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# Use Effective Methods of Project Management Methodology by IPMA the Realization of Investment Projects

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**Abstract.** International Project Management Association is an organization focused on Project management process which is understood as competence field of a Project Manager. The Project Manager is the main person of all the process with responsibility from the beginning to the end of the process. This article focuses on the tools, documents and project management procedures related to building projects and big investment areas. Based on practical experiences it describes the main role of the project managers in terms of competency skills. It refers to bottlenecks of the buildings projects, underestimating the risk management and it includes a short view on process solving with Theory of Constrains. On the end of the article is mentioned a team work as a tool for successful achievement of objectives.

## 1. Introduction

The complexity and gradually increasing complexity of problem solving in a modern and dynamically evolving world has in the course of time required a very specific approach to their management in order to effectively and comprehensively address problems, including all direct and indirect contexts. Already our ancestors in dealing with complex and extremely extensive tasks, such as the construction of pyramids or various ancient monuments, used methods and techniques to help them manage a huge burden and organization. In the thirties, and especially in the 1940s, project management was developed, which was associated with the project manager. This is in particular the period of the organization of large-scale military operations during World War II and its completion. How the world changed, its organization, but especially the nature and complexity of the tasks, where the emphasis was placed especially on time, resources and quality of outputs, the face and structure of project management also changed.

Over time, many techniques and standards of project management have been developed according to the variety of tasks and the environment in which they were created. The main standards of project management include, for example, PMI, IPMA, PRINCE2® and, to some extent, ISO 10 006. Their main differences are the place of origin, the backgrounds from which they were created and the way they were processed. However, the basic philosophy to approach problem solving is very similar and the difference is only in the point of view of the solution area.

PMI is a professional association of companies and individual project managers. It is an American company that creates and maintains the PMBoK® standard. As with the British Standard PRINCE2® and ISO 10 006, this is a process concept of project management issues. Unlike the above-mentioned concept of the International Project Management Association (IPMA) established and managed by the Professional Organization, it is purely competent [1]. Therefore, this standard is not focused on the exact



form of defined processes and their specific application, but on the skills and competencies of project, program and portfolio managers and members of their teams. It is clear, therefore, that the concept and approach to project management by the IPMA organization differs greatly from one another by its concept and approach, although the methods and procedures used are very similar to other project management standards. As a central "figure", IPMA is a project manager who must be able to solve projects in three core competency areas, which are summarized in the so-called IPMA Competence Baseline (ICB). These are competence areas called technical competencies (methods, techniques and tools), behavioural competencies (basically soft skills), and context competencies (integration and contextual competencies). These areas are then subdivided into individual elements that describe in detail individual topics, recommend process steps, define requirements for a candidate for certification, and indicate links to other elements.

## **2. Project manager role**

The competence approach to project management places great demands on the person of the project manager, who is considered to be the leading and most important element in project management. This concept also offers unequivocal assignment of roles and competencies, including responsibility throughout all defined processes. In a building business environment, this approach appears to be inappropriate, but the opposite is true. As in other dynamic fields, the implementation of construction projects is clearly uniquely designed to manage the project approach. It is almost always a new project with new attributes, it is always exceptional and unrepeatable, we always change the state from the initial to the target, we always work with project teams, limited resources and time, interested parties, outputs and, last but not least, risks. The lifecycle of construction projects is very similar to the IPMA approach, with the most important phase in risk management of construction projects being the pre-project phase - the preparatory phase and the project planning phase [2], which is already part of the IPMA project.

The most crucial factors in the success of large construction projects are therefore inseparably associated with risk management, which is still underestimated in the field of building business, and the approach "when it comes, we will solve it" is very often applied here. This is despite the fact that underestimation or underestimation of risk management methods, especially investment risks, are inherently threatened by the failure of the project. Many years of building experience make many people feel that they do not need any project managers to be able to work and manage efficiently, have their building managers and members of the management but they often do not realize that the duties of these highly qualified experts are strictly limited and everyone cannot do everything. There are very clear boundaries between the responsibility of the project manager, building manager and production manager in the construction process. Each of these members is responsible for other outputs, other activities and, last but not least, for performing different activities.

