for OSINT development became apparent (Herman: 1999). As the Cold War was an intelligence war, all types of sources had to be accessed and all known collection methods were used, OSINT playing an increasingly important role, also considering that this period coincided with the development of public and private networks of radio and television. (Williams, Blum: 2018). While the intelligence services were previously focused on indexing, storing and easily accessing written information, they started now to be concerned with converting voice to text in order to process the information disseminated through radio. This is also the moment when emerged the need to capture, index, save and access video information. It is the period in which it became apparent that, in addition to SIGINT, IMINT or MASINT, the efficiency of OSINT largely depended on the efficiency of computing and other technologies used (Williams, Blum: 2018).

The fifth landmark is the mass use of the Internet. The fact that the start of www coincided with the end of Cold War, the removal of certain international tensions and the eradication of some censorship systems led to the exposure and transit of a much higher volume of data, also due to the speeding up of globalization. The year 2000 and the dotcom bubble burst caused an exponential growth in the volume of data available on the Internet (CRS: 2020). Moreover, social media opened up new perspectives, providing new categories of data and meta-data which allowed the micro-profiling and profiling of an entity or a group at any level (Miller: 2015) (Huges-Wilson: 2018). This trend was further enhanced by the emergence of mobile data access devices which led to a significant increase in the use of social media (Williams, Blum: 2018). The new technologies provided for the intelligence services' needs of managing huge volumes of data, facilitating the specific activities of the intelligence cycle, especially as concerns the collection, processing, management and dissemination of information.. For example, in 2008, DNI Open-Source Center (OSC) was using technology to collect economic information from

over 2,000 periodicals, 300 radio stations, 235 television stations, 95 foreign organizations (e.g. The Economist, Thomson Reuters, Lexis-Nexis, Stratfor, etc.), and other sources from more than 160 countries, with information in more than 80 languages, from websites, press, shows, television, radio, maps, databases, grey literature, photographs and commercial satellite imagery (Hamilton: 2011). Moreover, from the early 2000s, the new technologies have allowed for the implementation of efficient communication flows and procedures, in real time, between various groups of entities within the intelligence structures, also complying with the restraints imposed by information classification criteria (ieee.es: 2013). The moving from analog to digital made it possible to fine tune the collection methods. Radio streams were automatically converted into text and the television streams into text and frame sequences. This enabled their automatic indexing and processing, for example the who-where-when correlations. The search and indexing by image became possible for all categories of data. The correlations OSINT – IMINT – SIGINT – MASINT were also enabled etc. At this point, the challenges posed by OSINT consisted in the ability to convert into actionable intelligence the large volumes of data, which in most cases were unorganized, came from multiple sources, were available in different forms and collected through several categories of channels and to subsequently convert them into validated intelligence (Hamilton: 2011). The specific methods and instruments could assist in the creation, validation and enhancement of a collection base adjusted to the intelligence needs. It is an essential step considering the high number of sources, of different types (databases – government and private – structured, unstructured databases, studies, prospects, publications, etc.), coming from various key areas (economics, politics, diplomacy, state administrative apparatus, etc.) with anisotropic topics (processes, products, regulations, competitors, mergers, partnerships, sectoral information, social trends, etc.) (Brown: 2019). The calibration of collection base is a process where the sources are continuously reviewed, keeping however in mind that the sources should cover all key areas required for the intelligence base.

Summing up the five landmarks, we briefly present below the evolution of OSINT in the past 200 years:

• the advent of print media leads to the establishment of intelligence systems allowing the systemic and systematic collection from open sources;

• the structured intelligence networks start to influence and control the print media and the intelligence services need to categorize the information collected from the press based on criteria related to publication, author and context;

• the intelligence services become government institutions and the segregation between domestic and foreign occurs, the open-source information being collected now from homeland sources and from abroad target territories by different structures;

• public radio and television networks are developed and, if until that time, the intelligence services were focused on indexing, storing and easily accessing written information, they start now to be concerned with converting voice to text in order to process the information disseminated through radio. The need to capture, index, store and access video information becomes also apparent;

• in addition to SIGINT, IMINT or MASINT, the efficiency of OSINT starts to highly depend on the efficiency of computing equipment and technologies used;

• the massive use of the Internet causes an exponential growth in the volume of data available on the Internet;

• the moving from analogic to digital allows for the segmentation of data and data series, facilitating the collection, processing, and analysis;

• the social media and the emergence of mobile data access (www) devices provide new categories of data and meta-data which allows for the micro-profiling and profiling of an entity or a group at any level.

• using the new technologies, the OSINT structures transform into actionable intelligence big volumes of data, which are most often unorganized, derived from multiple sources, available in different forms and collected through several categories of channels;

• as the volumes of available data are huge, the purpose is no longer to collect all information that could be of interest, and the collection base needs to be continuously adapted to the intelligence needs.

Considering the above-mentioned landmarks, we identify the following trends:

1. the volume of open-source information is continuously growing at an exponential rate;

2. the number of sources is continuously increasing, and their types are more and more diverse;

3. the technological progress and the new technologies allow for the automated collection and processing of large volumes of data and their integration from various types of sources;

4. the processes for setting source system limits and calibrating the collection base in relation to intelligence needs are dynamic.

2.2. States, Strategies and OSINT Centers

In the light of the above-mentioned trends, we can infer that OSINT is placed high on the agenda of most intelligence services. This is further reflected in the strategy of intelligence community and is part of the national security strategies.

As such, the National Security Strategy of the United States of America - 2017, in a first mention concerning OSINT, emphasizes that the US rivals (with direct reference to China and Russia) use marketing information and techniques to attack individuals and institutions. It is emphasized that the risks to US national security grew as the attackers integrate information collected from multiple sources and use methods of analysis based on artificial intelligence tools. The countermeasures identified by the American government concern the collection and enhancement of information from all available sources and creation of cutting-edge technological platforms. Moreover, within one of the priority strategic actions in terms of intelligence, the US "will, in concert with allies and partners, use the information-rich open-source environment to deny the ability of state and non-state actors to attack our citizens, conduct offensive intelligence activities, and degrade America's democratic institutions" (White House: 2017, 32), and this strategic line is based on the new technologies. The idea is detailed in the chapter "Information Statecraft" which clearly mentions the tools used: large databases integrating information derived from personal and commercial sources with open-source information and data analytic and processing capabilities based on Artificial Intelligence (White House: 2017).

The French Defense and National Security Strategic Review - 2017 is focused in Part C on the strengthening of its Defense Industrial and Technological Base (DITB). This technological infrastructure sustains the national economy and helps France to expand its influence over the world. France's strategic autonomy and technological superiority are possible only if it sustains and maintains the excellence of entities within the DITB. Furthermore, one of the approaches supported by the Ministry of Defense requires that the administration, in partnership with the research community, should make a systematic use of open sources (President of the French Republic: 2017).

In the Russian National Security Strategy - 2009, the innovation and investments in the new technologies are referred to as national strategic priorities. Moreover, clear strategic lines, such as the development of applied sciences, of new technologies or the interdisciplinary cooperation, are detailed (Russian Federation's President: 2015). Even if there are no direct references to open-source

collection, the contextual references are frequent (Russian Federation's President: 2015) (CRS: 2020). Similar references are also found in "Doctrine of Information Security of the Russian Federation" – 2016, which makes mention of technical intelligence (The Ministry of Foreign Affairs of the Russian Federation: 2016).

In the "National Security Strategy - 2013", Japan underlines its need to strengthen the capabilities of intelligence community. Chapter 7 "Enhancing Intelligence Capabilities" clearly states that the development of OSINT is crucial, because in addition to HUMINT, SIGINT, IMINT and other types of sources, it will ensure a consistent system of sources (Ministry of Foreign Affairs of Japan: 2013). As a sign of strategical consistency, in "2020 Defense of Japan", OSINT is referred to as being one of the six pillars that contributes to the development of the capabilities of intelligence services (Ministry of Defense of Japan: 2020).

Similar approaches are found in the security strategies of other states, such as Canada, England, Germany, the Netherlands or China, the latter also displaying a special focus on OSINT (Bereziuk: 2016).

Thus, we may conclude that open-source collection is among the main concerns of the intelligence services all over the world.

As the importance of open-source collection has increased over time in terms of volume, being reflected accordingly in the composition of the collection base, the intelligence services were required to use to a greater extent the technology in the process, in order to collect and automatically process the avalanche of large data volumes (Tabatabaei, Wells: 2016). As such, dedicated structures have been formed and strengthened, such as "Open-Source Center" within the CIA (USA), "Centre des sources ouvertes" within the DNI (France) or "The Internet Center" within the NPA (Japan). Russia acts through the 12th Chief Directorate within the GRU, "information warfare", FAPSI "The Federal Agency for Government Communications and Information" and IRA "Internet Research Agency". China established "the Third Department" or "Technical Department of the Central Military Commission".

3. TECHNOLOGIES

While before the end of Cold War the technologies used mainly originated from the research centers within the defense and security structures, in the past 20 years the academic and business environments have also significantly contributed to the technological change, as more and more joint projects and programs were implemented (Williams, Blum:

2018). One such example is Hacking for Defense, which currently involves DOD, IC, 31 universities and 66 companies. These programs gave rise to a new trend, namely: if until the 1990s most of the cutting-edge technologies were shifting from the defense to the business environment, after 2000 this trend reversed. Moreover, private companies acting in the competitive intelligence field started to be noticed (Katz: 2020). As such, now we can make a relatively thorough assessment of the technologies used in OSINT with reference to unclassified information and information preponderantly coming from open sources.

Thus, considering the phases of intelligence cycle, we list below, in table I, the new technologies which could ensure a more efficient exploitation of intelligence in OSINT centers (Williams, Blum: 2018).

Table 1. OSINT Cycle and Technologies

OSINT Cycle	Operational Steps	Intell Category	Technologies							
			CSS	BD	AI			RPA	BC	Δ
					SA	ML	NLP			
Collection	Scanning Sources	OSD	CSS		SA		NLP			Δ
	Monitoring Sources		CSS		SA	ML	NLP			Δ
	Collection		CSS							Δ
	OSD Storage			BD	SA			RPA		Δ
Processing	Normalize	OSIF OSINT			SA	ML	NLP			Δ *1
	Aggregate				SA	ML		RPA		Δ
	Processed Data Indexation				SA		NLP			Δ
	Correlations				SA	ML	NLP			Δ
	Clearance Permissions				SA	ML		RPA		Δ
	OSIF Storage			BD	SA			RPA		Δ
Analysis	Source Validation	OSINT OSINT-V			SA					Δ *2
	Intell Validation				SA	ML	NLP			Δ
	Integration			BD	SA	ML	NLP	RPA		Δ
	Analyze				SA	ML	NLP			Δ
Dissemination	Production	OSINT-V			SA	ML	NLP	RPA		Δ
	Intell Indexation				SA	ML	NLP	RPA		Δ
	Distribution				SA				BC	*3
	OSINT Storage			BD	SA			RPA		Δ
	Feed-back						NLP		BC	Δ

OSD:	Open Source Data
OSIF:	Open Source Information
OSINT:	Open Source Intelligence
OSINT-V:	Validated OSINT

Δ - other applications
*1 - convertors
*2 - social network analysis; geointell
*3 - electronic post applications

CSS:	Crawlers - Spiders - Scrapers
BD:	Big Data
AI:	Artificial Intelligence
ML:	Machine Learning
NLP:	Natural Language Processing
SA:	Statistic Algorithms and Analytics
RPA:	Robot Process Automation
BC:	Blockchain Technologies

Source: author, 2021

Further analyzing the above contextual framework, we can note that in the near future, the most significant impact on the economic intelligence systems will be that of the new technologies (Johnson: 2010) (ODNI, DNS: 2018). As "Table I" indicates, there are four large types of technologies that have and will have an increasingly important contribution: Big Data, Artificial Intelligence, Robot Process Automation and Blockchain.

3.1. Big Data

Big Data is the technological field that deals with systematic ways for storage, extraction and analysis of data and information. Big Data appeared as a solution to the problem raised by data sets that were too large or complex to be handled by traditional applications. Big Data is associated with three key concepts: volume, variety, and velocity (Miller: 2015).

Big Data facilitates the capturing, storage, update, querying, search, sharing, transfer, analysis and visualization of data, while ensuring the confidentiality of information and sources. Big Data makes it possible to identify correlations between specific data sets, to determine specific patterns, and promotes the use of predictive analysis and other analysis methods that allow for the extraction of actionable intelligence (Katz: 2020).

The high capacities of storage, indexing and analysis of information allow to easily access large amounts of data and information (Johnson: 2010) (ODNI, DNS: 2018). The databases can be connected to automatic systems for collection of open-source information, coupled with systems for automatic indexing of collected data and information, which enables the structuring of data and information, also including the implementation of policies regarding the permissions (the rights of access) (Miller: 2015). Moreover, 5G technologies will significantly increase the technical and tactical capabilities in the field of data collection, monitoring, telecommunications (extensive real-time data transfers from the tactical area – automation based on transmission via cellular networks, Internet of Things, or edge computing). At the same time, vulnerabilities specific to these capabilities will arise and require significant counterintelligence efforts, especially in the field of cyber security (The Economist – Intelligence Unit: 2020).

3.2. Artificial Intelligence

Artificial Intelligence is intelligence demonstrated by

technological devices that collect signals and perceive the environment where they operate, starting and managing actions that maximize the chances to successfully achieve their objectives, by replicating the cognitive functions associated to human mind, such as learning, analysis and problem solving (Miller: 2015).

Artificial Intelligence includes three broad types of algorithms:

- Statistical Algorithms and Analytics – generation of statistical structures and calculation of probability, predictive analytics,

- Machine Learning – neural networks and reasoning, deep learning, and

- Natural Language Processing – learning and representation, accessing of knowledge (Williams, Blum: 2018) (Nacci: 2017).

In most software solutions, these technologies supplement and enhance one another, processing and analyzing large databases (Big Data Analytics), their result being used and interpreted in classical software and programming structures (Williams, Blum: 2018) (Nacci: 2017).

The Artificial Intelligence technologies can allow the automation of collection platforms, also optimizing the selection of sources based on collection requirements. The algorithms can generate models that are able to anticipate certain collection tasks according to currently processed information, can trigger the selection of the best sources or determine optimal collection frequencies. Also, deep-learning algorithms facilitate automatic decision-making allowing for a dynamic adaptation of the collection tasks. Thus, the collection becomes adaptable also entailing a downsized human contribution (Katz: 2020) (Nacci: 2017).

Moreover, the artificial intelligence applications will allow the use of efficient automated solutions during the information processing phases and later in the analysis phase. Scenario analysis, predictive analysis, establishment of both recurrent patterns and future patterns are possible using artificial intelligence technologies (The Economist – Intelligence Unit: 2019). Furthermore, the development of hardware capacities (e.g. quantum computers) will enhance the capabilities of Artificial Intelligence-based software, having a significant future impact. According to a study issued by the Emerging Technology and National Security Team, 32% of critical technologies used by the intelligence systems will be based in the future on Artificial Intelligence and 16% on quantum computers (Miller: 2015) (ODNI, DNS: 2018).

3.3. Robot Process Automation

Robot Process Automation is the technology that allows to automate IT and digital processes by configuring software robots that emulate and integrate the actions of a human operator, interacting within the digital systems to carry out various processes. RPA robots can utilize the user interface to collect data and to manage applications, just like a human user. RPA robots interpret information, trigger responses, and communicate with other systems, especially in order to perform a wide variety of repetitive tasks (CRS: 2020).

Robot Process Automation technologies are useful for the processes of intelligence collection, processing, dissemination, and management because they allow the automation of recurrent tasks by processing and indexing large volumes of data, also ensuring the correlations between databases, recipients, channels of communication and other entities (Miller: 2015).

