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ADVANCEMENT OF PROJECT MATURITY OF CONSTRUCTION COMPANIES

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Abstract

The article presents a problem of project maturity of construction companies. They were analyzed by their ability to execute construction investment projects. Survey results refer to issues related to the organizational culture and challenges connected with an improvement of the processes of project management for construction. It was revealed that a success of the company is connected with an increasing level of project maturity as a condition for a successful project management.

Introduction

A specificity of the construction as a unique industry evokes a necessity for considering construction investment projects with paying special attention to their attributes that have various origins.

There are many approaches to defining the concept of the "project". Trocki et al. define projects as unrepeatable processes, of high complexity, specified in terms of period of their realization, with the distinguished beginning and end, requiring engagement of considerable but limited means (property, human and financial ones). They are realized in teams by a team of qualified specialists, representing different branches of science (interdisciplinary) and connected with high economic risk and requiring the application of special preparatory methods and realization [10].

In terms of considerations about projects, realized by the enterprise, one can accept the definition by R. Max Wideman: "project is an original undertaking creating the supply of a new product (good or service) with set expectations. Projects are typically limited by limited resources" [11].

So under the term of *project management* one can understand all the activities connected with the preparation and decision-making about the realization of projects.

According to Pawlak, project management does not refer to activities, which are directly associated with the realization of the undertaking – especially with specialized aspects of its solution, but the management of the problem-solving process. The *problem* one can term as both being a pending danger and occurring chance and also unsatisfactory situations and favourable in the course of realizing the project. Project is an original undertaking, aimed at solving a particular problem, taking an opportunity or fulfilling some other business requirements. By participating in a project we want to achieve a specific, detailed goal, in accordance with a time schedule (start and end dates) and using particular resources (including a project budget). In order to implement an idea which can be organized in a project, we need to coordinate a series of interrelated actions of all project stakeholders. A project, implemented by certain parties, exists in a specific market and process environment which communicates with more distant environment (the so-called outside world) [9].

In order for organisations to survive in the turbulent circumstances and remain competitive with this ever changing (and shrinking) workforce, they must adapt their human resource management practices to meet the needs of the up and coming generation of workers. Fighting this change will only make business less competitive in the long term.

Project management

The process of managerial project management usually includes successive phases [2]:

