IMPLEMENTATION OF PROJECT MANAGEMENT IN THE MILITARY ORGANIZATION

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Abstract: *The military potential of any state is determined primarily by its economic capacity, by the endowment of military structures with modern combat equipment and technology, as well as by the level of training of the combat forces. It can also be stated that the economic, financial, social, diplomatic and political dimensions as components of national security are achievable only by ensuring efficient management, integrated both at the organizational and national levels. Currently, most states are marked by permanent transformations, unpredictability, rapid changes and challenges in all areas, management thus becoming an essential tool for the efficient organization and implementation of diverse and complex projects. I believe that an adequate and applicable management model for the military organization is project management, which can be considered an essential component in the successful strategies of units and large units.*

Keywords: *national security, military organization, management, project, performance.*

1. INTRODUCTION

As a result of the increasing complexity of human activities, the development of technology, especially in the era of artificial intelligence, there is a strong need for organizations to adapt to new challenges, to the demands of society and consumers, which are increasingly diversified.

Although the term project has been used since the 15th century, its definition was limited at that time, as introduced by Filippo Bruneleschi, to architectural projects or other activities specific to the construction field. A project is defined as any individual or collective activity, which may include research or design and which is carefully planned to ultimately achieve the desired result.

In the contemporary era, projects are part of our lives, being found in all fields and we are surrounded by them everywhere.

It can be said that the project is one of the most used words in the economic vocabulary in general, but also in most segments of activity, including the military organization. This is happening because we are facing a real explosion of projects at the global economy level. This trend is visible even more significantly at the level of the European Union.

Joseph Weiss and Robert Wysocki consider that the project can be defined as an activity or a collection of complex and sequential activities, which represent a unique set of events, with well-defined start and end dates (finite project), with limited resources and budgets and involving several people (usually with different functions or roles) whose actions are oriented towards a common goal, having as a final result a product or service [1].

Management has a significant impact on our existence, given that everything is located under its incidence in different aspects of our lives, as we constantly come into contact with various organizations, or even carry out activities within them. Organizations are under the control of one or more people who are in charge of orienting and guiding them through the decisions that the responsible ones make.

Project management is the application of knowledge, skills, tools, and techniques to carry out the activities and operations of a project in order to meet its requirements. Specifically, project management aims to transform ideas and concepts into reality. Whether it is developing a new technology, setting up a laboratory, or organizing an event, the project management process involves identifying objectives, developing a detailed plan, assigning resources, and carefully monitoring progress. Project management is based on a series of key principles, practices, and concepts, including the clear definition of tasks and responsibilities, effective communication between team members, risk management, and adaptability to the inevitable changes that may occur during the project.

I believe that the success of a manager's activity is closely linked to the way in which they foresee and plan the use of resources, the way in which they organize the work of the team and coordinates it during the project, personally getting involved, while checking progress at the same time.

2. GENERAL NOTIONS ON PROJECT MANAGEMENT

2.1. Project management fundamentals

The concept of project management appeared in the early 1950s as a specialized branch of management, thus creating a discipline targeted to the organization and verification of complex activities specific to the branches of the economy, especially heavy industry.

Although some specialists consider it a new field, its existence and practical approach date back thousands of years. The oldest projects are considered the Egyptian pyramids due to the prior planning of the project and the supervisors that the pharaoh sent to play the role of project management.

Among the most important factors regarding the emergence and development of project management, the following are worth mentioning: the competition between the economies of nations for supremacy in the military field and the pressure that customers put on their projects to be ready as quickly as possible in order to recover their investments. Moreover, the National Aeronautics and Space Administration (NASA) was influential in the emergence of this branch of management, as a result of the initiation and development of its space programs.

The experience and knowledge accumulated over the years, as well as the development of computer science, favoured in the 1990s an explosion of knowledge in the field of project management, as well as the emergence of new methodologies such as PRINCE (Great Britain, 1990), RUP (Relational Unified Process) or XP (eXtreme Programming- Kent Beck, 1996).