3.4. Block Chain Technologies

Block Chain Technologies are based on a chain of cryptographically linked data blocks, each block containing a cryptographic key ("hash") of the previous block, a timestamp and transaction data. Therefore, Block Chain Technology does not allow any data alteration. Once recorded, the data from a block cannot be retroactively altered without the alteration of all subsequent blocks. The technology uses a distributed ledger and not a unique ledger.

Block Chain Technologies will allow for an efficient implementation of the policies regarding the permissions and rights of access to classified information, including the remote access to systems and data on high security conditions (The Economist – Intelligence Unit: 2019).

3.5. Other Technologies

Web Scraping is used to extract data from websites. Using various protocols, the software directly accesses web pages through automated processes, a bot, or a Web Crawler, to collect specific data (from a database) which are stored and subsequently used (Pinto, et al: 2018). Web Scraping implies downloading the content of a page and then extracting data for subsequent processing. Thus, the content of a page can be stored, structured, and subsequently analyzed. The Web crawler, the Spider or the Spider-bot is a robot that systematically browses the web. Crawlers copy the pages for immediate or later processing. Crawlers can also map the web identifying the relevant information for specific search sequences.

All these technologies are essential for collection because they allow for the collection and storage of web data (Katz: 2020).

The analog-to-digital converter is a system that converts an analog signal (sound, light etc.) into a digital signal. A converter can also provide the digital value of a measurement, for example the value of voltage in a circuit. These technologies are critical for OSINT because they allow the conversion of analog information, such as audio recordings, video recordings or images, into digital information. The digital information has the advantage that it can be stored, indexed (attributes can be assigned to digital information), aggregated and subsequently used in intelligence actions. Some specific technologies of the intelligence community that allow certain digital-digital conversion required for an appropriate indexing of information can be included as well in the class of convertors (Williams, Blum: 2018). For example, the automatic conversion of an audio recording into text or the conversion of a digital video recording into audio and then into text and correlation of the text with the frames. Similarly, printed information can be converted into digital information. Also, using Artificial Intelligence technologies, subjects can be automatically identified in photos, as well as the actions taken, territories and other information which can be indexed, subsequently allowing a proper exploitation (Williams, Blum: 2018).

Social networks analysis software facilitates social network analysis in terms of quantity or quality, by describing network characteristics and by numerical or visual representation. The networks can consist of anything, from families, teams, disease vectors and membership on social media websites and web networks (Pinto, et al: 2018). Networks are formed of direct connections between nodes or indirect linkages based on shared attributes, shared attendance at events or common memberships. High performance software packages use relational databases to import and store some network features and use advanced Artificial Intelligence algorithms for statistical analyses, sentiment analyses, traffic, language and prediction (Katz: 2020).

The electronic mail applications are critical, because they are vulnerable mainly regarding data transfers security. Security requirements, such as the identification of the person and related device, data encrypting and security, network and data packages security, are critical issues that these applications must ensure. Also,

the applications can be configured so as to be in accordance with the distribution matrices, to add beneficiaries or, for certain topics, to suggest the user that he or she should also inform other entities that could face the risk (Brown: 2019).

4. OSINT - FUTURE TRENDS AND TECHNOLOGIES

We will refer below to OSINT by analyzing the phases of intelligence cycle: collection, processing, analysis and dissemination. Please note that our approach will be somehow theoretical, organized by individual phases. In fact, the intelligence cycle phases often overlap or in some cases, they are not all part of the process.

As regards all phases listed below, it is relevant to mention that for the entire intelligence cycle the matters pertaining to the safety of databases, devices and networks, data submissions and packages are central items on the agenda of intelligence services (Katz: 2020) (CRS: 2020) (Tabatabaei, Wells: 2016). In most cases, dedicated modules or applications are being developed, but efficient solutions have also been developed in the commercial sector, such as those provided by large companies like Microsoft, IBM, Cisco, Fortinet etc. or other niche providers, such as SolarWinds, Intruder, Bitdefender, Malwarebytes, etc.

4.1. Collection

As regards the collection, we first refer to the setting of the source system for all systematic (recurrent) intelligence topics. As such, based on the national interests, most intelligence services also constantly monitor other target territories. In many cases, the monitoring implies the setting of a system of sources, an initial correlation of relevant information available in those sources, followed by the systematic collection of new information. Such collection can be planned at various intervals or can take place at the same time as the publication. Once an optimal frequency is set, the sources are systemically and systematically scanned and monitored: new intelligence is gathered, the differences arising in databases are identified, volume or qualitative variations in the news flow are assessed or the deviations of certain indicators are recorded and flagged (Katz: 2020). As soon as the collection base is set and validated, the sources remain relatively stable, meaning that, once set up, the technologies used for collection operate without requiring other significant adjustments, unless the source structure is being adjusted (ODNI, DNS: 2018).

However, the appearance of asymmetrical topics can require a recalibration of the source system. Even though by the surveillance and monitoring activities, the intelligence services aim to be warned about, and timely anticipate all possible threats, atypical disruptive situations that had not been covered by those mechanisms can occur. Such atypical situations require that new sources be integrated in the collection base. The integration of new sources requires in most cases that reliable technological solutions be found as soon as possible. As such, it is recommended for the above-mentioned collection base to be able to ensure the informative framework capable to provide early warnings and respond to all types and categories of possible and probable threats (CRS: 2020).

Therefore, the recurrent collection of intelligence is a preponderantly technological, systemic, and systematic process, the purpose of which is to ensure an exhaustive information base. The collection of information by request is also a technological but non-systemic and non-systematic approach, aimed to ensure an information base for a specific topic. The ideal scenario for any OSINT center is to operate relying only on the systemic and systematic intelligence collection, but due to the volatility and asymmetries of the current environment, the professionals are often required to dynamically adjust the system of sources and need to find new technological solutions to handle specific requests for information (Katz: 2020).

While at present the sources that are preponderantly exploited are those allowing for a systematic collection, the technological advances will soon make it possible to map most of the open sources and to identify more easily technological solutions that enable the extraction of information from these sources. It is hence confirmed the trend according to which the processes for setting source system limits and calibrating the collection base based on information needs are dynamic (Brown: 2019). This will be possible because, with the exception of print media, there will be new technologies to enable an efficient identification and monitoring of web, media, social media and dark web sources (Ortega: 2019) (Pastor-Galindo et al. 2016). On the one hand, there are new solutions allowing the systemic collection from certain categories of sources and, on the other hand, the existing platforms are developed so as to include and process new categories of sources (Brown: 2019).

To identify the open sources from web, social media and dark

web, the OSINT centers currently use web search engine-like solutions that are somehow similar to Qwiki, Wolfram Alpha, Wowd or Recorded Future.

The future trends indicate the use of elastic search solutions, enhanced by robotic process automation technologies, solutions which would enable an efficient scanning of social media (Kanakaris et al., 2018). Another aiding tool is the specific artificial intelligence technology, which by special statistical algorithms, natural language processing and machine learning, allow a proper identification of sources. Moreover, the software solutions will run on continuously upgraded hardware infrastructures. The increase in the operating speed and computing power will promote the development of more and more complex and refined algorithms (CRS: 2020).

The best-known core robot process automation solutions are: UiPath, blueprism, Automation Anywhere, etc.

It is difficult to give examples of artificial intelligence solutions as their field of application is extremely wide. Large corporations, such as Microsoft, IBM, Google, Adobe, OpenAI etc., along with niche companies, such as Starmind, Vesttorly, Braina or Footprints are among the best-known providers.

To extract data, the ONSINT centres currently use "spider", "scrap", "crawl", "geolocation" or other similar solutions, enhanced by artificial intelligence and robot process automation capabilities (Williams, Blum: 2018) (Kanakariset al., 2018) (Pastor-Galindo et al., 2016). The solutions used by the OSINT centres are similar to solutions such as: Scrapy, HTTrack, OutWit Hub, Visual Scraper, Google Dorks, Spyse, Creepy, etc.

The future trends indicate the use of these types of solutions (Crawlers – Spiders – Scrapers) for data extraction, but within them, the weight of artificial intelligence and robot process automation will be significantly higher.

4.2. Intelligence Processing and Indexation

Both systematically and non-systematically collected (for a specific topic) information should be normalized, aggregated, indexed (assigning of attributes) and stored, so as to be easily identified whenever necessary (Katz: 2020).

Normalization means converting and bringing all collected information to the same form (e.g. all information should be in digital text format, in the same language and all images in a specific digital format) (Miller: 2015). The efficiency of

conversion software is critical here. Identical and similar data that is collected from different sources is then aggregated (Williams, Blum: 2018). Subsequently, in the indexing phase, along with the allocation of metadata and attributes (subjects, places, events – subject matters, actions, thematic verticals), depending on the technologies used, the related potential risks and recommended countermeasures can also be correlated, or other similar cases can be listed, etc. (Katz: 2020) (Pastor-Galindo et al., 2016). The more attributes and metadata are allocated, the higher the likelihood of leveraging the information at a subsequent phase or operation. For these categories of applications, it is relatively difficult to identify examples of commercial software (Williams, Blum: 2018). However, certain features are found in applications such as CRMs or MATLAB, SPSS, Wolfram Mathematica, etc. With regard to databases, at the forefront are the solutions provided by large corporations such as IBM, Oracle, Microsoft, etc. or for the analytical part, IBM SPSS, Elasticsearch, SAP Hana, MicroStrategy, SAS Visual Analytics, Forestpin Analytics, etc.

Moreover, the access rights can be technologically set up to a great extent, in keeping with the policies on information classification. For example, the rights can be allocated by correlating the levels of access to information with those of a subject and with access levels that have been allocated to the sources and by subsequently fine-tuning permissions based on the metadata related to the information or the cluster where the information was distributed (Katz: 2020). Here we can also find solutions developed by Oracle, Microsoft, Cisco, etc.

Besides the aspects related to the indexing and setup of access rights, the processing and indexing of available web and dark web databases are other challenges posed at this point. Difficulties arise as each source can use arbitrary structures and indexing for its databases and the normalization, aggregation and indexation thereof require great initial effort (Ortega: 2019). For example, a simple parameter, such as the distance between two points, can be expressed in kilometers or miles. Or a source can rely on the distance between the two points, while other source can relate to an average time needed to cross that distance (Katz: 2020). There are cases where maintenance can also be difficult because the sources can voluntarily change the structure of the bases. Moreover, it would be ideal for all databases collected from various sources and relating to a certain topic

to be aggregated into a single base. It is only after normalization and aggregation that the warning and early warning indicators (levels) can be determined. The aggregation and normalization precede the automated and semi-automated generation of recurrent informative products submitted to certain beneficiaries. An example of informative products that are automatically issued based on series of data are those reflecting the fluctuations of currencies in certain territories (Katz: 2020).

The current trends indicate that the processing will be preponderantly carried out using technology. The advances in conversion applications, the fine-tuned normalization and aggregation solutions assisted by robot process automation will allow the specific artificial intelligence (machine learning and natural language processing) algorithms and technologies to successfully perform these categories of tasks.

4.3. Analysis

A first challenge in OSINT analysis is the validation of information. Besides the actual analysis of information, attention should be paid to sources and authors in order to avoid all possible attempts of manipulation or misinformation (Nacci: 2020). There are publications or authors who get voluntarily involved in manipulation or misinformation and authors who have unwillingly been trapped into the manipulative arrangements, unknowingly taking over certain distorted ideas in their articles (Katz: 2020). Moreover, incomplete information and fragmented information are hindrances that can be however compensated at a subsequent phase, by analyzing all sources (by also integrating other types of sources – HUMINT, IMINT, SIGINT, MASINT, etc. in the analytical approach) (Katz: 2020) (Brown: 2019). For information analysis, the Artificial Intelligence solutions based on natural language processing and machine learning become more and more efficient, making it possible to detect any attempted manipulation, propaganda, or fragmentation of information (Brown: 2019) (Nacci: 2020). In this respect, commercial solutions, such as IBM i2, Palantir, Siren, Cogito, 6th Sense, etc., are in place.

The second challenge in OSINT analysis consists in determining intelligence dissemination patterns, given that information is often taken over without quoting the source. In the analytical phase, it is essential to determine the source of information and the time of publication, because possible interests related to the source or author can also be analyzed

(Katz: 2020) (Brown: 2019). This operation is even more difficult in case of social media and can be in all likelihood carried out only using high-performance technological tools (Williams, Blum: 2018) (Kanakaris; et al., 2018). The impact of artificial intelligence and robot process automation is increasingly felt in this case too. At present, the machine learning algorithms and robot process automation mechanisms make it possible in certain cases to automatically identify the source (Miller: 2015) (Brown: 2019). In parallel, social network analysis applications, such as NetMiner, NetworkX, Centrifuge, SocNetV, etc. have also been developed.

The impact of Artificial Intelligence will be noted in case of analysis too. The correlations who, what, why, where, how, with whom, etc. will be more and more accurate, providing the analyst with significant clues (Brown: 2019). The analogies related to certain patterns of action, profiling, speech analytics, evidence management, etc. will be processed automatically to a greater extent, providing the analyst with reliable working assumptions (Katz: 2020). A significant role in this respect will be played by quantum computers, which will accelerate the development of artificial intelligence and revolutionize certain programming patterns (Miller: 2015).

4.4. Intelligence Dissemination

In case of OSINT, the creation of informative products gives rise to several situations. As such, certain informative products can be automatically created (using technology), with a specific pre-set frequency. Examples of such informative products include the press review or a summary report or chart on stock exchange transactions concerning the companies in which the state holds equity interests. Likewise, in certain cases the reports are automatically generated, and the analyst conducts a final review of the document before being submitted to the beneficiary (Nacci: 2020). A third case is that in which the informative products are fully drafted by intelligence analysts, in keeping with the common practices, in most cases according to an approach implying the analysis of all sources (Katz: 2020).

With regard to intelligence indexing and classification, all documents are indexed and stored according to the principles set forth under the processing phase, because it is highly important to be able to further access them whenever necessary.

In terms of intelligence dissemination, the informative products are generally disseminated to the designated beneficiary or

beneficiaries. However, the current technologies facilitate the creation of distribution matrices, which makes it possible to also disseminate this information to other beneficiaries (Katz: 2020). The distribution matrices make it possible to draw up the best lists of beneficiaries, taking into account the permissions to access the information and the interests of beneficiaries. Depending on the metadata attached to the informative products, the informative products are automatically correlated with other possible beneficiaries who may leverage such information, which significantly enhances the efficiency of this informative approach (Williams, Blum: 2018).

The beneficiaries may subsequently request clarifications or additional information. They may also submit suggestions regarding the presentation form (text, table, charts, images, etc.), calibrating hence the communication to the best level (Williams, Blum: 2018).

There are numerous applications designed for electronic mail services, including here players such as Microsoft, IBM, Apple and other niche players, such as eM, Inky or Hiri. As to the next steps, the trends of an increasing impact of Artificial Intelligence and Robot Process Automation are once again confirmed here. Moreover, block chain technology plays a significant part when it comes to transaction security (Brown: 2019). Here too there are well-known providers, such as IBM, Microsoft, Oracle, etc. but also smaller companies, including Ripple, NEO, Stellar, etc.

5. THE NEXT STEPS OF OSINT

The already identified five trends are further confirmed by the outcomes of each OSINT step, as follows:

1. The volume of open-source intelligence is continuously growing, at an exponential rate, a trend confirmed by the development of web, dark web and social media.

2. The number of sources is continuously increasing, and their types are more and more diverse, a trend which is supported both by the diversification of technologies used in web and databases, as well as by the emergence of content platforms.

3. The technological advances and the new technologies allow for the automated collection and processing of large volumes of data and their integration from various types of sources, a trend sustained by the technological advantages related to Artificial Intelligence and Robot Process Automation.

4. The processes for setting source system limits and calibrating

the collection base in relation to the information needs are dynamic and can be technologically assisted by Artificial Intelligence algorithms.