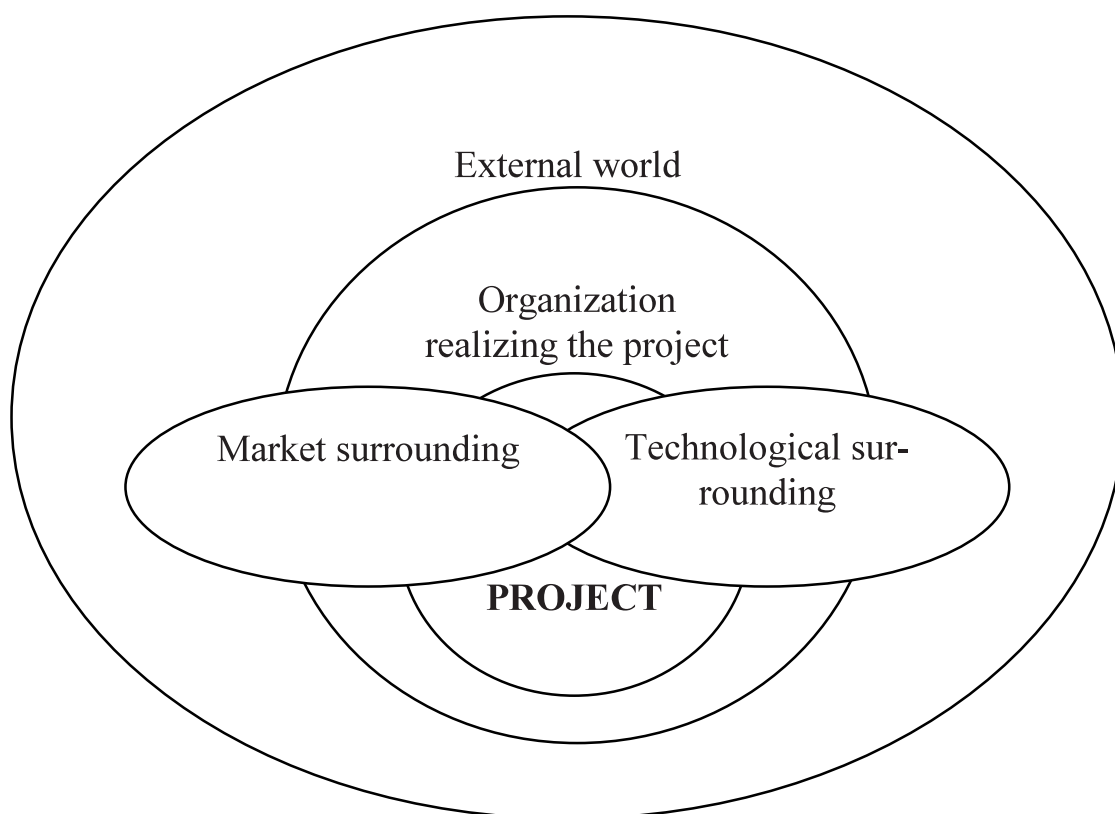
- 1). **concept phase** (initial identification of problems connected with the realization of the project, making a decision about joining the project, appointment of the project manager).
- 2). **preparatory phase I – pre-agreement planning** (start of the planning of the course of the project, appointment of the core team – project implementers, who plan action indispensable for fulfilling set requirements and negotiating the contract; the phase finishes by signing the contract).
- 3). **preparatory phase II – post-agreement planning** (project manager along with the team prepare details of the plan of the project and elaborate a detailed, integrated, basic plan of the project).
- 4). **realization – implementation phase** (team, led by a project manager, realizes the program of the project according to the basic plan).
- 5). **final phase – control and overview of the project** (project manager finishes the project internally and with the client; completion of

the whole documentation and submission of respective elements to the care of proper units; doing an overview of the whole project and formulation of conclusions – experience for next projects).

The management of undertakings of a project character (project management) uses system solutions, i.e. cost management and risk management.

Project is the undertaking realized by specific entities, is placed in a concrete environment: market and technological surrounding, contacting further surrounding (the so-called external world) (figure 1).

Fig. 1. Scheme of the project environment



Source: according to [12]

Mapping problems in the project can be helped by consideration modeled on the SWOT analysis, done in a dynamic way in all the phases of the project.

Time of the classic approach to project management has almost finished, during which scheduling and budgeting played the most important role. New concepts underscore the leading role of the human factor – the capability to communicate and work in a team.

The proponent of using “soft” aspects of management, R. W. Darnall underlines that orientation toward people is a condition of the considerable improvement of effectiveness in projects. It is also important to concentrate on the aims of the project, and not on the efficiency of processes. Solving the problems of quality in projects is included in the idea of Total Quality Management (TQM). The next problem is the susceptibility of the effects of the managerial project to the compression of time. Time criterion is often understood in such a way for the shortening of the time of realizing tasks within the managerial project to be a success. However, one should notice that firstly such a shortening is usually costly, and secondly not always the recipient of the effects of the realization of the project is interested in the maximum approximation of the deadline of the task. Thus the idea “just in time” should lie at the bottom of formulating the concept of reliability of managerial projects [4].