Starting with the 2000s, an attempt was made to develop a final and mature model of the project management concept.

For theoretical knowledge of the project management concept, but also for its application, it is essential to define the term *project*. It originates in Latin from the word "*projectum*" as a derivative of the verb "*proicere*" which could be translated as "*to throw forward*". We can see that the verb is composed of the prefix "*pro*", to indicate an activity that precedes the action and the action "*iacere*" (to propel).

In this sense, several approaches have been outlined to define this concept.

Mihaly Görög and Nigel Smith consider that the project represents any type of activity with a fixed duration, with certain constraints in relation to costs and with the aim of obtaining a finite result [2].

In our opinion, the project represents an accumulation of activities with a unique character, focused on clear, distinct objectives, with well-specified goals, without a routine character, representing a way of moving from the idea stage to the actual action, going through various phases of this process, using human, material, informational, and financial resources.

Any project is defined by its characteristics, and must be approached as a unitary whole. Even if the project will involve a series of contributions from several people, the notion of whole is applicable.

The project will also be defined by its features, which are correlated with the functions of project management.

The main specific features of any project, regardless of the field, are the following:

- the project objective – a project has a fixed set of objectives, and when they have been achieved, the project can be considered completed;
- the lifespan – a project has a limited lifespan, the end being usually specified in the set of objectives that must be met;
- a singular entity – the project is unique and is normally entrusted to a single centre of responsibility, while there can be several participants in the respective project;
- teamwork – the project is a unitary ensemble that needs teamwork, the contributions of the participants being closely linked and in a relationship of interdependence;
- life cycle – the project is defined by a life cycle going through stages such as development, maturity, and aging;
- uniqueness – no project is the same, they will differ by locations, infrastructure, resources, or microstructures;
- change – the project is characterized by many changes throughout its life, actions, interventions, phases, and resources;
- successive nature – the project components are gradually completed, as the time resource is consumed;
- custom-made – the project is always created at the request of a legal or natural person who has the quality of customer;
- the degree of innovation and complexity –the project will depend on a lot of defining characteristics: its element of novelty, the scale of the project, social repercussions, uncertainty in achieving the project objective, etc. A project will be complex regardless of whether one or more of its characteristics are less complex, as long as others have a higher degree of complexity.

During its development, the project goes through several stages, the total of which makes up the project life cycle. The life cycle must be viewed in its entirety, from all perspectives, and it is necessary to take into account a variety of aspects, such as the necessary resources, the time available, the technological quality, the benefits, etc.

The specific stages that any project goes through are the following:

-the conception phase;
-the definition phase;
-the planning and organization phase;
-the implementation phase;
-the product delivery and project evaluation phase;
-the product operation and maintenance phase.

Normally, these phases should be completed in order, but this happens quite rarely in reality. Oftentimes, not only do the successive phases overlap with the previous ones, but a complete overlap of all phases can also occur. We can observe that some of these phases contain elements specific to management, such as its functions, planning, organization, decision, etc.

In the last ten years, experts in the field have been analyzing and evaluating how the project integrates into the organization, how the organization behaves, how it adapts to the permanent development of projects, while also aiming to increase the capacity to develop more and more projects. An organization in which project management is applied represents the organization of the future, which has the ability to operate dynamically and efficiently and which is much more difficult to imitate by other competing organizations.

Thus, we can see that the role of projects within the organization is defined in two distinct areas: the operational area and the strategic area. The role of the project is visible both at a strategic level because it can be subordinated to the organization's strategies, but also at a tactical level because it must represent ways to solve problems.

This role results from the following aspects:

-it initiates change;

-it ensures development;

-it allows the achievement of the proposed objectives;

-it maintains internal competitiveness;

-it creates competitive advantages;

-it streamlines the organization's activity.