5. OSINT collection and processing progresses towards a preponderantly technological approach, as confirmed by each phase of the intelligence cycle. As such, trend 5 can be reworded as follows: OSINT progresses towards a preponderantly technological approach.

5.1. The merge between OSINT and the new Technologies

Hence, OSINT progresses towards a technological approach. Each phase uses its own technologies, Crawlers – Spiders – Scrapers in case of Collection, convertors in case of Processing or Blockchain in case of dissemination. It is relevant to mention that Artificial Intelligence and Robot Process Automation contribute to all phases. Moreover, the advances made in the development of quantum computers, the increased computing power, the continuous development of various types of networks will significantly influence the collection, while also prompting and providing solutions, which will also bring about some direct benefits, such as a better processing speed, an increased volume of processed data and improved ways of processing and analyzing information (Katz: 2020). Likewise, quantum encryption and decryption could radically change this field. Quantum computers could accelerate the development and increase Artificial Intelligence capabilities, transforming the collection and processing capacities (Nacci: 2020). The development of 5G technology and IoT devices will trigger changes in where and how information is collected, the "omnipresent connectivity", creating new opportunities for the collection field (Katz: 2020) (Nacci: 2020).

In conclusion, the technological advances support the development of OSINT. Practically, the accelerated technological development inevitably leads to an accelerated development of OSINT.

5.2. The OSINT impact in the national intelligence systems

The sustained growth of OSINT will reflect accordingly in the weights of collection base and subsequently, in those of the intelligence base. The advantages provided by the automation of collection, processing and dissemination phases and the significant technical support provided to the analysts enhance the importance of open-source collection. Moreover, the fact that information is collected remotely, without exposing the human collector, is a significant

advantage (Ivanjko, Dokman: 2020).

Therefore, due to the increase in the volume of open-source intelligence, due to the fact that OSINT processes are automated, reducing hence significantly the required resources and, as the open-source acquisition does not expose the human collectors, OSINT will continue to play a central part within the ecosystems of intelligence services.

5.3. The Next Steps

We can conclude that in the near future the ONSINT cycle will be a preponderantly technological approach.

As regards the collection, within the next ten years the technological advances will make it possible to map most open sources and identify easily, often automatically, the technological solutions for extracting information from these sources. The processes for setting source system limits and calibrating the collection base in relation to the information needs will be automated because, except for print media, the technological solutions will allow for an efficient identification and monitoring of web, media, social media, and dark web sources. The future trends indicate that Crawlers – Spiders – Scrapers solutions will be used for data extraction, but within them, the weight of artificial intelligence and robot process automation will be significantly higher. Moreover, "elastic search" solutions will be used and will be enhanced by robot process automation technologies, leading to an efficient scanning of social media. Artificial intelligence will promote a proper identification of the sources.

Processing will be preponderantly carried out using technology. The conversion applications, the fine-tuned normalization and aggregation solutions assisted by robot process automation technologies will enable the specific artificial intelligence technologies and algorithms to successfully carry out these categories of tasks.

Intelligence analysis will rely on efficient natural language processing and machine learning algorithms, which will automatically detect any attempted manipulation, propaganda, and fragmentation of intelligence. The correlations who, what, why, where, why, with whom, etc. processed by Artificial Intelligence will be more and more accurate. The analysis of scenarios, analysis of concurrent hypothesis, speech analytics, evidence management, etc. will be processed to a great extent automatically, providing the analyst with reliable

working assumptions. The network analysis applications enhanced by machine learning algorithms and robot process automation mechanisms will lead to an automate identification of the source.

The dissemination will use advanced protocols of encryption and secured transfer of information, probably using quantum computing. Moreover, the distribution matrices will allow the dissemination of information to optimized lists of beneficiaries.

6. CONCLUSIONS

How the intelligence services will adjust and synchronize OSINT with the technological process will be an essential success factor. Four levels are to be noted here:

- Use of artificial intelligence technologies in the specific phases of intelligence cycle and in most specific software platforms;
- Use of robot process automation technologies in the specific phases of intelligence cycle and in most specific software platforms;
- Adoption of 5G technologies;
- Adoption of quantum technologies.

These levels could make the difference between an efficient and effective service and a lower performance service.

ACKNOWLEDGMENT

This article was supervised by Professor Irena Chiru, PhD.

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THE ADVANTAGES OF INTEGRATING ARTIFICIAL INTELLIGENCE IN BUSINESS PROCESSES

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Abstract: *In the current age of information, digitalization is offering advantages to the organizations proportional to their willingness and determination to integrate technology. Innovative high tech has determined the developments of extremely dynamical and demanding operational environments but is also providing the tools to cope with them. In order to achieve success modern organizations need to implement highly flexible processes, which can be easily adapted to the permanent changing input variables or to the customizable output requirements. The development of artificial intelligence technology and its integration into the organizational business processes is promising to bring advantages, which could never be reached by utilizing classical human based processes.*

Key words: *business process, artificial intelligence, effectiveness, machine learning, decision-making, process redesign.*

1. INTRODUCTION

Every organization relies on three main pillars: people, technology and processes and by integrating these resources, the organization aims to accomplish its mission and goals. The management strategy towards operating with these resources can take two main approaches: the classical one where those resources could be viewed and designed to operate independently with very limited and strict regulated interactions, or a second one, where a more holistic approach with a high degree of interconnectivity and integration is designed between them. While the first one has been the basis of designing organization management for a long time, in the last years it has been observed that such a strategy is hampering the performance of the overall system (M.L. George, 2004). The modern highly dynamical environment where current organizations need to operate require from them to adopt a more complex resource management framework in order to increase their ability to adapt and thrive (Dell, 2005).

While the people and technology components are easier to visualize or comprehend and even have in all organizations dedicated well established corresponding management structures, the third one - processes - has not generated a similar standardized approach. This domain is currently beneficiating of different strategies and various levels of attention based on organization internal complexity, the specific operational environment and the domain importance established by managers. The organization processes depend extremely on the mission, internal entities, external partners, legislative framework, technology and most important people. This extremely complex set of factors determine the emergence of a set of business processes which is unique to every organization and are left to the decision managers to govern. In addition, due to this complexity and need for flexibility, the creation of a general accepted standardized framework for ensuring the development of efficient business processes was not possible.

A business processes within an organization is the combination of a set of activities with a structure describing their logical order and dependences and having as main objective to produce a desired result (Ruth Sara Aguilar-Savén, 2004). Business processes are conducted horizontally or vertically within an organization and may or may not be visible to the customers. Sometimes business processes even cross the boundaries of the current organization (Gartner, 2020) and involve external entities. The development of technology determined an increased adoption of a service oriented framework within modern organizations and such external processes become more and more frequent.

2. BUSINESS PROCESSES

Because of the huge diversity of organizations, there are numerous types of business processes, designed and particularized for the different areas of the organization: sales, customer service, technical, finance, production, business continuity, procurement, management, etc. All of them can be divided in three main categories, which are encountered in every organization:

- operational processes: processes that are designed to transform inputs into outputs and to create value for the organization. Depending on the situation, the outputs could be goods, services or both of them. Such processes are the vital ones for the organization as they implement the main goals and reflect the overall reason of its existence;
- supporting processes: processes that do not contribute directly to the transformation of inputs to outputs but ensure the running of the main processes by providing resources, task synchronization and life cycle management. Supporting processes are also very important for

the organization and should be carefully considered because the quality of their performance directly impact the running of the operational ones;

• management processes: processes used to establish the goals, plans and strategies of the organization. Such processes could be also seen as designed to coordinate and control the other process. The strategic management process is one of the most important management processes designed to create the overall process framework for the organization.

In the effort of addressing the efficiency vector of the business processes the domain of business process management was developed. Business processes management is a discipline designed to discover, model, measure, analyze, improve, optimize and automate (Figure 1) the business processes (Wikipedia, 2020).

Traditional business processes management emphasizes the operational efficiency realized by standardization and automation in order to scale, reduce error rate, improve compliance and minimize costs. This metrics are typical for classical organization environments and do not reflect the dynamics of a digitalized changing modern environment.

Digital businesses are thriving growth opportunities for organizations willing to take the risks of this novel approach. The modern world requires an approach to process management, which is based on variety, flexibility and on the fact that every customer has different requirements and particularities. Generic processes cannot ensure varying needs being

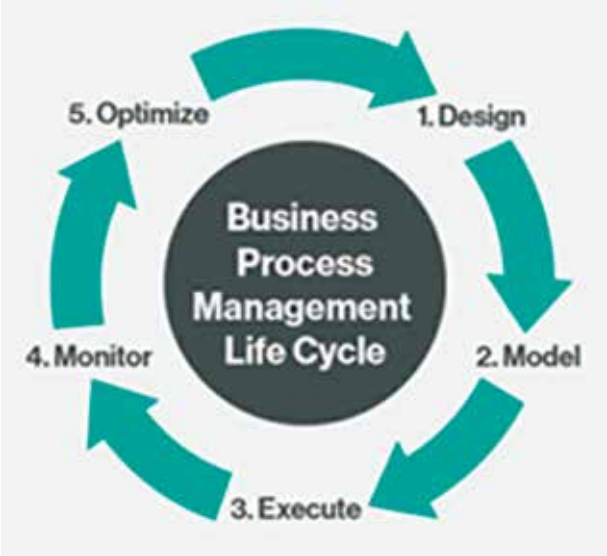

Fig. no. 1 Business Process Management
Source: www.sweetprocess.com, last retrieved February 2021

satisfied efficiently and effectively. The modern metrics from business process management are a combination between standardization and customization but the success of a modern organization requires an operational framework, which allows deviation from standards when necessary. Organizations need proper processes in order for human resource at every hierarchical level to get the right information at the right time in order to be able to rapidly make, within an agreed framework, the required change and adapt to the new challenge or opportunity.

3. ARTIFICIAL INTELLIGENCE

The development of technology has brought challenges but also opportunities to organizations. Indeed, the climate where to operate and the requirements for increased flexibility and adaptability has put a great pressure on them; however technology offers also a plethora of opportunities and tools which could help them achieve success.

Artificial intelligence is the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. (Oxford Reference, 2020)

Machine learning is an application of artificial intelligence. It allows systems the ability to manipulate data and learn from it without being explicitly programmed to do it. Machine learning uses algorithms that can be classified in three main categories (Figure 2):

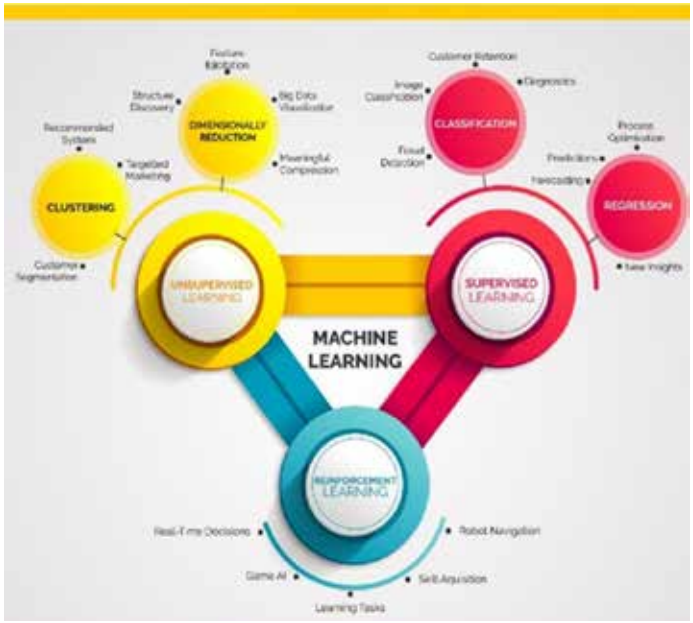

Fig. no. 2 Types of machine learning
Source: www.brainstormingbox.com, last retrieved February 2021

3.1. Supervised learning

In supervised learning, algorithms are trained by using labeled training data alongside known solutions. The labeled training data provides models for algorithms to build their training database. By employing labeled pairs of input and output data, an algorithm will be trained on how to map a provided input data pattern to an output. After training, an algorithm can be used, with an accepted error rate, to classify input data in a certain category or to predict future courses of action.

3.2. Unsupervised learning

Algorithms in unsupervised learning are not given any solutions. Instead, with only unlabeled data as input, they must attempt to find hidden structures and patterns. This approach is mainly used for clustering, such as grouping events based on common characteristics and association, where preferences and tendencies are identified. The benefit is that the system identifies data patterns without the contribution of the human. The results, for example, could be personalized supermarket discounts sent to your phone, an error source identification, a potential new cyber-attack strategy or a tailored homepage for a service.

3.3. Reinforced learning

In reinforcement learning, software agents are placed in an environment and seek to maximize the cumulative reward for their actions. The significant difference of this algorithms compared to the previous two is that no training data is needed; the training of the system is performed by employing them in cycles of observation and action/ reward mechanisms. This type of machine learning can be applied in areas such as game playing and for control problems.

4. ARTIFICIAL INTELLIGENCE IN BUSINESS PROCESSES

Digital transformation is getting deeply integrated into the business processes with artificial intelligence leading the effort. Making artificial intelligence a part of business process management is gaining a lot of traction for uncountable benefits that come with it. It helps organizations to automate their complex processes system by developing a dynamic and modern technological environment. Here are some directions in which artificial intelligence can be integrated within the business processes with associated benefits. It needs to be mentioned that not everything can be automatized and replaced by technology.

4.1. Repetitive tasks automation

Automation of the repeated tasks is one of the most common applications of artificial intelligence. Robotic process automation and intelligent process automation are technologies based on machine learning and artificial intelligence algorithms that are used to replace the repetitive work done by humans. By employing these technologies, large volumes of repetitive work are transferred from humans to automated systems increasing the productivity, accuracy, responsiveness, while minimizing error rate.

4.2. Increasing human resource motivation

By integrating automated systems in business processes, the human resource is relieved from performing the repetitive tasks and reassigned to other activities involving emotional intelligence, reasoning, judgment, or communication with the customer. Employees appreciate the opportunity to work on tasks that are less repetitive which stimulates their thinking and offer more value to their organization. Their active contribution is really making a difference and this induces a strong sentiment of work satisfaction increases their commitment for enhanced productivity. In this manner, both employee motivation and customer satisfaction are improved.

4.3. Enhancing decision-making capabilities

The decision making process involves the processing of a quantity of data based on a previous understanding of environment in order to establish a future course of action. The usage of mathematical models in the process is highly beneficial. However, those are just simplified versions of the real complex environments and their limitations increase the risk of not taking the right decision at the right time. By employing fuzzy systems and neural networks, real complex scenarios could be much better modelled. Artificial intelligence systems integrating these technologies can then be trained on realistic scenarios with all the intricacies and ramifications to develop a better understanding of the environment of the decision.

Artificial Intelligence can mimic the real systems and can be trained from scenarios or past experience. Uncertainty and imprecise knowledge can be represented with fuzzy logic (Pedrycz Witold, 2008) and artificial neural networks (Hammerstrom, 1993).

Augmented decision-making processes based on artificial

intelligence decision models can assist the managers in decision support for tasks such as: organize received data, integrate and visualize data, prioritize and filter event specific relevant data, design an optimal response, assess and quantify risks (Phillips-Wren G., 2006).

4.4. Redesigning processes

As companies grow more and more they develop highly complex processes, which involve many internal and external entities. Due to the high level of sophistication, improving the business processes is hampered, as it is highly difficult to understand the interdependencies between them. Business process improvement efforts could beneficiate upon the usage of an artificial intelligence platform in order to automatically map the processes and establish the relations between them. The data could be later analyzed by using different visualization modes based on desired criteria. Artificial intelligence can be used to identify critical failure points and even recommend optimization actions for those processes.

