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UPRAVLJANJE POSLOVNIM PROJEKTIMA PRIMJENOM STANDARDA ISO 10006

BUSINESS PROJECT MANAGEMENT BASED ON ISO 10006 STANDARD

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Stručni članak

Sažetak: *Moderno poslovanje temelji se na projektnom pristupu. To je naročito prisutno na organizacijskom tržištu gdje su glavni kupci javne kompanije kao što su Elektroprivreda, Telecom, državne institucije itd. Cilj ovoga rada je pokazati kako kombinacijom postulata standarda ISO 10006 i znanstvene metode kreirati jedinstven model koji omogućuje standardizaciju projektnog poslovanja kao i jasnu strategiju nastupa prema javnim kompanijama kao kupcima. U radu ćemo se fokusirati na: odnos prema kupcima, vrste vođenja na projektu (leadership), upravljanje resursima (resource management), organizacija projekta, komunikacija na projektu, upravljanje rizicima (risk management) i mehanizmima kontrole svega ovoga. Za realizaciju modela primijenit ćemo znanstvenu metodu koja podrazumijeva primjenu znanstvene literature i dosadašnjih znanstvenih istraživanja iz područja poslovne ekonomije.*

Ključne riječi: *ISO 10006, procesni pristup, upravljanje projektima*

Professional paper

Abstract: *Modern business is based on project approach. This is especially present in organizational market where the main customers are public companies such as power operators, telecom operators, state institutions etc. The purpose of this paper is to show how to create a unique model of project management by combination of postulates of ISO 10006 standard and the scientific method. In the paper the following shall be focused on: customer relation management, project leadership, resource management, project organization, risk management and control mechanisms. For the realization of the model scientific method shall be used, which presupposes the application of scientific sources and research in the area of business economy.*

Key words: *ISO 10006, process approach, project management*

1. INTRODUCTION

Just as each country has a constitution and laws which one must abide by, every company needs to have its own rules of conduct. These rules are best defined by ISO 9000 standards, and today there are almost no companies that have not yet introduced a quality management system according to these standards.

Modern business is based on project-based business operations and, in order for a project to be successful, it has to be realized by certain rules. The International Standardization Organization (ISO) has defined two standards for project management, ISO 10006 and ISO 21500. The topic of this paper is the ISO 10006 standard, which will be dealt with in a separate section.

As stated in the subtitle, the subject of the paper is the application of scientific methods in project management. Scientific method is based on the use of scientific achievements in some areas, as opposed to the empirical method, which is based on the use of other people's or own experiences [1].

Project-based business operations are characteristic for industrial markets, so in this paper iz shall be assumed that industrial market is in question, where the main customers are public companies that in their purchasing actions usually buy complex objects whose sale requires project approach.

2. PROJECT AND PROJECT-BASED BUSINESS OPERATIONS

In this section the fundamentals of project-based business operations are presented. First we shall provide a definition of a project and then, using the process approach, we shall clearly define what affects the realization of a project, as well as the resources necessary for the successful implementation of the project.

There are several definitions of the project and in this paper this will be limited to three definitions. According to the first definition, project is a set of related activities aimed at achieving the objectives and of limited duration [2]. According to another definition, project is a closed, complete and complex undertaking whose characteristics and objectives can be defined, and that must be achieved in a given time, and which requires coordinating the efforts of several services, i.e. staff employed in these services [3]. Finally, according to the ISO 10006, project is a unique process that consists of a set of coordinated and controlled activities with a defined start and

completion dates, undertaken to achieve an objective harmonized with specific requirements, including constraints of time, costs and resources (ISO 10006:2004). From these definitions it can be concluded that projects are of transient nature and practice shows that each project brings a new experience to be applied in future projects and makes their implementation easier.

In order to understand project management and project-based business operations we shall implement a process approach to make it easier to explain why a project was initiated, what affects its implementation, which resources are necessary for the implementation of the project and what its outcome is. Figure 1 shows the process model of projects.