Project manager is an indispensable personality in implementing any project that is to be managed efficiently and well. Its role is indispensable especially when perceiving the wider context of each project. In the case of a well-prepared and planned project, many curious situations cannot occur when it becomes completely binding communication not only between the members of the project team but also among the stakeholders, poor delegation of competencies and responsibilities, non-modification of the project, non-investigation of significant risks, then they have enough space to devote to their actual duties, ie to create the required outputs in the required time, quality and cost, and they often do not have to solve problems that are not their competence.

### **2.1. Investment risk**

Investment risk can be seen as part of risk engineering or risk management [3]. Project management, the core of this paper, deals primarily with risk management and its context. The strategic context of investment risk management includes three core components:

#### **a) Strategic management**

b) Operational management

c) Risk management [4]

The application of risk management in building production is based on:

- "internal needs of the organization" [3],
- External influences (customer, contractors, government, finance, etc.)
- Economic interests of shareholders and stakeholders [3].

In risk decision making it is possible to select and apply one of four basic risk decision strategies [3]:

**Strategy Take**

This strategy implies the factual acceptance of the costs that may arise in connection with the realization of the risk. In theory, risk management is usually known as "zero strategy" [3]. It is decision-making in a situation where the appropriate measures against the risk under consideration are more expensive (or significantly more expensive) than possible future costs associated with the realization of the given risk, or are these de facto negligible future costs de facto negligible.

**Strategy Treat**

This strategy includes, but is not limited to, risk prevention, which is, in particular, the theoretically best way of eliminating risks in relation to risk management in general and investment. Risk prevention can take the form of:

- Design-Build (D / B) orders
- Public-private partnership (PPP) contracts,
- Alliance Partnership
- Other forms of realization of investment projects [3].

**Sub-strategy Test**

In the risk management of investment projects, the possibility of risk assessment is a pilot project usable in connection with the general characteristics of the projects or taking into account the specifics of the investment projects [5], which should be classified as projects with a unique character [6].

**Transfer Strategy**

It is a transfer for consideration to a third party, usually in the form of insurance. [3]. Risk insurability is important. Some risks (such as bankruptcy) are unsafe risks [3].

**Terminated Strategy**

This strategy is one of the limit strategies [3], as it assumes the failure of the end of the project. However, its consequences may lead to a loss of market or reputation, and these impacts need to be carefully considered.

Efficient risk management of investment risk in the case of construction projects is to a large extent conditioned by the availability of relevant information. Crucially, in this case, economic information is both external and internal. Quality internal information requires the dynamics of enterprise and project data [7].

*2.2. Competence and role of the project manager as risk mitigation.*

The position of the Project Manager is specific in that, despite being outside of the hierarchical organizational structure, its responsibilities and powers enable him to significantly influence the course of the contracts and to organize and manage human and other resources across the company on the basis of the competences entrusted. The project manager needs a range of competencies for the success of his / her work, which needs to be set before starting work on the project. Since each construction project is unique, it is necessary to subject this situation to setting the position of the project manager individually.

Also, the structure of supplier-customer relations and financial flows during construction creates the need for individualisation of the competences entrusted to each particular case.

The importance of competences should be understood not only in terms of competences, but also in terms of capabilities and the ability to achieve the objectives. Problem is always the question of responsibility. If the project manager's competence is inadequate, he / she will not be able to influence the processes he / she is supposed to manage and will therefore be difficult to answer for the results achieved. Conversely, if the project manager's competencies are overly extensive without sufficient control, the firm will lose control over the processes and the whole project. In practice, there are examples where an active project manager himself employs competencies he does not have and decides on financial, material and human resources based on his needs and experience. Experienced project manager rarely threatens his / her behaviour, and so it depends only on properly set control processes and monitoring of his / her activities, so that the company does not lose control over his / her activities and has the opportunity to pursue corporate interests.

One of the pillars of project manager's success is a well-established team of co-workers. Human resources as such are always a limiting factor, because their availability is hindered by restrictions on availability. In practice, this means that the project manager must achieve his / her goals with the available staff [8].

Nevertheless, he should be able to participate in the selection of co-workers, and at least half of his team, he should be able to decide on the choice of people himself. It is he who must rely on people and trust them. On the other hand, there is also a company that is interested in places in the project team to fit their people. The company's interest in positioning in a project team is driven by the need to provide professionally competent and professionally adequate human resources, sometimes to employ spare capacity, and in some cases, the occupation of positions in a team is motivated by the need not to lose control of the project and to have an informal channel monitoring the progress of the project. This is not a manifestation of mistrust in a project manager, but about trying to be able to respond to problems before their impact is irreversible.