4.5. Performing predictive analysis

The high quantity and variety of data coming in short time is putting a huge pressure on the current organizations and their ability to maximize the value of collected data. Artificial intelligence algorithms can be integrated into business processes in order to compute large quantities of data collected from various channels, which is otherwise unfeasible to be performed by employing traditional tools and processes. In this way, it is possible to identify patterns that are too complex to be discovered by the human mind. For example, analysis-segmenting prospects based on their buying behavior for marketing purposes, detecting trends, identifying a cyber-persistent threat hiding below classical detection level or even identifying emerging opportunities in a conflict. Artificial intelligence technology can in this way provide predictive analysis of possible courses of action and determine faster and more effective decisions.

4.6. Decreasing costs

The possibility to process large quantities of data and identify relations with the information environment can support the organizations in decreasing costs in a multitude of ways: decreasing error rate, reassign human for more productive tasks, eliminating waste from decision cycle, identify risks in supply chain, optimizing resource utilization, etc. According

to a research from Accenture, "a successful RPA implementation can yield a 40 to 80 percent reduction in processing costs, and up to an 80 percent reduction in processing time." (Acenture, 2017). Even though initially there are some investments in adopting and integrating the new technology within the organization in less than a year most enterprises already reported a positive return on investment (UiPath, 2020). The technology is highly flexible and even the initial costs can be lowered by adopting a scaling up program based on performance.

4.7. Improving customer experience

When first introduced into organizations artificial intelligence was considered only a cost decreasing tool. However, improving the customer experience has emerged as another highly appreciated characteristic. Artificial intelligence-based business processes provide accurate insights into customer's behavior, offer virtual customer assistance and triage, predict maintenance and upcoming repair needs, connect right service staff to customers, prevent fraud, expedite customer complaints and enquiries. Such systems can build customer profiles and can identify market trends or propose products most suitable to the customer needs. Chatbot is one example of a technique, backed up by artificial intelligence technology, which is designed to establish a direct communication with the customer. Such techniques improve the customer experience by helping to create a transparent platform of communication between entities.

4.8. Improving organization adaptability

Modern organizations have to operate within an extremely dynamic environment and their success depends greatly upon their ability to take advantages upon opportunities. This requires for the organization to have processes which enable rapid data collection and processing, quick and efficient command and control system and highly flexible reaction tools. Their organizations structure is being able to permanently adapt on short notice to the new environment.

The internal business processes are defined by complex interlaced relationships which, in order to support the dynamical organization needs, require themselves to have a dynamical nature and be able to modify the way they operate or their outputs. Because of complexity and impact, such efforts are usually extremely difficult and require long and complex processes, which are not operationally effective.

Due to their ability to rapidly process data and learn, automated processes based on artificial intelligence can be designed to dynamically reposition themselves or to provide managers with early warnings. Auditing and evaluating sub-processes could be triggered and performed more frequently and much rapidly than in the classical environment. The results can be implemented with human support in and supervised framework or even automatically in an unsupervised or reinforced one.

5. CONCLUSIONS

Artificial intelligence is not just a labor-replacement or cost-saving mechanism but it has the potential to radically change organizations in an unthinkable way. The technology is revolutionary in its ability to impact and transform how every layer of organization works. Artificial intelligence-embedded business process management solutions are assisting businesses to overcome performance blockades, seize opportunities and improve their work efficiency and quality. Organizations all over the world need to understand the benefits of artificial intelligence and to integrate business process management capabilities for optimizing their business processes.

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ANALYSIS OF THE DETERMINANT INFRASTRUCTURE EFFECT IN SUPPORTING SUBMARINE OPERATIONAL DURABILITY TO INCREASE THE RESILIENCE OF THE INDONESIAN STATE DEFENSE SYSTEM AT SEA

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Abstract:*The Indonesian nation is currently continuing to develop the strength of the Indonesian Navy's submarine fleet to increase the deterrence of the national defense system and to ensure the security and safety of shipping in strategic maritime routes. The Indonesian Navy submarine is capable of supervising ships sailing or entering and leaving Indonesian waters freely and without being detected by the sonar of warships and submarines of other countries. The limited operational time of the submarine can be caused by several things, both related to the characteristics of the submarine related to the technology used, and the availability of logistics and supporting infrastructure for the submarine's operations. The Submarine cannot continuously dive during its operation to secure and enforce the sovereignty of the Indonesian national jurisdiction. Focus of research is on the determinant influence of infrastructure on submarine operational durability to increase the deterrence of the state defense system at sea. This research uses a qualitative analysis method with the development of thinking through interviews, Focus Group Discussions (FGD), Round Table Discussions (RTD), and semi-structured interviews to obtain data about submarine operational durability. This research found that there was a significant influence on the causal relationship between the two variables with the following information: 1) Submarines can only contribute to increase the deterrence of the state defense system at sea; 2) To be able to realize submarine operational resilience, determinant infrastructure support is needed that can be provided by the Indonesian National Army (TNI), in this case, the Navy and the Defense Industry (State and Private Owned Enterprises).*

Key words*: Indonesian Navy, Indonesia Warship (KRI), Determinant Infrastructure, Submarine Technology, Focus Group Discussions (FGD), Round Table Discussions (RTD).*

INTRODUCTION

As an archipelagic country with 2/3 of its territory constituting the sea (Sebastian et al., 2014), it is necessary to carry out the development of Navy to realize a state defense system at sea (Putri: 2017). To answer the needs of the development of a Navy force that has deterrent capabilities, the Indonesian Navy is responsible with the development of a national defense strategy at, and/or by sea, hereinafter known as the Archipelago Marine Defense Strategy (SPLN) (Putra et al., 2017). This strategy is an elaboration of the defense system that takes into account the geographical conditions of Indonesia as an archipelagic country and implements state defense in an active, multi-layered manner, and can ward off all threats to prevent war, overcoming threats from the marine aspect, internal security disturbances and armed rebellion in the territory of the Republic of Indonesia in creating a safe and controlled Archipelago Sea (Marsetio: 2014).

The development of the naval force also needs to be carried out strategically and effectively to realize the desired deterrence as mandated in Law Number 3 of 2002 Article 3 Paragraph 2 and Article 6. One of the effective forces to build deterrence in the national defense strategy at sea is a submarine fleet (Green & Long, 2017). The effectiveness of the submarine force is expressed in its ability to launch continuous attacks into strategic areas of the opposing country and ward off potential threats from countries that have greater military power (Andersson: 2016). Regarding the strategic value of submarines, silence, and speed of a submarine can paralyze a strategic maritime route (maritime chokepoint) and threaten the safety of shipping commercial vessels and the navy (Joiner & Atkinson, 2016).

Indonesian waters, which are located on the Equator, are tropical waters that contain a lot of fish, plankton, and also many straits that can be used as a strategic tool, as an effective place to avoid detection of other countries' naval forces infiltrating Indonesian waters (Susilo et al., 2019). The Indonesian nation is currently continuing to develop the strength of the Indonesian Navy's submarine fleet to increase the deterrence of the national defense system and to ensure the security and safety of shipping in strategic maritime routes (Indonesian Archipelago Sea Route - ALKI) (Susilo et al., 2019). The Indonesian Navy submarine is

capable of supervising ships sailing or entering and leaving Indonesian waters freely and without being detected by the sonar of warships and submarines of other countries (Ministry of Defence, 2015).

The ability of a submarine to be undetectable during its operational life both at the bottom of the water (operational depth) and at the water surface (periscope depth and surface depth) is both an advantage and a weakness regarding the operational durability of the submarine. This shows the importance of submarines to always be felt in the area of operation, but the exact location cannot be known. Based on Table 1, information on the operational time of KRI for submarine types for the period 2012 - 2019 which is the cumulative data on submarine operational days (CKA-401, NGL-402, NPS-403, ADL-404).

Based on these data, it can be seen that the longest operation was recorded for 196 days in 2017, and the shortest for 8 days in 2016. In terms of operating data per KRI, the longest operating time was only carried out by KRI NGL-402 in 2017 for 164 days. The data in Table 1 shows the limited operational time for KRI types of submarines and the vulnerability to the state defense system at sea, especially underwater security from the activities of other countries that operate their submarines through Indonesian waters. This data shows that there has been a large number of voids in guarding Indonesia's underwater areas. Following the understanding that the shorter the ability of a submarine to be in the area of operation and maintain the confidentiality of its existence, there is a sense of vulnerability as far

Table 1. Number of Submarine Operation Days 2012 – 2019

Name of KRI	2012	2013	2014	2015	2016	2017	2018	2019
CKA-401	-	114	-	-	-	-	-	-
NGL-402	76	60	75	45	8	164	93	69
NPS-403						32	42	49
ADL-404							42	9
TOTAL	**76**	**174**	**75**	**45**	**8**	**196**	**177**	**127**

as the the ability to deter the state defense system at sea is concerned (Laksmana: 2014).

The limited operational time of the submarine can be caused by several things, both related to the characteristics of the submarine related to the technology used, and the availability of logistics and supporting infrastructure for the submarine's operations. The ability of the submarine to operate depends on the fuel capacity, the battery resistance of the propulsion system, and the availability of oxygen for the crew (Herz, et al., 2017). Meanwhile, logistical needs and supporting infrastructure related to submarine operational needs include the need for improvements to equipment and systems in the submarine, as well as the support facilities at the front and forward bases to meet the needs of logistics, fuel, fresh-water, oxygen generator cartridges, and remote locations for supplies of re-availability, logistical support, battery maintenance facilities, submarine docking stations, submarine battery recharging and discharging facilities, messing facilities for personnel (Jeon: 2020).

Faced with a stretch of Indonesian waters spanning almost 4,000 nautical miles, the Submarine cannot continuously dive during its operation to secure and enforce the sovereignty of the Indonesian national jurisdiction. This shows that it is necessary to provide such infrastructure in the submarine operational area (Laksmana: 2014). Apart from supporting the operational needs of submarines, strategically the infrastructure must also be able to support operational needs to support the Navy's power projection. The preparation of infrastructure to support the operational needs of submarines and the Navy as a whole can be done by studying other countries and how they develop their infrastructure support systems. Naval forces in other countries that are currently of concern include China, the United States, Russia, and India. In the decades following the 2000s, the development of China's naval power became a topic of worldwide concern (Friedman: 2019).

The US and Chinese naval bases can be used as an ideal base facility reference to support the operational durability of the Navy in general and specifically to support submarine operational security. Referring to the US and Chinese naval base infrastructure, the Indonesian Navy base infrastructure still needs development, both in quantity and quality, to be able to support the operational durability of ships in general and submarines

in particular. Until now, submarine maintenance and repair facilities in Indonesia are only at Surabaya Naval Base. The infrastructure facilities mentioned above are the facilities needed to support the operational durability of the submarine. This condition is considered very difficult in optimizing the role of the base for the submarine fleet (Mian et al., 2019).

These facts are in line with Anderson's (2016) statement that to obtain the effectiveness of the defense system's deterrence using a submarine fleet it is necessary to increase maintenance capabilities, logistical support, crew training, command and control capabilities, submarine rescue, surveillance, and seabed mapping. This statement shows that the strategic value of the Navy's submarine capabilities is greatly influenced by the ability of its supporting infrastructure to be able to maintain the confidentiality of submarine operations. However, infrastructure development supports the operational resilience of submarines in the face of the limitations of the state's ability to meet the development and development needs of defense equipment (Ghosh: 2013). Flowing from the above discussion, it can be felt that in making strategic decisions that are relevant to the development and fostering of the submarine-type KRI force is very complex. With the background of the problems that have been described, this research is very important to do in order to describe existing conditions and can be used as a consideration in making solutions to deal with problems that exist today. Some of the literature used as support in conducting this research, such: Research by Friedman, N (2019) entitled *Strategic Submarines and Strategic Stability: Looking Towards the 2030s*, states that submarines can operate strategically in water areas where it is difficult to detect their presence. The biggest challenge to finding a submarine is due to its operational environment rather than technological factors. Anderson in *Submarine capabilities and conventional deterrence in Southeast Asia* (2016) states that submarines are the weapon of choice to fight stronger enemies. The author also examines countries in Southeast Asia that are beginning to equip their militaries with submarines.

Research by Opresnick D. et al entitled the *Conceptualization of sustainability in operations management* (2015) discusses operational resilience in manufacturing organizations. Stebbins' in *Broaching the ship:*

rethinking submarines as a signaling tool in naval diplomacy (2015) states that submarines have strategic value in supporting naval diplomacy compared to deploying aircraft carriers. One of the beneficial factors is the factor of lower operating costs. Research entitled *Toward a theory for dissuasion (or deterrence) by denial* discusses methods for implementing deterrence in the Australian defense system (Davis, et al., 2016). There is a pool of research in the field, and some of the most relevant titles are listed as follows: *Innovation and Learning in High-Reliability Organizations: A Case Study of United States and Russian Nuclear Attack Submarines 1970-2000* (Bierly et al., 2008); Danger and New Risk for Nuclear Submarine in South Asia (Mian et al., 2019) ; Test and Evaluation for early adaptive designs in Australia's Future Submarine (Joiner & Atkinson, 2016); Study for Safety Operational Envelope of a submarine in Jamming (Park et al., 2017); Evaluation of Naval Submarine Seakeeping Criteria (Moonesun et al., 2015); Framing for Threats and Deterrence from Nuclear Submarine in the South Atlantic (Herz et al., 2017).

Locus and the object of this research are carried out on submarines owned by the Indonesian State, the focus of research is on the determinant influence of infrastructure on submarine operational durability to increase the deterrence of the state defense system at sea, making this research a novelty. This research describes qualitative analysis method with the development of thinking through interviews, Focus Group Discussions (FGD), Round Table Discussions (RTD), and semi-structured interviews to obtain data about submarine operational durability.

The results of this research can be used as a reference for determining policies in increasing the deterrence of the state defense system at sea. This paper was divided into several parts, including the second part that contains basic concepts and literature review, the third part contains research methods, the fourth part contains the results of research and discussion and the fifth part contains conclusions.

1. MATERIAL & METHOD

1.1. National Interest

By the Indonesian Defense White Paper, the Indonesian Nation builds a defense system by identifying various threats as the main factors that form the basis for the preparation of the national defense system design, both actual and potential. The types of threats identified as potential for the present and future can be classified into three types, including military threats, both armed and unarmed, non-military threats, and hybrid threats. Therefore, the development of defense forces which is manifested

in the development of military forces is an absolute necessity to guarantee and protect the national interests of the Indonesian people in the arena of international relations (Ministry of Defence, 2015).

Efforts to realize a State Defense that is capable of handling the security of the Maritime Area is carried out by deploying Sea-power in a task force capable of reaching the boundaries of the Indonesian Exclusive Economic Zone effectively and capable of exercising control of the marine area of national jurisdiction (Bueger & Edmunds, 2017). The Navy has a unique ability compared to other militaries, namely the ability to produce coercive signals and deterrence to the enemy. Naval power can effectively transmit these signals, and their effectiveness stems from two unique features of Navy capabilities (Susilo, et al., 2019).

1.2. Defense Strategy

Two basic things need to be described in the implementation of a national defense system strategy that has deterrent capabilities. First, deterrence by denial strategies to prevent an action by making the enemy predict is impossible or unlikely to succeed, thereby denying the potential enemy's confidence in achieving its objective of deploying sufficient military forces for the invasion. Second, there is the deterrence strategy that relies on threatening to give severe penalties – (deterrence by punishment) – such as nuclear escalation or heavy economic sanctions, in the event of an attack (Senol & Karacuha, 2020).

1.3. Submarines in the State Defense System at Sea

A submarine is a strategic weaponry in the Navy that has operational capability, such as tactical and strategic surveillance and reconnaissance, anti-ship war, anti-submarine war, attack to vital target on land (precision strike), raid amphibious operation, mine deployment to the SAR operation, and VVIP security (Suseto, et al., 2018). Marsetio (2014) predicted that submarines will have a leading role in the future, compared with surface combatants, considering its secret trait and mobility which can reach further water area. Infiltration and exfiltration operations will be more effective using submarines in intelligence operations against other countries.