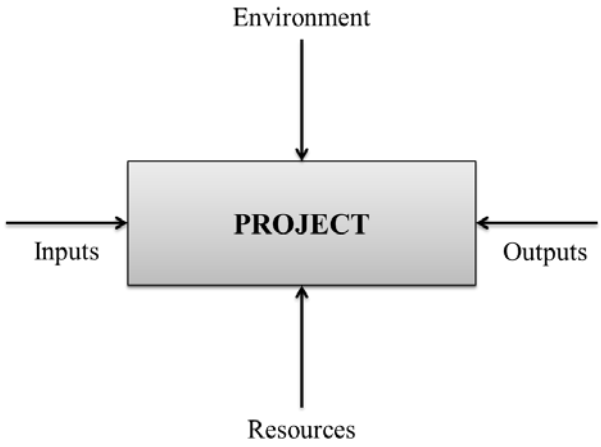

Figure 1. Process model of projects (according to [4])

Inputs represent specific requirements or needs that should be met through the implementation of the project. In the business world these requirements and needs are defined by the customer in the form of tender documents or request for submission of bids.

Outputs are the result of the project. Based on the defined requirements and needs, a company defines the offer in terms of project documentation, which should be a response to the request / meeting needs. In this way in the business world complex objects of various types are constructed, such as the ones in the area of construction, mechanical engineering, electrical power, etc.

Environment implies the business environment in which the project is implemented. Specifically, we are aware that we are not alone in the business, but that we operate within an environment that imposes its rules and controls that we have to implement during and after project implementation. There are three types of business environments [5]:

- Macro environment. Macro environment consists of political - legal environment, economic environment, demographic environment, cultural environment and technological environment.
- Meso environment. Meso environment consists of competition and the public.
- Micro environment. Micro environment consists of suppliers, various dealers and consumers.

Resources are necessary resources for the successful implementation of the project. Key resources for successful implementation of the project are [6]:

- Human resources. Human resources are employees of companies with their knowledge, creativity, skills, mental and physical abilities, and their ability to acquire new knowledge, skills and habits. Employees drive business processes, monitor their implementation and implement improvements.
- Knowledge resources. Knowledge resources are inseparable from human resources, as human resources without knowledge cannot contribute to the development of business processes and therefore the successful implementation of projects. This knowledge is found in books, professional journals, web resources, as well as in various internal documents that constitute a business secret.
- Equipment. Equipment refers to hardware and software tools used by employees (human resources) in order to use knowledge resources to carry out processes in the company. Hardware tools are used in the production of physical product testing and software tools in the process of collecting and processing data and process analysis and modeling. The term equipment also involves office supplies and furniture, computer equipment, etc.
- Infrastructure installations. Infrastructure installations are installations that apply hardware and software in the form of a network to link different parts of the company. Secured infrastructure network is essential to carry out all activities in the company.
- Buildings and workspace. Buildings and workspace are the places where the processes are carried out. These resources provide suitable working conditions because the size, shape and functionality of buildings and office spaces are very important for the effective and efficient implementation of business activities, implementation of products / projects etc.
- Financial resources. Financial resources are the money that the company owns at some point. In addition to this money the company has to take into account the claims and debts in order to know whether the current financial resources are sufficient to carry out business activities or whether it should take a loan.

3. ISO 10006 STANDARD

The ISO 10006 provides guidelines for quality management in projects. It can be applied to all kinds of projects, from small projects to the realization of very complex projects. For the purpose of this paper we shall assume that complex projects are in question, which are mainly implemented in industrial markets where the main buyers are public companies such as JP Elektroprivreda, Telecom operators, etc. Under paragraph 4.2.1 of this standard the key principles of quality management in projects are defined (ISO 10006:2004):

- Customer orientation
- Leadership
- Human participation
- Process approach

- System approach to management
- Constant improvement
- Fact-based decision-making
- Mutually useful customer relations

Below we present the key elements of ISO 10006 using the scientific method. It is important to instantly emphasize that these are only guidelines that still need to be developed in practice in order for organizations to be able to efficiently and effectively manage projects.

3.1. Management responsibility

In every project there is the project manager who is to be appointed at the beginning of the project. They have the key responsibility for the project but managers at higher levels are also not exempted from this responsibility. Responsibility relation should be clearly defined at the beginning of the project and this is only possible with clearly defined communication during the project. Therefore, this will be dealt with in more detail in the section that deals with communication.