Project management is based on the understanding and effective application of the principles and techniques in the respective field. The following aspects are relevant in this context:

-project planning is an essential process in project management and involves the development of detailed documents regarding the courses of action necessary to achieve the established objectives;

-project control consists of carrying out the process of monitoring, evaluating, and adjusting the progress and performance of the project, respectively monitoring progress, comparing it with the initial plan, identifying deviations and problems, taking corrective measures, and reassessing the plan, if necessary;

-communication is a key concept of project management, being essential for the success of the project and consists of applying the following algorithm: identifying stakeholders, defining communication channels, establishing communication objectives, creating a communication plan, active listening, adaptability, feedback and evaluation;

-risk management is a fundamental concept of project management and involves identifying, evaluating and managing the potential risks that may affect the success of the project;

-quality management represents the concept of ensuring that the products or services delivered within the project meet or exceed established standards and expectations, an aspect that is materialized by establishing quality standards, quality planning, quality assurance, quality control and continuous improvement.

By analyzing project management in an organizational context, we discover that it has brought added value, ensured the transition from an inferior to a superior situation or from a negative to a positive one, and that the project itself represents a change.

Such examples of projects that have completely changed the way of working within organizations are: the transition from typewriters to computer systems, from physical archives to electronic ones, from landline to mobile telephony, from mail to e-mail, from radio to satellite communications, and so on.

By implementing project management in the military organization, creativity and involvement of subordinates in the act of execution and creation, design and verification are achieved, thus creating the premises for maintaining internal competitiveness.

Employees can be stimulated to work both in teams and individually, being pushed towards initiative by the project manager who must know how to organize their subordinates into teams, to coordinate them, to communicate the objectives to them, and to ensure that communication in the created microgroups is optimal.

Therefore, project management is not just a simple method of coordinating activities, but represents a strategic framework aimed at optimizing the use of resources in a synergistic way, so that the organization achieves superior performance and remains competitive in its specific environment. Against this background, knowing these concepts, it is necessary to identify the ways in which this type of management can result in increasing and at the same time ensuring the performance of any organization.

Iit is worth mentioning the fact that not all projects can have the same level of performance, since a lot of aspects depend on the quality of the leader in charge of project development, more precisely the project manager. They must analyze the five basic factors that represent the foundation of any project, namely time, costs, quality, purpose and last but not least risks (Fig. 1).

FIG. 1 Fundamental factors in a project

2.2. Increasing project management performance through the use of artificial intelligence

The implementation of artificial intelligence (AI) in project management has been a constant topic of interest for researchers and practitioners alike in recent years. Its potential advantages regarding project management include increased efficiency, improved decision-making, as well as better management of operational risks. In this context, artificial intelligence brings with it a series of significant transformations, revolutionizing the way such initiatives are planned, implemented and monitored.

Joined shows one way of using AI in a competitive organizational environment in companies on several continents (Fig. 2), [3].

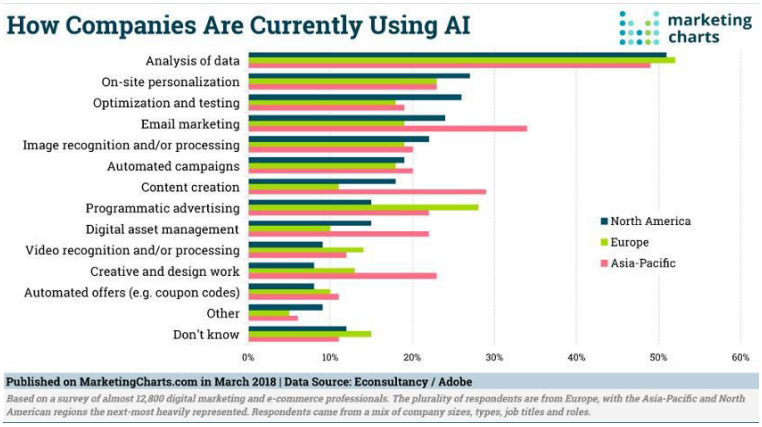

FIG. 2 Comparison of current uses of AI (source: *Project Management.com*)

AI can be used to automate routine tasks such as data entry, scheduling, and reporting, which can free up time for more strategic and complex aspects of the project. In addition, AI can help identify patterns and trends in data that may not be immediately apparent to humans, which can inform decision-making and improve the quality of project outcomes. Implementing AI may also require the development of new skills, such as data analysis and programming, to effectively manage and use AI technologies. According to a study conducted by PwC Romania and the International Project Management Association in 2020, over half (52%) of project management professionals anticipate integrating a Digital Assistant and adopting artificial intelligence in the next five years. Within project management, the roles with the greatest potential to be taken over by AI in the next five years are the Project Manager Assistant (52%) and the Project Manager Advisor (44%).