Seven basic principles of project management, formulated by R. Max Wideman correspond to the above-mentioned concepts [11]:

- I. The Commitment Principle referring to honest relationships between the supplier of resources (called the owner or sponsor of the project) and project team (supplying the product of the project), during the whole lifecycle of the project. It results from the fact that both sides take some risk. The principle of mutual, equal commitment is not possible without understanding risks accompanying the project – also accompanying the given technology (technological risks).
- II. The Success Principle underscoring that the measures of the success of the project, in both process and product terms, must be defined at the start of the project, as the basics of making decisions in the course of project management and serving the assessment of the project after its finalization. Definition of the measures of the success of the project is especially important on account of the fact that usually the owner of the project is interested in benefits from the product, while employees belonging to the project team are interested in benefits resulting from the realized processes. The accepted measures of success enable to focus on the aims of the project and constitute the reference basis for correcting discrepancies in the project.
- III. The Tetrad Trade-off Principle indicating that four variables of the core of the process of project management: scope of the product, degree of quality, duration of production and total cost of the realization of then project task, must be mutually dependent and

achievable. The principle is an extension of two first principles and enables their fulfillment.

- IV. The Strategy Principle describing the strategic approach to realization of the strict set of successively increasing phases: first planning and then execution.
- V. The Control Principle says about the need for applying effective and efficient policies and procedures for project management and control of commitments in the project.
- VI. The Single-Point Responsibility Principle meaning that there must be a single communication channel between the sponsor of the project and the leader of the project team in terms of all decisions about the product.
- VII. The Cultural Environment Principle which underscores that managers must satisfy information needs and support cultural environment to ensure that the project team should be able to work as best as possible.

Attempts at describing uncertainty are limited to specifying risks in the project. Projects are made of processes, which are a series of successive action, enabling to achieve the set result. In projects one can distinguish two categories of processes:

- processes of project management, which are oriented toward describing and organizing work in the project realization. They are applied to most of the projects.
- processes oriented toward products – to create a specific good or service. They are defined by the lifecycle of the project and differ depending on the industry.

Project maturity idea

Maturity can be defined as a quality or a state of being mature. If a concept of maturity is applied to an organisation it may refer to a state where an organisation is in a perfect condition to achieve its objectives. Consequently, project maturity can mean that an organisation is perfectly conditioned to deal with its projects. It seems to be quite obvious to talk about a certain degree of maturity and make an effort to measure or characterise the maturity of the organisation because fully matured organisation is just a theoretical concept [1].

It is worth to emphasize that construction projects are complex and are associated with many uncertainties. According to some papers, these uncertainties come not only from the unique nature of the project, but also from the diversity of required resources and activities. In general, they

lead to a risk (what was noticed previously) in achieving two main objectives (schedule and budget) what might cause conflicts between owners and contractors where claims arise [6].

A narrower concept of project maturity is presented by some other scientists. For example, maturity of risk management in large-scale construction projects and therefore models based on this phenomenon can effectively help organizations to understand the level of current practice in terms of their capabilities in risk management, as well as their strengths and weaknesses towards future risk management practice, in order to take appropriate actions to improve their risk management performances [8].

Since project management became popular and some PM methodologies were created and introduced into public, companies have been trying to understand their capabilities in project management and improve their procedures in accordance with the strategy and economic objectives.

Directions of development of project maturity

Supposedly, as soon as modern managers of construction companies are able to profit from maturity of project, the companies will reach a competitive advantage so useful in turbulent economic environment.

Literature review recalls an explanation of the project maturity origins. A predecessor of this concept was process maturity created by Total Quality Management movement. A need for process maturity resulted from the efforts to reduce variability in the process and to improve its mean performance [3], [5].

According to Deloitte's report, "construction companies rate the maturity of construction project management relatively high, and therefore a great number of organisations are well prepared for worsening market conditions" [8].

Deloitte's researchers examined in 2012 all answers received from thirty nine polish construction companies that operate countrywide. Those companies were classified by three factors: revenue generated in 2010 in PLN, capital origin and presence on the Warsaw Stock Exchange.