3.2. Customer orientation

In industrial market there are not many customers, so customer relations should be given special attention in order to retain them. Such customers are called key accounts and their main characteristics are high purchasing power, the complexity of behavior when buying and readiness of entering into long-term partnership [7]. For successful relations with key accounts, the same authors propose the following:

- Developing long-term relationships through direct communication
- Negotiating on all the key issues in business relations
- Developing good interpersonal relations without which no business relationship is possible
- Monitoring of the major competitors in order to provide a better service based on this information
- Monitoring of contract realization of projects that are in progress
- Providing quick service for the client through teamwork in the company

Finally it should be emphasized that for good relations with a business partner confidence is crucial. Confidence means that the communication with a business partner is honest and open from the very beginning. Such approach allows for concluding long-term business relations with a business partner. First, one should enter a smaller investment project with a business partner to see whether one may trust the business partner. If so, one may get involved in larger business arrangements and establish long-term relations with the business partner.

3.3. Leadership

In order to ensure a successful implementation of the project, it is necessary to clearly define the style of project management. When it comes to leadership styles, there are several approaches. We focus here on the Likert style that consists of four leadership systems [8]:

- System 1. This is an extremely authoritarian system and this manager is an autocrat who has little trust in subordinates.
- System 2. This is a benevolent authoritarian system where managers have patronizing confidence in subordinates, motivate them with rewards, and only in some occasions with fear and punishment.
- System 3. This is a consultative system where managers have extensive but not complete confidence in subordinates, they apply the opinion of subordinates and for motivation use rewards and occasionally punishments.
- System 4. This is a participatory collaborative system where managers have complete confidence in subordinates and always use their ideas and opinions.

For the purpose of project management the best variant is the combination of systems 2 and 3. The practice has shown that it is not good if the manager is too authoritarian, but also if there is too much trust in collaborators on the project. Furthermore, the same principle should be applied by senior managers towards the project manager, because the practice has also shown that too much freedom given to the project manager results in bad outcomes regarding the project.

3.4. Human resources management

For the successful implementation of the project it is very important to choose the right participants. There is no single criterion for the selection of team members who will implement the project, so here we present two models that can be used as the basis for setting up criteria for the selection of team members for the project [9]. The first model is the Rodger's Seven-Point Plan, which includes: physical characteristics, achievements, general intelligence, special abilities, interests, character and circumstances. The second model is based on Fraser assessment based on five items: the impact on others, qualifications or acquired knowledge, innate abilities, motivation, adaptability and emotional balance.

3.5. Organizational structure

Basic forms of project organizations are [10]:

- Pure project organization is an independent organization of project management. It is a comparative organizational unit together with other organizational units.
- Influential project organization is a form of organization where project management has limited duties and responsibilities in terms of coordination, planning, and control of deadlines and costs.
- Matrix project organization is a combination of functional organization and pure project organization.

Figure 2 shows these structures.