The integration of artificial intelligence into this process has brought considerable benefits through operational efficiency, informed decision-making, innovation, and adaptability to changes in the project environment. The significant contribution of artificial intelligence in project management is also manifested in facilitating intelligent decision-making, an essential aspect for the success of a project implementation [4].

Advanced data analytics is a powerful tool in the hands of project managers, offering them critical information needed to substantiate key decisions. AI systems are able to process the huge volume of data generated by projects, identifying patterns, trends or risks that might go unnoticed in a typical human analysis. By anticipating risks, artificial intelligence helps to outline a solid action plan, designed to minimize the impact of potential problems. Informed decisions, guided by real-time data analysis, not only optimize the path of a project, but also significantly reduce the risk of failure due to uninspired decisions.

Thus, the use of artificial intelligence in decision-making not only brings immediate benefits, but also consolidates and sustains long-term success in project management. Another key aspect of the importance of artificial intelligence is stimulating innovation in project management.

By analyzing data and identifying unexpected patterns, AI can suggest new approaches and strategies for project management. This not only optimizes existing processes, but also encourages and facilitates innovation in addressing problems and developing innovative solutions. Also, adaptability to change is an essential feature brought by AI to project management.

AI systems can analyze available information in real time and dynamically adjust plans and strategies according to changes in the environment.

This adaptability ensures flexibility in project management, and helps reduce the risk associated with inevitable changes.

With all these advantages, it is important to emphasize that the implementation of AI in project management must take into account ethical and social aspects.

Additionally, AI systems process and store a large amount of data, some of which is sensitive and confidential. Thus, there are security risks and possible threats to data confidentiality, requiring additional measures to protect information from possible cyber attacks. Implementing AI systems and training staff to use them can also involve some significant costs, especially for smaller organizations.

3. MANAGEMENT OF THE DESIGN OF AN "INDOOR" FIRING RANGE

The issue of national security is the attribute of public institutions, dedicated ministries, including the Ministry of National Defence, their role is to focus on the integrated management of risks, threats and vulnerabilities existing at national, regional, and European levels in the military field [5].

Romania's defence capability represents an accumulation of elements, namely economic, military, social and diplomatic. At the same time, the combat capabilities of military structures are directly determined by the level of equipment and technical endowment, the level of operationalization and training of combat and support forces.

In order to argue that project management is a high-performance model applicable to the military organization, respectively the military structures within the Defence, Public Order and National Security System, I will present a design variant of an "Indoor" Shooting Range.

I believe that this project represents an innovative and efficient solution intended for light weapons training of military personnel, the range will ensure the training and modernization of the training structure [6].

The management of this project requires a meticulous and well-structured approach, an application of general and technical knowledge which should take into account the following aspects:

- detailed planning: the construction of the range involves numerous stages, from identifying suitable land to designing and building the infrastructure required for shooting activities. A detailed plan, covering each stage of the project, is essential to ensure that deadlines and budget are met;
- regulations and permits: all necessary permits and approvals must be obtained from local authorities and other competent entities from the design stage, this will lead to compliance with environmental, urban planning, and safety regulations;
- resource management: ensuring the availability of the necessary resources, such as budget, construction materials, equipment and skilled labour. Efficient management of these resources can help avoid delays and reduce additional costs;
- supervision and quality: closely monitoring the progress of the work and ensuring that quality standards are met are critical aspects of project management in the construction of a shooting range. It is important that each stage of construction is supervised and verified to ensure that the final result meets the established standards and requirements;
- communication and coordination: effective communication between all those involved in the project, including the execution team, clients or beneficiaries, as well as other stakeholders, is essential to avoid misunderstandings and to maintain alignment on the project objectives and progress;

- risk management: identifying, analyzing and managing potential risks, such as adverse weather conditions, delays in supplies or changes in project requirements, are essential to ensure that the project runs smoothly and is delivered on time and within budget.