The project manager's involvement in project budgeting and acceptance is also significant. A project manager is a person who should be able to assess the financial conditions in which they are able to implement the project. You cannot demand budget compliance in a situation where the project manager has no way of expressing his / her level and structure. The right to participate in the creation and changes of the budget should be taken into account by the Project Manager in the description of his / her work and in the contracted competencies.

Each project has to be monitored in three basic planes. In terms of financial, time and factual. The time plane and the timing of the project depend on many factors. The timing of the project affects the internal and external conditions, or changes that occur during the implementation of the project, and the project manager must be able to cope with them. This is related to his right to inform about the project and the right to be informed about the project. The right to inform about the project solves the company's duty to hear the project manager whenever he asks. In practice, this means that if there is any deviation from the expected status of the project, the manager has the opportunity to immediately inform the management of the company or the relevant responsible staff of the new situation and cannot be denied. The right to be informed about the project expresses the obligation of the company to inform the project manager of all company decisions in relation to the project without being obliged to search for this information itself. During the course of a project, there may always be situations when a company reconsiders its plans in relation to the project for a variety of reasons, and the manager has the right to learn about them without delay.

For high quality work, the project manager also needs clearly formulated third-party powers. These include the right to take up work, the right to pick up supplies and the right to convene a team. A seemingly simple act, such as calling a meeting of a project team [9], can be complicated by the fact that some team members are only partially involved in the project and perform other duties within their core workplace. In practice, this means that the formal organizational leadership of the company should accept the inclusion of their staff member in the project team, thus respecting the decision-maker's

priority in the use of the employee's capacities. It cannot be allowed to exert a pressure on the worker to decide on the priorities for whom he will work at the moment, or to retain the decision-making power of his formal leaders. Adverse impacts on project management and its smooth course of dual leadership, in terms of subordination and superiority, would certainly have come to pass.

The right to take over the work done and to express its quality should be an integral part of the project manager's competencies. Regardless of the management style and the leadership of the people, the project manager needs to secure a position that allows him to reject poor work. Similarly, when picking up supplies or material. The project manager must have delegated powers of management to penalize non-compliance with quality and deadlines. Without these powers, it is impossible to blame him for the poor performance of parts of the project.

Besides the necessary competencies within the meaning of the project manager's competencies, it is also necessary to recall the competencies of the sense of ability to achieve the goals. Achieving goals is the central role of each manager and it must be remembered that a manager can achieve goals only through people and through them. This is related to the knowledge and ability to use soft skills in managing the project team. An employee who does not have basic skills such as employee motivation, delegation, or goal definition should not be selected as Project Manager. The project manager is a position requiring stress and load resistance. The project manager cannot be chosen only on the basis of knowledge, skills and competencies, but also his / her personality prerequisites and his / her willingness to perform the project manager.

### *2.3. Basic documents need for successful obtaining objectives*

In the life process of the implementation of the construction projects, including the pre-project phase, where very important decisions are taking place, which subsequently have a very significant impact on the other stages of the project, we distinguish four basic phases. The pre-investment phase (project initiation and definition), the investment phase (project self-planning and implementation), the operational phase and the destruction of the construction work. Each of these project phases is represented by its specific activities and output documents, from the point of view of the IPMA methodology it is a pre-project phase (pre-investment phase), project management phase in the IPMA (start, planning, implementation and termination). From the point of view of the successful achievement of the goal, all the mentioned phases of the project are very important, at each stage we may encounter a problem whose seed was sown in some of the previous phases.

However, strategic documents are already being prepared in the pre-investment preparation phase of the project, in particular the LR, the risk analysis and the documents that respond to the crucial questions when deciding on the implementation or non-implementation of the project. Looking at the optics of building projects is not an important study for us at this time as it solves the question of how to implement this or that investment, but the answer to this question is addressed by top management that fulfilling the goals and vision of society and is fully responsible for these decisions. From our point of view, project managers are very important information about the possibilities of their own implementation included in the feasibility study, which provides all the necessary information for a good decision, whether to implement the investment yes or no and what outputs must be to support the successful fulfilling of the stated goal. For the project manager, as the person who is subsequently tasked with implementing the goal, the feasibility study contains important information about potential project-related constraints, threats, and contexts that could threaten the implementation of the project in the following phases.