1.4. Operational Durability

Durability is a complex concept, but it is made possible to filter the most fundamental aspects to adopt the system approach, which system is defined simply as a set of elements that relate to each other (or subsystem). The strategy of durability and sustainability of operation of State Defense System

is a secret in general, maintained by a state which uses it. Operational durability strategy in the case of the manufacturing industry is formulated through a capability approach to ensure strategy (planning) and operation (implementation) which is sustainable (Mora et al., 2009). According to research in the field, operational durability strategy must consider environmental factors (Trost: 2000). The schematic of the relationship between the enduring factors in operations management is shown in Figure 1.

1.5. Submarine Operations

In the context of operational security, Anderson (2016) states that it takes mastery and preparation in the areas of maintenance capabilities, logistical support, crew training, command and control capabilities, submarine rescue, seabed monitoring, and mapping. Determination of the technology that needs to be installed on a submarine generally takes into account the operational tasks to be carried out, the operation area-range-transit time, speed, diving depth, passive defense, weapons systems, rescue and rescue, re-support, maintenance, and average size of crew (Joiner & Atkinson, 2016).

1.6. Determinant Infrastructure

In the terminology of the United States of America military, infrastructure is defined as the whole building and permanent installation required for support, placement, and operation of military force, such as barracks, headquarters, airfield, communication, facility, warehouse, port, and maintenance station

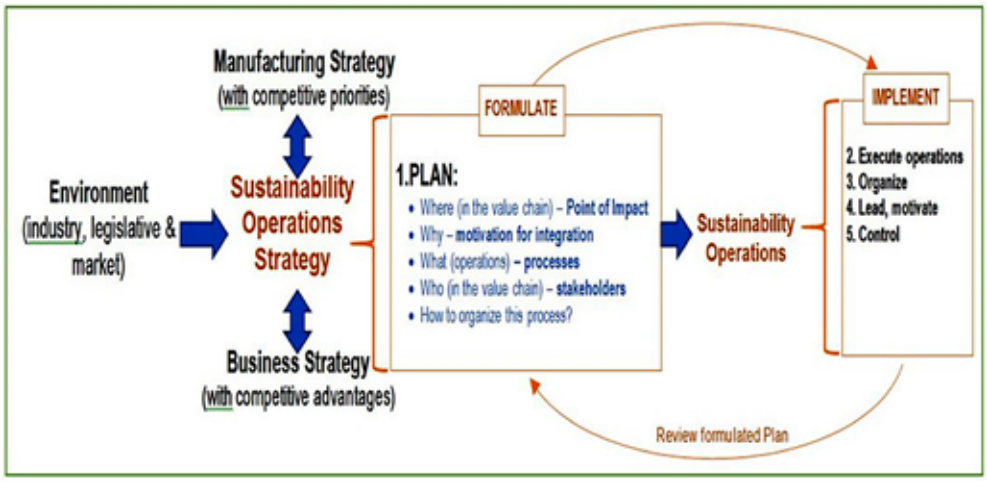

Fig. no. 1 Durability in Operations Management

(Lostumbo et al., 2013). Military infrastructure is required in supporting operational durability, but budget availability and national resource in general are limited to meet the need for development and maintenance for military infrastructure (Ghosh: 2013).

1.7. Submarine Logistical Support System

The submarine (subsurface) logistical support system is not much different from the logistical support system for above-surface warships. A good logistics system, among other things, forms the foundation that allows for flexibility and strategic mobility to support military operations and warfare. Thus, the existence of a sustainable logistics system determines the success of a strategy. Therefore, qualified logistics will greatly determine tactical readiness and success to obtain strategic results and outcomes (Jeon: 2020).

A system consists of many different elements, including those directly used in achieving the actual mission (including, the main equipment installed in the system, personnel as operators, features, and so on) and maintenance support elements (for example, maintenance personnel, test equipment, maintenance facilities, spare parts, and parts and repair inventory). Supporting infrastructure is not often considered as the main element of a system, but the system may not be able to complete its specified functions if it is not supported by the supporting infrastructure (Blanchard: 2016). Thus, the supporting infrastructure is referred to as the main element in the system, presented in the context of the system life cycle (Figure 2).

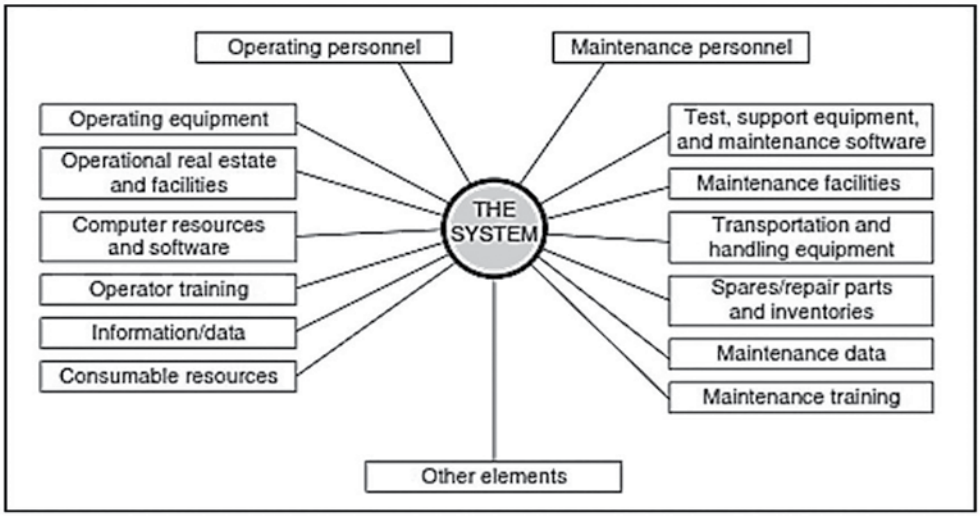

Fig. no. 2 Main Elements in a Logistic Support System (Blanchard: 2016)

This research was divided into four main parts, including a) input, b) process, c) output and outcome. The input in this research was the perceived need for a determinant infrastructure to support operational resilience of submarines to increase the deterrence of the state defense system at sea. After the formulation of the research input, it was continued with the research process that begins with the formulation of the problem and carried out a literature review to compile research hypotheses, the formulation of research methodology as a guide for data collection and analysis.

The next stage is data analysis. This research used qualitative analysis with a narrative interpretation method where the qualitative data obtained was interpreted narratively to obtain conclusions relevant to the research problem. The data obtained will be grouped into categories of opinions, facts, and knowledge. Opinions related to the informants' thoughts on a phenomenon that was asked in the interview; facts regarding what the informants know; and knowledge relating to what the informant knows about the field in question. The results of the interviews obtained from the previous stage are transcribed so that they form a database that can be used and read repeatedly as needed when interpreting data. After obtaining the qualitative research database, the data compilation was carried out by decomposing the data according to the characteristics relevant to the research problem. In the process of decomposing the database, data were sorted and reduced with a focus on the sections that were relevant to the research topic and ignoring other parts. The necessary parts are then rearranged (the reconstruction phase) to obtain a pattern that is characteristic of this research database. Upon obtaining the characteristics of the data, data interpretation and verification followed in order to obtain the meaning of each piece of information obtained by looking for relationships, similarities, and differences. Furthermore, the relevant conclusions were drawn to answer the research questions.

2. RESULTS AND DISCUSSION

2.1. Results

The qualitative data collection of this research was carried out through the implementation of Focus Group Discussions (FGD), Round Table Discussions (RTD), and semi-structured interviews. The implementation of the FGD involved the resource persons Rear Admiral Muhammad Ali, SE, MM

who at the time of the FGD served as Commander of Fleet I Command, and Marx Jefferson who served as Head of the Submarine Program of PT PAL Indonesia (Persero), and was attended by FGD participants who came from the Head Technology Transfer and Offset Division of the Defense Industry Policy Committee (Rear Admiral TNI (Ret) Rachmad Lubis), BPPT Submarine Research Representatives and Research Representatives from the Sepuluh Nopember Institute of Technology and the University of Indonesia.

The resource persons and RTD participants included the Assistant for Planning and Budget for the Chief of Staff of the Indonesian Navy, the Commander of the Indonesian Navy Command and Staff School, the Governor of the Naval Academy, a researcher at the University of Indonesia, a researcher at the Sepuluh Nopember Institute of Technology and a researcher at the Defense University. Structured interviews were conducted. In this research, the informants include Indonesian Navy Maintenance and Repair Facility officials as submarine

Table 2. Experts in Research

No	Expert	Total	Code
1	Commander of First Fleet Command, Vice Admiral Muhammad Ali	1	E1
2	Head of the Submarine Program of PT PAL Indonesia, Marx Jefferson	1	E2
3	Head of the KKIP Technology Transfer and Offset Division, Vice Admiral (Ret) Rachmad Lubis	1	E3
4	Vice Admiral Iwan Isnurwanto	1	E4
5	Vice Admiral TNI Tunggul Suropati	1	E5

In this research, RTD was carried out virtually by some experts and practitioners in the field of defense and submarine technology.

maintenance operators, officials in Fleet Command II, Indonesian Navy Headquarters, Ministry of Defense, Indonesian Navy Base as submarine

operational and maintenance regulators, Directors within State-Owned Enterprise (BUMN) as determinant infrastructure service providers for ship maintenance and repair, Directors within Private Owned Enterprise (BUMS) as determinant infrastructure service providers for ship maintenance and repair, experts as expert resource persons in the field of national defense, academics as expert resource persons in the field of submarines, academics as resource person Infrastructure experts support submarine operations.

Several qualitative information is obtained from informants. The identification if the latter was made by using a purposive approach with the consideration that only certain personnel have knowledge and authority about the submarine, both the management of the submarine operation and the relevant development, maintenance, and repair processes. Some important points obtained from the results of qualitative data collection through FGD, RTD, and semi-structured interviews include:

a. The operational durability of a submarine is influenced by the condition of the submarine and the technology used, the availability and ability of material and personnel maintenance facilities as a determinant infrastructure to support submarine operational needs, the availability of submarine tenders, and submarine logistical support.

b. Determinant infrastructure to support submarine operational resilience is currently available only at Surabaya Naval Base as the base for a submarine base (initial base) and its current condition needs to increase its capacity and capability according to the needs of submarines both in terms of quantity and submarine equipment technology.

c. Shipyard (defense industry) supporting submarine operation, maintenance and repair must have mastery of submarine maintenance and repair technology which requires a large investment of capital and time. Currently, only PT PAL Indonesia (Persero) can provide submarine maintenance and repair services so that with the increasing number of submarines owned by the Indonesian Navy, the market for submarine maintenance and repair is becoming more extensive and is opening opportunities for other shipyards, both governmental and private. To play an active role in supporting the operation, maintenance, and repair of submarines.

d. To increase the operational durability of submarines, a commitment at a strategic level is also needed to ensure the availability and adequacy of submarine operational budgets, including for submarine maintenance and repair activities.

e. Submarines can operate "openly" or "covertly" to maintain confidentiality while creating the required defensive system countermeasures. However, this deterrence can only be obtained if the submarine can sail and dive following its operational strategy of maintaining secrecy.

2.2. Discussion

The influence of total submarine technology through determinant infrastructure dominantly affects the operational durability needs of the submarine. Referring to this, it can be seen that the influence of determinant infrastructure on the operational durability of submarines becomes increasingly significant after being synergized with the level of submarine technology being operated. This means that the technological level of the determinant infrastructure needs to be adjusted to the level of technology of the equipment and systems installed on the submarine. Meanwhile, the logistical needs to support the operational resilience of submarines will have an increased effect if they synergize with the determinant infrastructure. This statement is in accordance with the operating pattern that the submarine returns to base, among others, to carry out re-provisioning of logistical needs. This means that the logistical needs of submarines require the availability of a determinant infrastructure to be distributed to the submarines in need.

Referring to the results of the analysis, it can be understood that the operational durability of submarines is influenced by the determinant infrastructure, submarine technology, and submarine logistical support, either individually or simultaneously. It is known that the determinant infrastructure to support submarine operations is needed at 1) First Base; 2) Early Base; 3) Front Base. The need for determinant infrastructure in First Base is following the results of an interview which states "... in the future we will think about infrastructure that is mobile ..." (Rear Admiral TNI Muhammad Ali). This statement strengthens the estimated value of First Base as the most dominant compared to other dimensions (Early Base and Front Base). By the submarine operation pattern, First Base is an approach base before the submarines enter the combat area (operation).

Preparation of determinant infrastructure can increase the operational durability of submarines strategically because they are still in a safe area and allow submarines to immediately enter the operational area in a relatively short time. Therefore, the provision of mobile infrastructure as a determinant infrastructure for the Indonesian

Navy task force can be prepared in the area closest to the submarine operation area which is equivalent to the location of First Base.

2.3. Resilience of the State Defense System at Sea

According to the above discussion, the operational resilience of submarines in this study is defined as the ability to maintain the KRI of a submarine type to be in the operational area for as long as possible without the other party knowing (maintaining confidentiality). Admiral TNI (Ret.) Prof. Dr. Marsetio stated that the Indonesian nation needed a minimum of 25 submarines to be able to guard the country's defense system at sea, especially controlling subsurface security.

The resulting deterrence of submarine operations is the belief (perception) that a country will be able to provide significant resistance to other countries with a surprise attack on the center of power of the intended country. This is in line with the statement of Rear Admiral Muhammad Ali–and Vice Admiral (Royal Australian Navy) Tim Barret that the submarine's deterrence correlates with the sub's operational durability, mobility, and firepower. Besides, the effectiveness of submarine operations depends on the ability of a country to master the technology of operating, maintaining, repairing and providing the necessary infrastructure by the technology used (Anderson: 2016).

Based on the discussion in this research, it can be concluded that the operational durability of submarines has a significant effect on increasing the deterrence of the state defense system at sea provided that, among other things, the secrecy of the submarine can be maintained and the ship can be operated continuously at sea. Maintaining the confidentiality of the submarine requires a determinant infrastructure that correlates with the level/type of submarine technology in operation, submarine logistical support, a high level of commitment to ensure the availability of budget support for submarine operations, maintenance and repair. Besides, the involvement of shipyards and the defense industry, both state-owned (BUMN) and private-owned (BUMS) enterprises, is needed to ensure the availability of the determinant infrastructure needed to support submarine operational resilience. Following the analysis of interview data, determinant infrastructure needs to be provided (built) in Sumatra, Natuna, North Bali, Ambon, Makassar, Palu, Tarakan, and Papua. It is believed that the involvement of shipyards owned by the government and the private sector can support the

operational resilience submarines, which in turn is expected to increase the deterrence of the state defense system at sea.

3. CONCLUSIONS

The effect of submarine operational resilience on the deterrence of the state defense system at sea in this research was carried out in a qualitative analysis. The qualitative analysis method was carried out because the deterrence of a country's defense system is the perception of various parties, both (the state) that organizes the defense system and other parties (state) in relation to the host country. In a discussion of the effect of submarine operational durability on the deterrence of the state defense system at sea, this research found that there was a significant influence on the causal relationship between the two variables with the following information:

a. Submarines can only contribute to increasing the deterrence of the state defense system at sea if the ship is operating, has motion and firepower. This is consistent with the data obtained from research informants and secondary data from interviews with international news reports.

b. The operational durability of a submarine is influenced by the condition of the submarine and the technology used, the availability and ability of material and personnel maintenance facilities as a determinant infrastructure to support the operational needs of the submarine. This is supported by the fact that the Indonesian Navy submarine experiences limited operational time because the technology installed requires the submarine to return to its Surabaya base to carry out maintenance and re-provision of the logistical needs of the ship's material and personnel.

c. Determinant infrastructure to support operational resilience of submarines is currently available only at Surabaya Naval Base with conditions requiring increased capabilities by technological developments and the number of submarines of the Indonesian Navy. In line with the explanation in the previous paragraph, the Indonesian Navy submarine must return to its Surabaya Naval Base.

d. Currently, only PT PAL Indonesia (Persero) as a shipyard (defense industry) has the mastery of submarine maintenance and repair technology to support submarine operations, maintenance, and repair so a strategy is needed to increase the

involvement of the private sector to obtain an increase in the availability of determinant infrastructure effectively and efficiently.

e. A strategic level commitment is required to ensure the availability and adequacy of submarine operational budgets including for submarine maintenance and repair activities. This was supported by research informants who stated that the ship's operating capacity was limited due to limited budget support.