The design and construction of the range presents a number of specific characteristics and challenges that require a rigorous and well-planned approach.

The specific characteristics of such a range are the following:

- the size and the configuration: covered ranges are designed to occupy a smaller area than surface ranges, they must ensure adequate distances for various types of weapons. The safety zone must be well defined to prevent accidents, involving appropriate barriers and protective measures;

- construction materials: the materials used in the construction of the range must be impact-resistant. Walls and barriers are usually made of reinforced concrete, and bullet absorption systems, such as sand or recycled rubber, are essential to reduce the risk of ricochets and ensure the safety of users;

- ventilation systems: an effective ventilation system is necessary to eliminate fumes and lead particles resulting from shooting activities, especially in the case of indoor ranges;

- lighting system: lighting is essential for the operation of the range, the installation of an adaptive lighting system will allow shooters to train in various scenarios, simulating real operating conditions;

-safety and access control: the implementation of strict safety measures, such as security gates and video surveillance systems, is vital. Access control must be well managed to ensure that only authorized personnel have access to the range, thus reducing the risk of unauthorized incidents;

-training infrastructure: to maximize the efficiency of training, the range must be equipped with moving targets and automatic systems for evaluating the shooters' performances. Also, theoretical training facilities and post-shooting analysis are essential for the development of marksmanship.

The overall objectives of the project include creating a safe shooting environment, ensuring compliance with relevant standards and regulations, and achieving cost-effectiveness. It is also imperative that the range meets the requirements imposed by military and civilian regulations to ensure the legality and safety of operations.

The specific objectives consist of determining the optimal capacity of the range, including the number of firing lines and the space required for training. The implementation of modern technologies for monitoring and evaluating shooters' performance is also a key objective.

The design team should include architects, civil engineers, safety engineers, and ballistics specialists. The execution staff will include builders, skilled workers, electricians, and plumbers. It is essential to recruit external consultants with expertise in specific areas, such as ballistics safety and acoustic engineering.

Specific training, such as site safety training and the use of specialized equipment, is essential for the success of the project. It is also beneficial to organize workshops and continuing education sessions to improve the team's skills and ensure compliance with safety and quality standards**.**

Construction materials, such as concrete, steel, and wood, are essential for the construction of the polygon infrastructure. It is important to select high-quality materials to ensure the durability and safety of the construction.

Supplier selection should be based on quality, price, and delivery terms, and contract negotiation and signing ensure on-time deliveries and compliance with technical specifications. It is important to implement a quality management system that includes quality control procedures, internal and external audits, and rigorous documentation of processes and results.

Budget planning involves allocating funds by stages and categories of expenditure. Sources of funding can include funds allocated from the military budget, government grants, and public-private partnerships. It is essential to develop a detailed financial plan that includes financial projections, cash flow, and profitability analyses**.**

CONCLUSIONS

In the context of a world characterized by rapid changes, the growth or decrease of the economic potential of states, project and program management becomes an essential component in the success strategies of the military organization. Its importance is evident both in the social and military environment, where the efficiency of project management has a direct impact on the achievement of specific objectives.

I believe that at the level of military structures, the application of project management can contribute not only to increasing operational efficiency, but also to strengthening the country's defence capabilities.

By presenting a project variant, I aimed not only to offer a theoretical perspective on management, but also to present how it can be applied and adapted in the specific context of the construction of an "indoor" shooting range, namely the efficient management of complex military projects. I believe that its implementation within military structures will bring multiple benefits, both in the short and long term. Thus, a local range will allow for the conduct of intense and regular training, adapted to the specific needs of units and large units, which will contribute to the significant improvement of the operational training and skills of the military.

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