An important document describing the various aspects of the project and its strategy is the Logical Framework of the Project (LR), which, in the form of a simple graphical overview using the table, formulates long-term benefits, project goals, outputs, individual activities, time requirements, preliminary costs and the main assumptions of project success. This document is being processed at the start of the project at the latest, but it is much more appropriate to have it on the table already in the pre-project stage, when it is still time to discuss all the important aspects of the project in a wider circle of all involved professionals to produce a meaningful document covering all aspects project. In particular,

the formulation of assumptions can also serve as a very good basis for building a less important document, such as risk analysis. It is strange how this element is very often underestimated or not processed in our country. In construction, we rarely encounter detailed risk analysis, while a well-documented document can help us to prevent the fatal consequences, losses and delays in projects. In addition to the construction industry, a very multidisciplinary field requires careful consideration of all possible risks, especially for large-scale projects, where a large number of subjects participate in many disciplines that are often completely non-existent. The risks here literally "lurk" on every corner.

When we move into the start-up phase of the projects and in particular the planning. So we already know how the strategic structure of the project that the Logical Framework provides should look like. We know what the goal of the project is, what outputs we must produce and what assumptions must be fulfilled. We know all the risks that we can encounter when implementing the project, and these are detailed in the Risk Analysis, so we can proceed to more detailed planning. If it is decided to run the project, it must first be started correctly. This step takes place during the project launch phase, for example, in the form of an opening meeting with the participation of all stakeholders, the project manager and the complete project team. From the perspective of the IPMA® methodology, the document establishing all the rules should be the so-called Project Charter (PC) as a basic project definition document. The project is assigned to a specific project manager and the project team is nominated. Subsequently, we approach the creation of the most important documents necessary for the successful management of the implementation phase of the project, the so-called Work Breakdown Structure (WBS), which is the document of the hierarchical structure of all the work in the project.

WBS is basically a hierarchical breakdown of the project goal into individual deliverables and then to individual products and sub-products up to the level of individual packages that must be created during the implementation. It defines 100% of the total project scope. In terms of the implementation of construction projects, this structure can be derived from the budget structure of the main production budget, where, in essence, the individual activities up to the work packages are detailed, including the costs of individual items and units (ATTENTION, we never set up activities in the WBS). The WBS is very closely linked to time planning when activities are assigned to each product to achieve them, their time consuming, activity-bound and resource-intensive are estimated. The output of the scheduling is a detailed schedule. By awarding resources and adding purchases and sub-deliveries to individual WBS elements, the project budget is also created. We find ourselves in the realization phase and we have clarified what we want to build (the logical frame of the project), what risks (Risk analysis), we know how the project is defined (the project identification sheet), we know what the basic structure of our work breakdown structure, , we know what costs (Project Budget) and at what time (Project Schedule). These core documents, such as the Logic Framework of the Project, Risk Analysis, Work Breakdown Structure, Project Budget, and Schedule, are the most basic and most important documents to ensure the success of the goal. Among these documents we can further include the Stakeholder Register, a register of changes to the project. High-quality documents and documents with resolved interconnections and especially with the treated risks are a basic prerequisite for successfully managing any project not only in the construction industry. The current trend in construction is gradually becoming aware of the importance of organized management of all construction projects using some of the project management techniques. Especially for large construction companies where there could be no clear organization and rules, there is an obvious growing tendency to manage projects responsibly and professionally. Project managers with project management capabilities are gradually becoming an inseparable part of these companies and project management is gradually expanding to smaller projects, which is only good. The individual steps of project management are strongly supported by software equipment in the field of building preparation and execution, which are already on a very high level.

### **3. Results and discussion – building problem problems from the view of effective project management**

The question is, what does "effective project management" mean in the construction industry? Is the construction project successful every time we build the building? Even if a successful project is

successful, it does not automatically mean that it has been well managed. In some cases, the success of the project is mainly due to happiness, improvisation and the exhaustive efforts of the stakeholders rather than the conceptual project management system. On such grounds, it is impossible to build in the future. This relationship is true of course and vice versa, and well-managed projects may not necessarily be successful. However, the probability of success is much higher for well-managed projects.