Based on the description above, it can be concluded that:

a. Submarine operational durability has a significant effect on increasing the deterrence of the state defense system at sea.

b. To be able to realize submarine operational resilience, determinant infrastructure support is needed that can be provided by the Indonesian National Army (TNI), in this case the Navy and the Defense Industry (State and Private Owned Enterprises).

4. ACKNOWLEDGEMENT

Researchers would like to thank all parties who have participated in completing and supporting the implementation of this research so that it can be completed smoothly. This research is supported by Indonesia Defense University.

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CONSIDERATIONS ON CONFLICT MANAGEMENT DURING ORGANIZATIONAL CHANGE

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Abstract: *Organizational conflict is not based on personal values; it occurs due to dynamic changes within the structure of the organization. When these dynamics are neglected, they generate conflict within the organization. Any organization reunites groups of individuals with different personalities, job outlooks, education, systems of values and different behaviors. The maintenance of a perfect harmony is hard to be achieved, conflicts being inevitable.*

Key words: *conflict management, dynamic changes, organizational conflict, organizational change.*

1. INTRODUCTION

In time, conflict approaches have evolved simultaneously with the transfer concerning the question of generating conflict and how to deal with it. Reality reveals that every organization has an optimal amount of conflict, which can be put into correlation with positive performance. When there is too little conflict, there is a state of general disinterest, apathy, change is not possible, and the persistence of the situation calls into question the very survival of the organization. From another standpoint, a high level of tension could direct towards the same result, because the occurrence of intense conflicts too frequently, which causes disparity, reflects the ambitions of the incompatibility of character, interests and overall bad management. [3]

2. METHODOLOGY AND RESEARCH QUESTIONS

The main objective of this research is to identify the sources of organizational conflict and to find the sources and factors that contribute to the occurrence of organizational conflict and to outline the main ways

in which organizational conflict emerges. The research method is that of integrative reviewing under the following research questions: What is organizational conflict? Which are the sources of organizational conflict? How does conflict within the organization manifest itself? Which are the factors that contribute to the occurrence of organizational conflict? The reviewed selected articles are published in international databases. [5]

3. CONFLICT MANAGEMENT DURING ORGANIZATIONAL CHANGE

3.1. Approaches relating to organizational conflict

In the economic literature, authors have outlined three main approaches relating to organizational conflict, namely:

- *The traditional approach* (classical) appreciates the conflict as having a dysfunctional character, an evil being to escape as quickly as possible. Because the conflict is not only perceived as harmful, but also time and energy consuming, traditional approach believes should be avoided by eliminating its causes. This concept represents a simplistic approach to the conflict and an old-fashioned standard of its assessment because it calls into question the conflict itself and not its management arrangements.

- *Human relations approach* a has a predisposition for human relationships which are established between individuals with personalities, mentality, education, systems of values and different behaviors and generate conflicts. Representatives of this school of thought consider the conflict as being an inevitable and natural result in any organization and any group, being accepted and perceived as positive and negative at the same time. The consequence of this perspective is that a leader must not remove any conflicts related to costs but only those who prove to be real obstacles in achieving the objectives of the organization. In conclusion, this approach takes into account those management strategies that focus on both, the recognition of conflicts, and resolving or removing them (Lussier, 2010).

- The latest approach to conflict is *the interactionist approach*, which considers the conflict as not only inevitable, but also absolutely necessary, an important motivating force for innovation and change. In this sense, some authors consider that such a concept encourages leaders to cause organizational changes through a strategy of fostering conflict. Effective management of post-conflict situations requires the identification of their causes in order to act for purposes of the corresponding positive effects and reduce negative consequences (Sierau & Hertzberg, 2012). [7]

3.2. Organizational Conflict Sources

As organizational conflict sources (Figure 1) we can name the following:

- Change. Certain changes within the organization are ordinary and expected. New policies, changes in operational procedures and a certain fluctuation of personnel are internal changes that all organizations go through. Reorganizations and changing the size of the organization may cause chaos, threatening the security of employment of every member. Even growth can generate conflict. (Dechurch & Marks, 2001) Although the increase is considered beneficial for the organization, the communication will be affected, it can change the responsibilities and hierarchical relationships can become entangled. Changes within the organization surely generate conflicts.

Goals and objectives. Usually this is the result of insufficient communication and planning. The goals and objectives of a department may be conflicting with those from another department. Better communication between the leadership of the departments can generally solve this problem.

Limited resources. Limited resources can be practically anything: running out of workers, lack of space, financial shortfalls, antiquated equipment, etc. These and other similar issues can cause conflict by limiting the expected performance on the part of individuals, departments, and perhaps even the entire organization. [1]

Fig. no. 1 Reasons for organizational conflict
Source: Personal interpretation of the data

In the organizational context, conflict is an expression of dissatisfaction in process, product or service. Someone or some group is unhappy with someone or something else. This dissatisfaction can result from several factors: different expectations, competitive goals, conflicting interests, interpersonal relations, confusing or unsatisfactory communication (Figure 2) (Taher, 2016). The examples include the managers concerned with the way of resource allocation; the production department's discontentment about the marketing of a product department that led to vanity; dissatisfaction with regard to the procurement process; consumer anger due to lack of technical support after the purchase of the product. [9]

In this way, the conflict is a process (Figure 3) and not a product (Dickinson, 2012). Organizational conflict is indeed an indicator of organizational dissatisfaction. Through consideration of the concept of conflict as a process, we abandon the idea that conflict is a tangible "problem" that can be solved, dominated, driven or controlled. Rather, the conflict is an interaction, a signal of discontent from inside or outside the system. The organization or person may elect not to respond to the announcement of the dissatisfaction (in a perfectly legitimate reason), but it does not mean that the conflict will cease (Taylor, 2010). [2]

Fig. no. 2 The conflict pyramid model
Source: Personal interpretation of the data

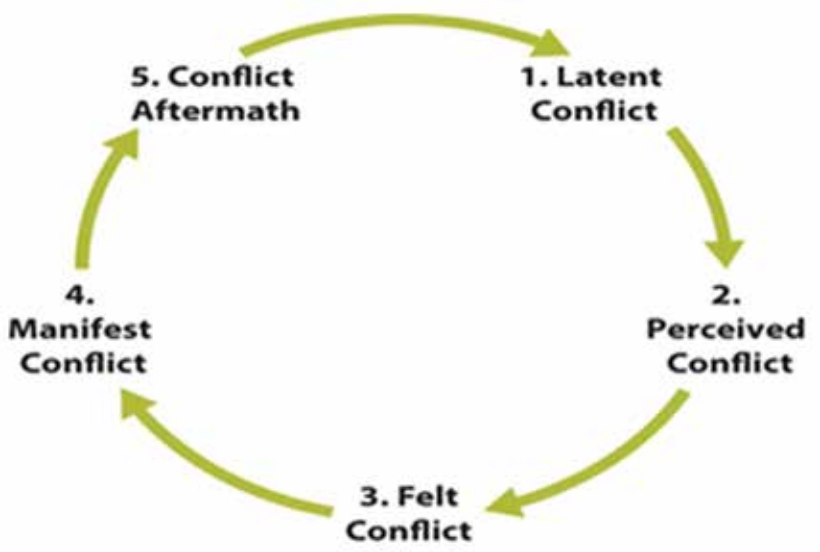

Fig. no. 3 The phases for organizational conflict
Source: Personal interpretation of the data

3.3. Manifestations of Organizational Conflicts

Conflicts in organizations are present in several ways:

- Competition: competition, especially within the organization and between individuals in the organization.
- Sabotage: this manifestation of conflict can be observed both in the inner and outer conflicts – for example, when the consumer says that everything is alright and afterward, without notice, he holds a news conference where he sends for trial for negligence in the manufacture of the product.
- Demoralization: much the same as ineffectiveness or failure to achieve the maximum productivity level, demoralization is frequently a response to the disputes. Usually this is the outcome of the test to keep away from or repudiate conflict or disappointment by trying to object to the actions within the organization. Workers are worried about the possibility of being transferred or restructured once more.
- Retention of knowledge: many corporate cultures consider that knowledge is power and the retention of knowledge (information) is used as a form of manipulation.

The *strategy oriented towards the avoidance* (Havenga & Visagie, 2011) is characterized by the fact that, although the warring parties admit its existence, they do not want to confront it. Conflict avoidance (trains) might be a reasonable response, particularly if the adversary is powerful and unfriendly, and it can become concrete by removing a

diplomatic subject or an issue until a more suitable possibility arises, or by switching the matter, neglecting some information or by trying to "bird" duties to others. [6]

The *approach oriented towards habituation* involves maintaining interpersonal relations at any cost, without regard to too much of the goals of the sides involved (Havenga & Visagie, 2011).

The *strategy focused on the collaborative approach* constitutes a perspective on conflicts that maximizes both the imposition of interest, or their own point of view, as well as cooperation or meeting the needs of others, in order to satisfy all interests of the warring parties (Figure 4). [8]

When conflicts are becoming destructive, the perspective is normal as long as it regulates power towards an optimal end result and interpersonal dispute, in this case, is in fact a third-party feedback. In general, when the confrontation has a better finished result, whether in a relationship or activity it means that the conflict system works. Mediation in this type of adjustment must only intervene when the fighting continues and after optimizing it when the power struggle appears. It is very rare that the recognized leader in the organization fights against others for influence. This happens because people instinctively updated according to good, positive, desirable values and they to this regardless of deviations. Therefore, at any time, a true leader is the one who boosts their self-esteem through technical and relational skills, not by force, not even by word (Behrman, 2012). [10]

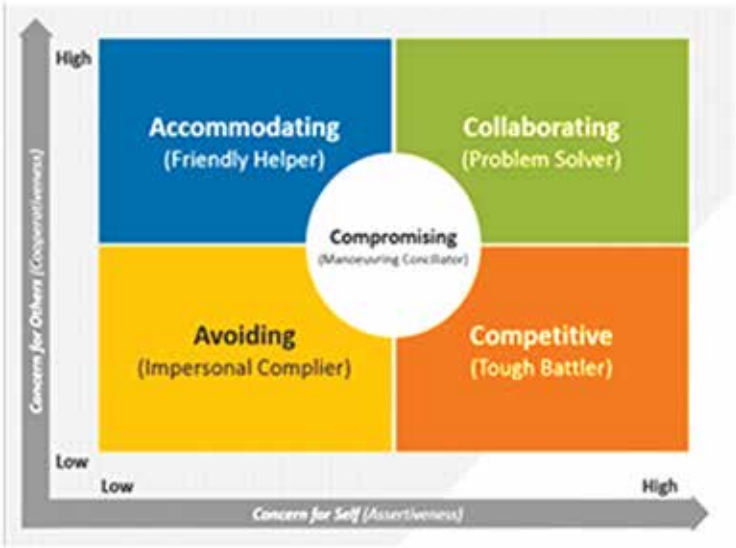

Fig. no. 4 The conflict management matrix
Source: Personal interpretation of the data

3.4. Factors that Contribute to Organizational Conflicts

Furthermore, we may isolate a few factors (Avruch & Mitchell, 2013) that contribute to organizational conflict:

Identification with the group or in organizations: there are many groups or classes with which people can identify. In addition, far from being coincidental or insignificant, differences between groups are accentuated by the real differences of power, opportunities, clients served, etc. Most likely, people who consider themselves as belonging to a group tend to be skeptical with those outside of it. The likelihood of conflict increases as the factors to which we will refer below enter the relationships between groups (Ludrigan et al., 2012). The emphasis that organizations put on teamwork counts as a huge success, bringing the employee on the verge of strongly identifying with his team.

Interdependence: when individuals or departments are mutually dependent for meeting their own objectives, there is a high risk of conflict. Interdependence means that each side has a certain power over the other and it is relatively easy for one of them to abuse of that power and create antagonism (Weiner, 2011). Interdependence does not always lead to conflict. In fact, it often provides a good basis for cooperation through mutual support. [11]

These factors can generate interpersonal, intragroup, intergroup or interorganizational conflicts (Figure 5).

Fig. no. 5 Types of organizational conflict
Source: Personal interpretation of the data

4. CONCLUSIONS

No leader should get scared of disagreements arising within his organization, because an organization or a completely uniform group, devoid of controversy, records low performance. At the same time a superficial approach to conflict, ignorance or non-utilization of appropriate strategies, constitute the main causes for different organizations, despite the fact that the human resources, financial, informational, etc., were weaker than the expected performance. Proper management of interpersonal conflicts between groups always has a positive impact on yields and performance and makes the organization a pleasant environment. [4]

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COMMUNICATIVE CULTURE AS A COMPONENT OF A FUTURE OFFICER'S PROFESSIONAL CAREER

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Abstract: *This article deals with the pedagogical conditions that ensure the effectiveness of the formation of communicative competence among future officers in the higher education system. They are professional activities by both cadets and teachers; modeling of communicative situations in the learning process, ensuring the free entry of cadets into the communication process; introduction into the educational process of a special course (elective) "Communicative competence in the professional activity of an officer"; an individual and differentiated approach to cadets in the process of developing their communication skills.*

Key words: *communicative culture, officer, communication, pedagogy, professional culture, qualitative characteristic, professional activity, communicative interaction*

Currently, in connection with the actualization of the culturological approach in the training of future officers of the Azerbaijan Republic Armed Forces, skill and professionalism are increasingly being replaced by the concept of communicative culture, which Agayev A.A. defined as the unity of emotional, moral culture and culture of speech. Bayramov A.S., Alizade A.A. added to the definition the culture of human relationships. Communicative culture is a condition and prerequisite for the effectiveness of professional activity, an indicator of professional competence and professional self-improvement. [1], [2]

A rather abstract concept of communicative culture is concretized in the professional and communicative orientation of the personality of the cadet and the future officer, understanding the importance of communication in professional activity, acceptance of the creative nature of work, background knowledge, communicative skills and personality traits, a structural component of the professional culture of the individual, but also the basis for the formation of future

specialists. This approach is based on the fact that the focus is on a person, a specialist who solves certain professional tasks, achieves a certain set of professional goals, and interacts and cognizes and transforms the world and oneself.

For a specialist, as a subject of professional activity, professional culture acts as a way of knowing and transforming the world, and communicative culture as a way of transforming oneself. Communicative culture here is a combination of those special communicative knowledge, skills and abilities with which a person overcomes the occurrence of psychological difficulties and predicts the effectiveness of interpersonal and business professional interaction. Psychological and pedagogical research is paying more and more attention to the issue of the free development of the personality, its non-standard formation, the ability to adapt in various cultural environments. Find the right communication strategy and tactics, deliberately penetrate the culture of the interlocutor, while maintaining their originality, find a common language and the key to the solution problems can only be a person ??? who has mastered both the elements of communication and reached a level of development of a higher order, using not the method of "trial and error", but based on a certain strategy. A special role in this process is assigned to the system of communicative culture, designed to provide key concepts and skills that provide a socially acceptable level of interpersonal interaction. It can be said differently: a new task and a new criterion for the education and training of future officers is to teach the culture of communication, i.e. to form a communicative culture.

According to the definition of A.V. Mudrik, communicative culture, as a component of the professional culture of the future specialist, is a system of knowledge, norms, values and patterns of behavior, adopted in society and change organically, naturally and unconditionally to implement them in business and emotional communication. [3]

Communicative culture occupies a leading place in public cultural and professional development of the personality. Being one of the priority tasks of vocational education, communicative culture is considered as the most important component of humanitarian education, as a special object of modeling pedagogical systems in the unity of their structural and functional components.