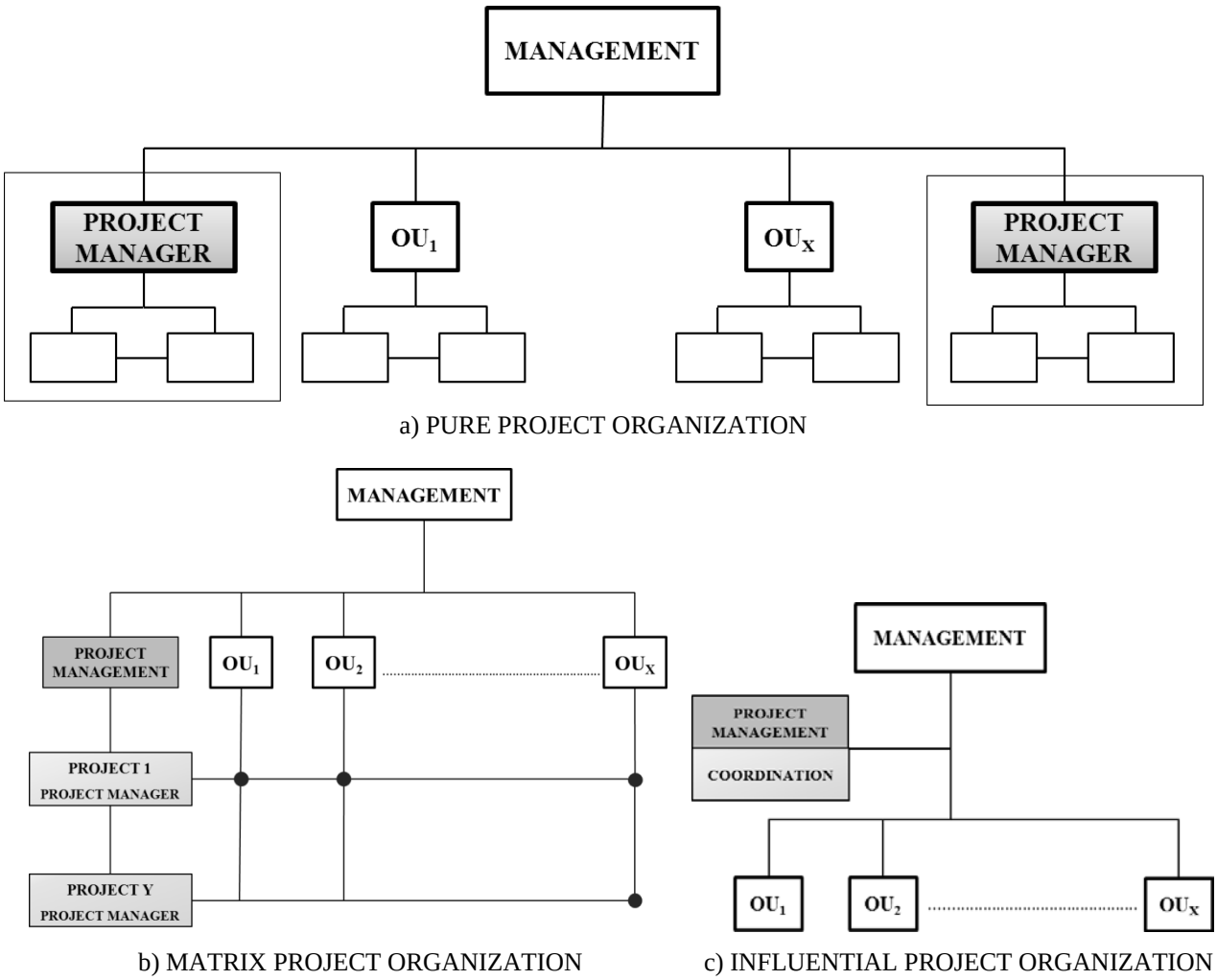

Figure 2. Types of project organizational structures [10]

3.6. Teamwork

For the purpose of realization of a concrete project teams are formed. In order for a project to be successfully realized, the following should be taken into account during the formation of the team [11]:

- Defining roles. In order for a team to be successful, it is necessary to clearly define what should be done by whom. The essence of the existence of each team is to assure that people with different skills and abilities tackle the task that is set before them.
- Team composition. When it comes to team composition, it is not a problem to set the team up in terms of professional competence of team members, but more in terms of human characteristics, because some people are not team players, but they are very professional. In each team there should be two types of interactions: cooperation and competition. Cooperation refers to team spirit, dedication, loyalty, and trust. Competition shows that the achieved diversity is needed for the development and dynamics of the team. Project manager is expected to encourage competition and prevent conflicts.
- Training and rewarding. In order for team members to be as good team players as possible, proper training is needed, which aims to perfect the skills of current employees as well as to show the team members that they can show and achieve much more by working together than individually. In order for team members to be good team players, they should be rewarded through an appropriate system of incentives such as salary increase, promotion, stimulation, etc. It is necessary to reward each individual that promotes teamwork, helps train new members, expands their knowledge and develops new skills, resolves conflicts etc.
- Building trust. Without trust there is no successful teamwork. Trust has five key dimensions: integrity, competence, consistency, loyalty and openness. Integrity implies that individuals respect personal integrity and fairness. Competence refers to professional knowledge as well as the ability of interpersonal communication. Consistency implies reliability, order and successful coping with all situations. Loyalty means protecting the integrity of each team member. Finally, openness implies the wish to share ideas and information with others.