From a professional point of view today, the construction industry has a range of top-of-the-line support tools in the form of software equipment that enable you to process very detailed and quality underlying documents at all stages of projects, from which you can draw high-quality and accurate information. From the point of view of the support of the expert site of the implementation of the construction problems, the current construction is very good, some information systems can prove to be more universal and able to solve complex projects in one user environment. Given that large investment units (such as EPC projects or large investment units) are implemented with the participation of many participating suppliers, there is a high demand for coordination and communication between individual suppliers.

It is precisely the communication and coordination of a large number of dynamically changing information and a large number of stakeholders that can be classified into managerial portfolio competencies rather than technical expertise. Not always functioning communication, unclear definition of the competencies of individual participants, underestimation of the risk aspects and pulling out of change processes is often a very narrow place of large construction projects. The reason for the emergence of these bottlenecks is not always the ignorance of these situations, but rather the underestimation of some, at first glance, insignificant aspects in a very dynamic environment. From a seemingly insignificant problem, the problem is often difficult to solve over time, with a significant impact on time, resources and outputs of the project. Every project during its lifecycle experiences reversals, changes and crises that need to be addressed calmly and professionally. A good project manager should be prepared for these situations, and during the project, he / she must not forget to continuously monitor project bottlenecks and especially risks. Here is clearly the saying "Who is ready, not surprised", at least not completely surprised.

For good communication across the project team and mainly across stakeholders, the Stakeholder Register and stakeholder register (such as the RACI matrix), these documents must be clearly identifiable, with whom, how often, in what detail and with what strategy to communicate. Underestimating good communication may become a very serious problem for the project, in many cases not only technical. Likewise, only a very well-developed system of registration of changes and change management with links to all interested parties can ensure their smooth implementation and implementation.

#### 4. Conclusions

Due to the broad scope of the construction industry, there are many types of projects with very specific processes in the individual project phases. Many large-scale investment projects have become a battlefield for solving a large number of "multi-criteria problems", so it is clear that the project manager is a key figure in this process. Only because of the multidisciplinary nature of some projects and their interrelationships and the interactions of the individual parts must "bottlenecks" necessarily arise, which need to be identified, analysed and subsequently chosen, as a matter of urgency, to eliminate these bottlenecks. Beware, in this case, this is not a project's risk, narrow places have a completely different character and are treated differently. To identify them, it is necessary to have some experience and "expertise", in which, in addition to "technical competencies", to reveal a particular problem, they apply in particular behaviour skills, i.e. to see the danger ahead, based on experience, estimation and inner sentiment. Many methods can be used to detect them; one of the most sophisticated and long-lasting methods of testing is TOC (**Theory of Constraint**), which is based on the **Critical Chain Method** (CCM).

This analytical method is used, respectively. has been developed especially for the manufacturing and process environments where it seeks limitations in terms of defined goals, identifies the narrowest



branch of the system, especially the process or power flow. With a good knowledge of the process flow of information, materials, outputs of a construction project, this analytical approach to the detection of bottlenecks or to bottlenecks can be used efficiently in building projects as well. In the case of the IPMA® methodology, for example, based on all the necessary documents (logical framework, WBS, timetable, stakeholder register and in particular experience from previous projects of a similar nature), it is possible to analyse the overall situation very well and to identify bottlenecks and in advance to identify and provide remedial action to remove these bottlenecks. This process is similar to project risks being monitored throughout the life of the project cycle as with dynamic changes in projects, bottlenecks as well as risks can be shifted over time depending on the development of the project.

With a very varied range of construction projects, we can find various bottlenecks in projects, although in modern practice of project management, we try to avoid these bottlenecks by the process steps and the competencies of the project managers of their occurrence already in the initial stages of the project. But it is not entirely out of the question that even a very well prepared project is burdened with these weak points only during its implementation. This is mainly due to changes and subsequent consequences to different parts of the project, typical changeover procedures during the project may be a typical bottleneck. Particularly large investment units, where there are many changes and modifications during the implementation, both on the initiative of the investors and on the initiative of the suppliers, are burdened with a large number of changes that need to be closely monitored in the context of the whole project, especially in the context of costs, and updating all required project documents. In general, as with risks, we try to prevent the creation of bottlenecks in projects and, in the event that they appear, the rule is that "who is ready is not surprised".

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