According to Nadir Abdullayev, communicative culture, considered within the framework of the pedagogical process, reflecting the unity of the target, content and procedural aspects of educational activity, appears, as a set of value structures in the form of emotional

or moral culture, culture of thinking and culture of speech, in turn which are "invariant components of the structure of activity, providing a system of invariant-activity qualities of the individual." [4]

The basis of communicative culture is the general culture of the individual, which is a high level of its development, expressed in the system of needs, social qualities, in the style of activity and behavior. Therefore, to the maximum extent, communicative culture includes essential personal characteristics, namely, abilities, knowledge, skills, value orientations, attitudes, and character traits.

Thus, communicative culture is a means and condition for the upbringing and development of a personality, an indicator of a person's awareness of the values of interpersonal and intercultural communication, its method and form, the basis for mutual understanding and interaction. It represents a culture of human relationships, the basis of which is sociability, the ability to experience pleasure from the communication process, which in turn "... manifests itself in a steady desire for contacts with people and which is combined with the speed of establishing contacts." The communicative culture of the individual is realized in the communicative knowledge, abilities and skills.

Communicative knowledge means the generalized experience of humanity in communicative activity, i.e. in the minds of people reflection of communicative situations in their cause-and-effect connections and relationships. The value of communicative knowledge was understood by people long ago. The ancient Greek philosopher Democritus said that "... upbringing develops 3 gifts in a young person: to think gracefully, to speak impeccably, to do what is due." Communicative skills are understood as a complex of communicative actions based on a high theoretical and practical readiness of a person for interpersonal and intercultural communication, which allows the use of communicative knowledge creatively. [5]

The works of H.H. Ahmadov clearly outline the range of skills necessary for communication, they boil down to the ability to understand another person, for which it is necessary, first of all, knowledge of the value orientations of another person, which are expressed in his ideals, needs and interests, in the level of claims. [6]

No less important than the ability to understand others is the ability to bring another person into the center of your system of value orientations.

This is a complex skill of feeling the being of another person,

about which V.A. Sukhomlinsky wrote: "Be able to feel a person next to you, be able to understand his soul, see the complex spiritual world in his eyes". [7]

Communication skills, as the practical application of communicative knowledge and skills, include the automated components of conscious actions that contribute to a quick and accurate reflection of the communicative situation and determine the success of perception, understanding the objective world and adequate impact on it. At present, the concept of professional culture of a future specialist is increasingly being replaced by the concept of communicative culture, while communicative culture is characterized as a condition and prerequisite for effectiveness of professional activity and as the goal of professional self-improvement. The communicative culture of the personality of the future specialist is a necessary condition for the effective implementation of his professional activity. Characterizing the communicative culture of an individual in interconnection with professional culture, we believe that without the formation of the former, it is impossible to fully develop the personality of a future officer. Thus, the communicative culture of the personality of the future officer of the Armed Forces is a qualitative characteristic of the subject of professional activity, integrating values such as, professional activity and the value of communication as a condition and means of one's own spiritual growth, allowing one to realize one's humanistic essence.

The purpose of a communicative culture is to reveal and develop the essential forces of learners in holistic interaction with others. But since a cadet creates himself, the communicative culture in this process acts as a form of his self-projection. In other words, a cadet, transforming the environment with the help of a communicative culture, understood as technology and the result of his activity, creates new determinants of his behavior, and transforming himself has a significant impact on others.

As V.S. Bibler stated, "Culture is a form of self-determination of an individual in the horizon of a personality, a form of determination of our life, consciousness, decisions and redefining their fate in the consciousness of its historical and universal responsibility." [8]

Self-determination determines a person's individual responsibility for their actions, consciousness, thinking, destiny, etc.

"Culture taken as a way of activity, - S.P. Morella and J.L. Gaudino, is not a closed, but an open system. Its algorithms, paradoxically, are open-source algorithms. They carry within themselves a breaking and correcting moment, which is the practical energy of an active social person." [9]

The practical implementation of the pedagogical condition is expressed in the saturation of dialogue methods of transferring educational professionally significant information from teacher to cadet during the educational process. Table 1 shows the communicative component of the materials of a number of academic disciplines of the humanitarian cycle.

Table 1. Reflection of the communicative component of the content of educational disciplines of the Azerbaijan High military school named after Heydar Aliyev

Name of the discipline	Content that promotes the development of communicative culture of cadets
Military pedagogy	Acquaintance with the development of the communicative culture of the personality of the cadet, the study of patterns, methods and forms of training and education of personnel. Mastering the theoretical foundations of pedagogical skills. In practical classes, cadets receive the necessary experience in the correct study of the military collective and the use of a complex methods of a pedagogical influence in order to educate and train a cohesive healthy team capable of performing tasks of any complexity.
Military psychology	Socialization and development of the communicative qualities of the individual. The communicative orientation of the personality: content, structure, function. Communication in interpersonal relationships. Psychology of communication - its goals and means, the implementation of the basic principles of relationships. The nature of conflicts based on the inability to build relationships in the course of interaction.
Philosophy	Knowledge of the essence of the image of the world, being and the value of human life. Variety of connections in society. The relationship between man and nature. Views of philosophers on the problem of the development of society and communication between citizens.
Sociology	Formation and development of social groups, the importance of an influence on the communication process in the military collective.The study of sociometry and its application in practice during military training.

On the basis of the authors' approval, the enrichment of the educational process with the dialogical interaction of teachers and cadets is possible with the direct improvement of the dialogicity of the entire educational process; development of internal understanding, dialogue, motivation of subjects of interaction and building joint activities; obtaining speech practice in the course of active development of general education and professional disciplines, as well as the involvement of cadets in service combat activities.

One of the forms of dialogical interaction between a teacher and a student during the educational process, "situational tasks" are defined as a solution that contributes to the formation of a favorable environment in the classroom and the building of effective communication between its participants, the joint search for new knowledge, the purposeful exchange of information between the participants in the dialogue.

In order to bring situations closer to the educational process of the High Military school for the development of the communicative culture of cadets, we have developed special "situations" that are as close as possible to the topics of classes conducted within the framework of military psychology, military pedagogy, political science, sociology, etc., capable of simulating professional activities of an officer of the Armed Forces of the Azerbaijan Republic.

The most effective and productive in the plan of development of communicative culture of cadets on practical disciplines of the above-mentioned disciplines are selected from the following "situational tasks": "situation-problem"; "situation-assessment"; "situation-exercise".

"Situation-problem" allowed the cadets to immerse themselves in the artificially created professional conditions of service and combat activity of the officer during the period of the emergence of communicative barriers in the solution of the assigned task service duty. The cadets in the role of officer-leader analyzed the complex situation-problem, offered the most effective ways of decision-making within the framework of established departmental rules and norms of mutual relations between colleagues and subordinates. During cadet's dialogue on the problems that arose, the formation of a group of likeminded people and opponents for the proposed solutions and hence the presentation of specific arguments allowed for the exit from the complicated situation.

In particular, cognitive activity and the ability to build effective relationships and interactions with employees were stimulated to solve common tasks.

For example, in the course of daily activities in combat training, one of the servicemen refuses to perform exercises in interaction with the serviceman. The cadet, at the initial stage, using the command resource and the degree of subordination of the serviceman, determines that in my unit such situations cannot be, and in any case, the serviceman under the threat of punishment will be ordered to do so. Following the assessment, given by the teacher for similar actions of the cadet and group discussion of the "situation-problems", the cadet in the role of the officer-mentor tries to understand the reasons for negative manifestations; to explain the importance of fulfilling the assigned tasks not in parts and separately, but in the complex and together; in case of necessity, substitutes for servicemen, working in pairs or in a group. Similar communicative actions of the officer-mentor lead to positive results and contribute to further minimization of conflict situations when performing joint tasks.

During the implementation of the "situation-assessment" cadets were offered to conduct an in-depth analysis of the already completed communicative situation and evaluate the adopted decisions. In this case, the cadets used a breakdown of the previous event to discuss the interrelated events that led to the result. Many cadets, using the communicative experience of others, including those who passed the military internship, expressed a possible solution to the situation with the most acceptable points of view. In a similar "situation-assessment" there was an emotional tension of the participants in the dialogue of cadets and some confrontation with the situation.

For example, in a subordinate military team, ethnic divisions began to appear when performing various tasks, and so on. The trained cadets in the role of officers are primarily trying to find and punish the recruits for similar actions, so that in this example to show the authority of the commander and the strict observance of the "established rules".

In anticipation of the development of similar events, the teacher gives an instruction on the conduct of the evaluation of his work as a commander and the direction of activity in the establishment of the cause and the absence of similar differences in the team.

The use of "situational exercises" implies the selection of cadets from the ready options of the solution of the communicative situation actually existing in the military units, or the offer and the sentence. A similar activity

stimulated the reflection of one's own communicative experience.

The cadets, after analyzing the possible ways out of the current situation with the use of methods of speech influence, predicting the development of events, jointly made a decision on further communicative actions adequate to the situation. In the process of using the "exercise situation", the group rallied around the joint search for an acceptable solution, complementarity of the solutions of others and support in the implementation of the selected communicative actions.

For example: when performing a service-combat mission to maintain a strong point in a subordinate unit, questions began to appear: "Why is this necessary and is it worth such efforts?" The first reaction of the cadets, considering their actions to be correct, is to make a decision to limit communication between servicemen and increase the workload for each, thereby supposedly removing the problematic issue. Open analysis of the adopted resolutions of cadets, teacher-mentor with the presentation of examples of military servicemen, marked state awards, experience of local warfare. An open analysis of the decision made by cadets, a teacher-mentor with examples of servicemen awarded with state awards, experience of local wars and retrospective actions of troops to contain the enemy during the 1st and 2nd Nagorno-Karabakh War; forms a different decision of the cadets. It is expressed in the conduct of explanatory work with subordinates and colleagues, the use of the entire arsenal of acquired communicative knowledge, skills and abilities of cadets aimed at the formation of patriotism, loyalty to duty, the importance of completing the assigned task by their unit on the scale of troops action to ensure public safety of citizens and society as a whole.

Similar situations have been tested in all groups, with the provision of solutions from other groups as a starting material for action. Thus, the cadets included in the experimental group corrected, complemented and improved the decisions made by their predecessors in the emerging communicative situations. The whole group received the practice of interaction, rallying to solve a specific problem, created the groundwork for reflection on the received communicative experience.

In the course of the formative experiment within the framework of the process studied by me, it becomes obvious that the development of the communicative culture of cadets becomes possible at:

– acceptance of the identity of each cadet who is at the individual level of development of the studied process;

– building subject-subject facilitative relationships between participants in the educational process, taking into account the general formed personality traits of cadets.

In the course of the formative experiment, the enrichment of the educational process with the dialogical interaction of the teacher and the cadets was reflected in the development of educational materials.

The practical component of the content of the optional course "Communicative culture of cadets of the Azerbaijan High military school named after Heydar Aliyev" implies the idea of attracting the maximum participation of cadets in the discussion of the problem raised when using both traditional and non-traditional forms of education. Disputes and practical exercises have become widespread, in which cadets have the opportunity to practically apply their abilities to build effective interaction with the team, enter into a scientific discussion on professional and general cultural topics, discuss and accept the experience of others in researching a problem of interest to them in the light of the prospects for the development of educational process of the High Military School.

In practical classes, professional and service situations are modeled, requiring an adequate decision to be made to effectively fulfill the assigned service and combat tasks.

As part of the practical implementation of the acquired communicative knowledge, skills and abilities while studying the optional course "Communicative culture of cadets of the Azerbaijan High military school named after Heydar Aliyev", a role-playing game "Effective resolution of conflict communication tasks" was organized. Role-playing is essentially divided into four main blocks: cognitive, self-analytical, discussion and final. It is carried out in order to equip the cadets with new communication skills and the practical development of communication skills for decision-making to find an effective way out of the emerging negative communicative situations.

The first (cognitive) block of the role-playing game "Effective resolution of conflict communication tasks" is a theoretical course, during which the teacher focuses the attention of cadets on the current legislation and regulations for interaction and relations between military personnel; adherence to military etiquette and linguistic norms of spoken and written language; existing positive experience in solving conflict communication situations; the

importance of mastering the culture of speech and the correct use of professional terminology. Also, the teacher pays special attention to the inability of individual commanders and chiefs to make the most effective decisions on how to get out of possible negative situations that arise in the process of relationships among the military personnel of the unit. In the second (self-analytical) block of the role-playing game "Effective resolution of conflict communication tasks" cadets of the experimental group using specialized literature, proposed by the teacher, materials of the library fund, their empirical observations and generalizations of the military advanced positive experience, independently analyze the emerging and promising ways of development in the troops according to the problems set by the role-playing game.

In the course of the third (discussion) block of the role-playing game "Effective resolution of conflict communication tasks", cadets, setting out their vision of the discussed problem, begin to conduct an active constructive discussion, offering their opinions based on military training. During the discussion, cadets consider possible flowcharts for solving communication problems; ways and forms of participation of the entire military collective in resolving the emerging negative communicative situation; the application of preventive measures to reduce the risk of negative manifestations in the military working team.

Upon completion of the role-playing game "Effective resolution of conflict communication tasks" during the fourth (final) block, the cadets through collective discussion together with the teacher (acting expert) formulate and present them in the form of practical recommendations to unit commanders on identifying, classifying and resolving possible conflict communicative situations in the military working team.

Thus, after analyzing the collected empirical data, the introduction of the optional course "Communicative culture of cadets of the Azerbaijan High military school named after Heydar Aliyev" allows us to conclude that within the framework of our experimental work, the proposed pedagogical condition effectively affects the process we are studying.

The cadets are invited to determine and evaluate, in points from 1 to 5, the ratio of polar qualities that a future officer of the Azerbaijan High military school named after Heydar Aliyev should have in the course of daily and service-combat activities when organizing interaction and building relationships with subordinates and colleagues (Table 2).

Table 2. EXPRESS SURVEY to identify the style of communicative activity of cadets of the Azerbaijan High military school named after Heydar Aliyev

Openness (freely expresses his ideas, no „mask")	5 4 3 2 1	Closeness (constantly keeps himself within the framework of his status, is worried about authority)
Mindfulness	5 4 3 2 1	Indifference
Activity (tries to keep subordinates in suspense)	5 4 3 2 1	Passivity (the process of relationships is not interested???, they are satisfied with their self-organization)
Encourages the initiative of subordinates	5 4 3 2 1	Constantly suppresses initiative
Individual approach to solving emerging problems	5 4 3 2 1	Lack of an individual approach in solving emerging problems
Benevolence	5 4 3 2 1	Malevolence
Flexibility (easily masters the communicative situation, resolving emerging conflicts of interest in the process of performing tasks)	5 4 3 2 1	Rigidity (in the process of interaction does not notice emerging problems, does not resort to methods of resolving conflicts of interest in the process of performing tasks)

When assessing the style of communicative activity of the cadet, the average grade is taken into account.

- 30-35 points: intensive communication activity, similar to the model of constructive interaction. The cadet, as a future officer, is able to freely own the audience, correctly focuses his attention in the process of interacting with subordinates, including all means. Joint service and combat activities are effective due to an effectively built system of interaction and relationships with subordinates and colleagues.
- 22-29 points: the student always correctly builds up interactions with subordinates, all available communication skills are used to achieve the assigned service-combat tasks. Reasonable initiative of subordinates is encouraged. Communicative activity is productive, takes place in active interaction with subordinates and colleagues.
- 16-21 points: characterize the cadet as capable of satisfactorily building a system of interaction and relationships with subordinates

and colleagues. In the course of his communicative activity, he freely makes contact with subordinates and colleagues, but does not experience some misunderstanding in interaction. Communicative activity is productive, but not always conducive, it achieves the assigned service-combat tasks.