3.7. Initiating and planning projects

Project planning is an activity that cannot stand alone, but it should be coupled with guidance and project monitoring. Therefore, here we present all three

activities. When planning one should stick to the following principles [4]:

- The purpose of the project – how and when the project is carried out and its scope
- Objectives – specific results that the project will produce
- Restrictions – restrictions that limit what one wishes to achieve by implementing the project
- Assumptions – uncertain information that one considers in the preparation, execution, implementation and completion of the project

Project management is carried out in two ways, through a regular program of activities and contractor teams that are formed based on a specific project [10]. At the beginning of the project realization, project manager has to present the following to all stakeholders [10]:

- Project work order
- Complete or partial initiation study
- Project work plan
- Plan of monitoring the implementation of the project
- Additional relevant information

Finally, project monitoring is carried out in the following three ways [10]:

- Monitoring according to the project plan, by means of which performance dates, actual costs and actual resource loads are reviewed
- Monitoring in project surroundings, by means of which various disturbances and changes may be noticed that have occurred outside of the project if their impact can threaten the planned execution of the project
- Monitoring project work, monitoring related to the periods in which certain project activities have to be carried out.

3.8. Communication

Projects involve four types of communication: top-down communication, bottom-up communication, horizontal communication and diagonal communication [12]. Should we apply this to the communication between the project manager and his superiors, it would mean the following:

- Top-down communication implies that senior management seeks information from the project manager or informs them on something. This form of communication has to take place in the form of meetings and written correspondence.
- Bottom-up communication implies that the project manager provides their superior with information. This type of communication should also be conducted in the form of meetings and written correspondence.
- Horizontal communication implies that the Project Manager A communicates with the Project Manager B on common actions. This form of communication, along with meetings and written correspondence, may also be conducted orally, in order for business activities to be conducted in a faster and easier manner.
- Diagonal communication implies that the project manager directly communicates with top management leaving the middle-level and first line managers out. This form of communication should be avoided because it means that there is no trust and that there is a conflict, which should be avoided in the course of the project implementation.

These communication forms are shown in Figure 3.

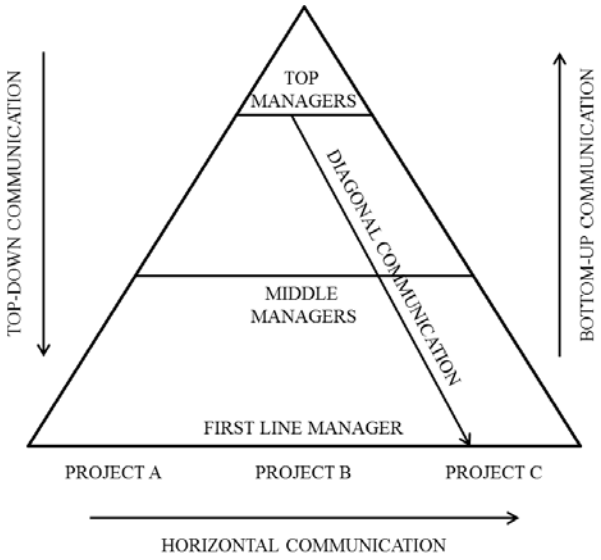

Figure 3. Project communication (source: created by the author)

3.9. Risk management

Each project brings certain risks that need to be identified on time in order to adequately respond to them and mitigate their effects on the successful implementation of the project. There are several approaches to risk management and for the purpose of this article we shall restrict ourselves to the approach to risk management that consists of three phases [13]:

- Phase 1. At this stage project risk management is prepared. This includes determining the categories and sources of risk, defining risk parameters of the project and establishing strategies for project risk management.
- Phase 2. At this stage the identification and analysis of project risk factors are carried out. This includes identifying project risk factors and prioritization of project risk factors.
- Phase 3. At this stage mitigation of project risk factors is carried out. This includes the development and implementation of a plan for mitigating the risks.

4. CONCLUSION

In this paper we dealt with the issues of the application of project management standards ISO 10006 using the scientific method. It is clear that it was not possible to offer a complete concept of project management, so it was restricted to the basic items of

standards without which one could not manage a project in practice and which were connected with definitions from scientific sources. This paper presents the basic guidelines that should be worked out in practice for the purpose of effective and efficient project implementation.

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