▪10-15 points: communication performance is low. There is a one-sided, not properly implemented direction of the communicative influence on subordinates. The presence of communication barriers in the entry of interaction and relationships with subordinates and colleagues.

▪5-9 points: a very low score, at which any communicative activity is ineffective, there is no interaction with subordinates and colleagues, relationships are impersonal, formal, thoughtless setting of tasks for subordinates is inherent without taking into account the individual qualities of subordinates and colleagues.

Studies show that in the educational process, both the teacher and the cadet receiving a higher military education carry out activities that are the dialectical unity of generated activity, expressing the personal culture of each of the subjects.

Communicative culture is considered as a component of the professional culture of the personality of a cadet, which is a system of regulators that carry a complex of general cultural knowledge, abilities, a combination of skills and communication skills, a culture of speech, which are formed in the process of training in a military university in the presence of certain value attitudes.

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THE LEADERSHIP - COMMUNICATION BINOMIAL WITHIN ECONOMIC ORGANIZATIONS. AN ESSAY-BASED APPROACH

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Abstract: *The great challenges of the third millennium are not limited to globalization (or, according to some people, the forced promotion of globalization worldwide by the world's great powers), the fight against international terrorism or the continuous implementation of state-of-the-art technologies. They culminate in the concept of "Industry 4.0[1], the fourth industrial revolution, represented by the digitization of all aspects of social life. New elements, totally unknown until recently and especially unpredictable such as economic recession, destabilization of the euro zone, political populism, intensification of cyberattacks of Russia or China, the failure of the Trump administration etc. required changes in the current environment. Through the rapid and categorical way of imposition, two of them stand out as cataclysms of the social life, as it was perceived at the beginning of the millennium, completely transforming the reality of civilization on the old continent. Thus, the refugee crisis and the COVID-19 pandemic crisis have changed human existence in all its complexity, redefining, among other things, the daily way we make our living through work.*

Key words: *work, leadership, communication, economic organization, the refugee crisis, COVID-19 pandemic crisis*

From the beginning of its existence, the main activity of the human species - work - is absolutely necessary for their survival and not only, because, with the evolution of human intelligence, work has become much more diversified, more refined and more profit-oriented. In order to meet all these higher requirements, demanded especially in the modern era, extensive analyses have been dedicated to work with the stated purpose of safe and rational knowledge of all the details specific to this field of social life. Of all the concepts, processes and components that have been identified, through in-depth specialized studies, as the prerogative of work, I will focus on two of them in this paper: leadership and communication.

Initially, the concept of leadership stood out in the military area, being mentioned since the first armed confrontations in early history, through individuals such as Ramesses II in Egypt, Hammurabi and Cyrus the Great in the Middle East, Alexander the Great in the Near East, Chandragupta Maurya in the Indian subcontinent, Qin Shi Huang in the Far East or Hannibal

and Caesar in Europe. Through their actions, narrated in written sources that have been preserved to this day, these great leaders of antiquity were the first people to be involved in the effective management of small groups of people. Nevertheless, with the evolution of man over time, this concept is not only used in the military area, but also it begins to be used in other segments of society, culminating in the modern era (where tolerance, understanding and peaceful coexistence have been raised at the level of state policy and/ or international faith - substituting the "old-fashioned" precepts of the past that were based on domination through violence or hatred), where leadership was almost entirely oriented towards the field of work performance.

Another very important concept for working in a human community is communication, which is defined as "a transmission or mutual exchange of knowledge"[2]. Even though it was assigned a secondary role in the past, specialized studies prove otherwise. Understanding communication as just a simple dialogue turned out to be a mistake, because it is much more than that and imposing this limited vision (restricted to a series of data directed from the transmitter to the receiver) does nothing but make it compromise its true potential and limit its value. According to recent analyses, "by creating a communication system, that ensures a real-time transmission of information, can be made substantial savings"[3]. Also, high-performance communication involves real-time self-adjustment, includes multiple complex mental processes (such as thought, memory, emotion, motivation etc.) and that is why it is the basic activity of investigating organizations, which can be used successfully to increase performance, being "the key to the analysis and understanding of the entity as an open social system"[4].

Since the middle of the nineteenth century, with the globalization of the Industrial Revolution, economic organizations, whose stated goal was to focus on profit, were the first to assume the role of implementing any new discoveries on this line, which represented possibilities to bring extra value. Due to the fact that they realized the true potential of leadership and communication in increasing labour productivity, the top economic organizations of the contemporary period - multinational companies (whose first advantage is that they have great financial resources and, thereby, they have at their disposal a generous budget for research) - have created divisions specialized in investigating these concepts, connections with other social processes, ideal forms that can be adopted to ensure the adaptation of the institution to environmental changes and, mainly, the identification of viable algorithms that can be applied in particular situations.

The concepts of leadership and communication are explained in most specialized studies as two separate notions, with distinct spectra of application and an apparent incorporation of communication in leadership. Nonetheless, analysing the interaction of the two concepts in a performance-oriented environment, such as the business world, it is observed that, in order to reach their maximum potential, they intertwine,

complementing each other in areas of dysfunction and highlighting their strengths, in such a way that the company "poses" as an ideal entity in relation to the object of activity, the commercial interest and / or the market requirements. Thus, in any profitable economic organization, leadership is capitalized through communication at the institutional level and communication - in its organizational form - is based on leadership[5]. In fact, in my opinion, they form a unitary and inseparable binomial, with a mutual influence in all situations and the excellence of the act of leading the team of employees - to which all social theories are applied, only on a smaller scale - and, including its productivity, depends directly on the correct application of the leadership - communication binomial.

The refugee crisis, which reappeared in an impetuous manner at the beginning of the third millennium, put the leaders of highly industrialized states in difficulty for the first time. This was generated by a series of recent political and social events near south-eastern Europe, the most important being the emancipation of the populations of some authoritarian states in the Middle East and North Africa, the war on terrorism led by the United States in the Middle East, poverty and human rights violations in these areas. These facts created the right conditions for the consolidation, in the collective consciousness of those communities, of a strong vector directed towards "the attraction of the West", which is perceived as "a promised land", where all personal shortcomings are instantly resolved. Once this idea settled, no counter-opinion mattered (the difficulties of a long road on foot, the drama of the children and the elderly, the lack of food sources, proliferation of crimes etc.) and the consequence was the mass migration to wealthy societies in Western Europe.

From the point of view of the studied binomial, the refugee crisis almost immediately failed due to the inability of European leaders to adopt an effective institutional communication (defined as an organized and continuous activity, in order to legitimize the personality of the European Union and obtain the consensus of the citizens of the community [6]), due to the belief that refugees will stop in the countries on the south-eastern border of the European Union and, thus, will not reach a large-scale crisis. The lack of effective actions, from the initial phase, triggered a series of chain reactions of cause and effect (such as the domino effect), which ultimately resulted in an exponential increase in the number of immigrants from year to year, all culminating in 2015 – 2016 [7]. The late and inadequate response of the politicians marked the first question mark on the usefulness of classical models of leadership and communication. Nevertheless, the failures did not stop here. The obsessive promotion of Western principles in refugee crisis management - in particular, the principle of their rapid integration into the community - proved to be another major failure, as most people could not understand, accept and adopt Western lifestyle, principles and European core values,

which has gradually generated in each individual a crisis of consciousness that has been translated, over time, into hatred and multiple antisocial manifestations.

Almost all economic organizations in the West saw the influx of refugees as a great opportunity, represented by a significant introduction of human capital that was hoped to be productive, but especially much easier to stimulate financially. And if we add to these the various financial insertion facilities offered by the state to ease their integration into employment, respectively the concerns caused by major demographic challenges in European countries (represented by low birth rate, aging population etc.), a perfect recipe for economic success was already being outlined. In fact, according to some conspiracy theories, the refugee crisis and the opening of Europe's borders have been deliberately provoked by business elites who are at the forefront of political leadership, as a viable solution to counterbalancing the economic imbalance of the labour force; the same would have been pursued by the strong promotion of the concept of "multiculturalism"[8].

Nonetheless, a new reality has emerged in which a large number of immigrants has encountered multiple adaptation difficulties in local communities, in general, and in economic societies, in particular. Their dependence on radical religious perceptions, transposed in their own way of perceiving life, work and the use of archaic and morally outdated values were insurmountable barriers in their integration in the evolved, modern and emancipated European world. In this context, the need to rethink the functional model of leadership - communication was clearly highlighted, when the failures of the peaceful integration of immigrants (based on respect for other colleagues) degenerated into multiple deviant behaviours, many of which were serious crimes that shocked public opinion[9]. The accumulation of such violent attitudes led one of the most representative European leaders of the time, Angela Merkel, to state clearly and unequivocally that "refugees must fully integrate, respect German laws and traditions and learn the language"[10]. Thus, a strong message was sent.

Much more dangerous to humanity than the refugee crisis, the COVID-19 pandemic has intensified the rethinking of the concepts of leadership and communication throughout society and in work in particular, as new elements have almost instantly imposed limits and prohibitions on the human interaction. The imminence of the disease, the large number of victims, its rapid spread globally, the lack of information about the SARS-CoV-2 virus and the inability of many leaders to manage the crisis (e. g. minimizing the danger by Donald Trump or the Italian government's hesitations over complete isolation of the initial outbreaks) have led to the loss of valuable time in the fight against the pandemic and, even, facilitated its spread.

The failure of the classic models of leadership and communication in most economic companies was mainly caused by the lack of foresight - a

basic feature of the first phase of the managerial act [11], so the decline in economic activity was recorded almost immediately after the crisis began. The assessment of the new reality was not properly done by the decision makers of the companies, being influenced by erroneous perceptions and personal feelings, such as the mental need for "optimism", which turned out to be a fiasco in the end. The subjective assessment of the new economic conditions and the lack of anticipation of the commercial entities led to their economic regression, resulting in the bankruptcy of many, especially those who did not have access to immediate financial resources.

The first consequence of the crisis was the economic recession, due to the new rules strictly necessary to be respected, the redirection of the effort to the production of material goods or services necessary to the medical system and the closure of all companies that were no longer absolutely necessary. This first step meant a record number of bankrupt companies and unemployed people who were no longer able to secure their usual monthly income. Due to financial losses, many people have changed their way of life into a bad one or have experienced in their own skin important shortcomings in daily life. Also, due to the fact that the compensatory payments offered to the companies by the governments were insufficient or were granted too late, only those with liquidity could survive. However, there were also managers who preferred not to give in and to adapt to the new situation, by analysing the real situation, reflecting on "what needs to be done" and acting accordingly with the help of intelligent technology (e. g. through the new digital marketing, which is a superior economic form evolved from the traditional market, that "occurred for companies to offer a number of benefits to individual and organizational consumers"[12]), even if the change was radical or the effort filed was very intense. From my point of view, I am convinced that these were the new models of leaders, the real winners of the crisis, related to the business environment. Personally, I know a few people who, at the level of micro-economic organization (small number of employees), immediately reshaped their business to segments that were legally allowed (e. g. the production of textile masks or home deliveries), using the large-scale communication both in the motivation of the employees and in the production activity.

After the epidemic wave was somewhat stabilized, another element emerged that tests the leadership - communication binomial within economic organizations: social distancing in the work environment, which limits direct human interaction and involves its replacement by the massive use of various virtual platforms. Nothing is more uplifting for the paradigm shift than working from home, which has recently promoted in a fulminant manner from a niche option - as seen until the end of 2019, when, with few exceptions, it was not at all desired and never really supported (being used by employers almost exclusively in the cases of employees on parental leave or in

other similar "special" situations) – to an almost indispensable condition of work in functional economic organizations at present.

The refugee crisis and the COVID-19 pandemic crisis have caused negative feelings in every human being that no one thought they could experience in the new millennium, characterized by intellectual progress, respect for others, humanistic values and social equality. Panic, ignorance, and the impossibility of working in the community - as has been the case for thousands of years in the human history - have led to major tensions unprecedented in the entire world trade area of modern times. Work simply ceased to be as it was perceived at the beginning of the third millennium, entering a broad process of transformation, along with all its systems and components. The leadership - communication binomial is no exception and is a subject to a continuous series of experiments in order to adapt. The new circumstances force an intimate connectivity of the concepts of leadership and communication, an osmosis in the essence of each and the effect obtained is not a destruction or a mutual degradation, but the opposite: they become indispensable for each other, the boundary between them no longer exists and we cannot know exactly what leadership, nor communication really is. Thus, in order to ensure the performance of the new companies (which are perfectly adapted to the current crises), a new projection of the top management (qualitative) is outlined: the leadership - communication tandem.

The two major disasters in the recent history of mankind cause profound changes in current economic realities, so the orientation of the new generation of organizational leaders must change from the "simplistic" model to the optimal and productive par excellence in the new conditions. Adaptation must be made quickly, but based on analyses, which have objective observations, and on the lessons learned from the experience gained so far. Errors of judgment or negligence (many due to prejudice) are not allowed, because it is no longer about optimizing performance, but the very existence of the company and the wellbeing of all its employees.

In my opinion, in order to successfully step into the future, the leadership - communication binomial of any company must pursue some clear goals. First of all, it must focus on cultivating closeness between employees' conceptions of the world, on peaceful reconciliation between the two opposing views (secular and religious), on finding common values, on tolerance in both directions and on promoting a cultural reunion between the two types of employees: the local ones and the immigrants; thus, a modern solution for the most effective exposure of organizational goals to staff is the use of motivational speakers - a newly emerged profession, specializing in high-performance communication. The implementation of information technology not only in telework, but also in other parts of the companies must be another priority direction; in fact, the current emphasis on artificial intelligence (resulting from its massive use to replace social

interaction, which is restricted in the real world) will materialize in the short and medium term in a real revolution in performance - dictated precisely by the increasing demand of quality optimization of the entire IT environment, both in the hard part (more capable peripherals, physical shrinking of components, use of more reliable materials etc.) and in the software part (better processing of collected data, optimization services offered, exploring new options etc.). It must also direct its efforts to bring the manager behind the screen in front of employees, to make him "alive", to make him go from a quasi-passive to a proactive-dynamic involvement; the great trap of the new working conditions (based on "links" at distance) is the apparent lack of humanity, the loss of direct empathy, which must be combated by promoting positive communication, based on trust and openness. Another important objective must be the professionalism of the managerial act, which is based on the seriousness and operability of all adjacent products and obligations to the company (immediate observation of environmental changes, collection of truthful data, detailed analysis, objective predictions of the evolution of reality, promptness in reactions, expeditious and objective actions, real-time feedback etc.); as we have learned from those two crises, underestimating reality, insufficient firmness or diminishing the importance of negative effects only lead to organizational failures. Last but not least, effective management means ensuring the funds for hard days, transposed into the establishment of viable financial resources in order to be used for periods of economic downturn that, at least from a statistical point of view, will certainly follow.

Beyond the conclusions offered or possible solutions promoted, I cannot overlook the personal observation that there is an almost perfect similarity between the initial management of the two recent social disasters, with the only difference being the different level of application. Thus, if in the case of the refugee crisis the managerial failure was found at the level of the political elites of the moment - macro-human entities, in the case of the epidemic crisis the failure became much more particular, being the prerogative of economic organizations - human micro-entities. Beyond this difference, the similarities are so obvious that it even outlines a model of the failure of the great challenges of the third millennium - applicable from the first impact - based on the lack of prediction, the poor investigation of the facts and the lack of ability to adapt to the new social conditions. The recurrence of these characteristics raises questions, in relation to the institutional competence (human beings) to assimilate the previous experience and to integrate the lessons learned. The question arises whether this model does not tend to become archetypal. Perhaps, under the impact of future threats, this impossibility of the leadership - communication tandem to adapt (throughout the social hierarchy) will be the main cause of the implosion of reality as we know it today. In fact, according to some conspiracy theories, the illicit and esoteric public battle for a new world order may have already begun.

ENDNOTES

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