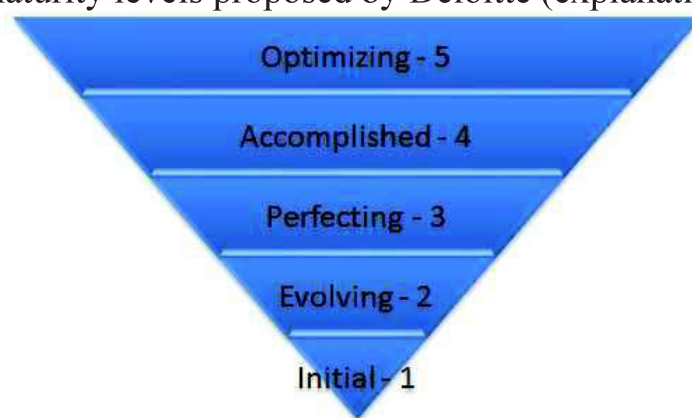
Organisations that participated in the survey were asked to indicate a maturity level for thirteen project management knowledge areas (according to the PMBoK methodology), i.e. Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Human Resource Management, Project Communication Management, Project Risk Management, Project Procurement Management, Project Environmental Man-

agement, Project Financial Management, Project Safety Management, Project Claim Management.

According to the report, a concept of maturity refers to the comparative level of advancement that an organization has regarding any given activity or sets of activities. Organizations with more fully-defined and actively used policies, standards, and practices are considered more mature than the others.

All respondents indicated one out of five maturity levels described below for each knowledge area (figure 2).

Fig. 2. Five maturity levels proposed by Deloitte (explanation below)



Source: own elaboration based on [8]

“1” (Initial) is a level featured by lack of standards or formal processes. “2” (Evolving) describes a level where some projects have developed best practice processes based on industry or consultant input and these processes are followed. However, the process is not routinely shared off project and has not been identified as standard. “3” (Perfecting) is a maturity level in which the organisation is developing its own best practice standard and centrally controlled project management processes. “4” (Accomplished) means that best practice process has been developed and rolled out across the organization. “5” (Optimizing) – the highest level of maturity – describes that a best practice process has been rolled out across the organisation and is being used on every applicable project. Project managers understand well the process, any problems that occur are resolved, and project feedback is provided on process improvement. In addition, the process has been optimized based on project feedback and on knowledge of industry best practices [8].

It is worth to underline that according to the Deloitte’s report, overall result of the level of the construction project management maturity in

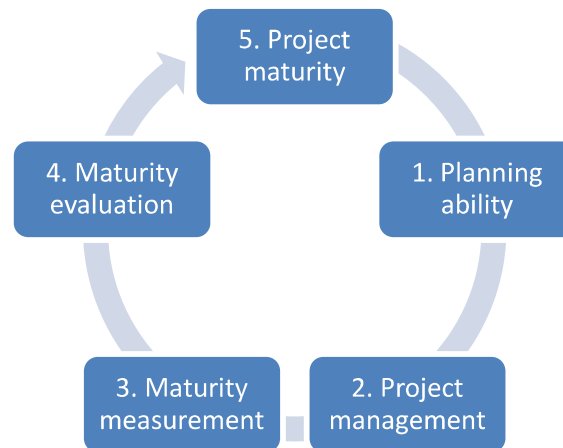
Poland is 3,50. The indicator is calculated as a weighted average of values (namely maturity levels from 1 to 5) scaled by their importance (percentage of respondents selecting proper answer). Moreover, the indicator value of 3,50 implies that researched companies rate their project management maturity between a level of “Perfecting” and the level “Accomplished” (explanation above).

The most significant discover is the surveyed companies seem to be perfectly conditioned to deal with its projects and therefore display the highest degree of maturity in terms of the Project Safety Management area. Whereas three other areas: Project Quality Management, Project Procurement Management and Project Financial Management are also featured by high level of maturity achieved by the construction companies (92% and more respondents selected at least ‘Perfecting’ level), those companies consider themselves as less capable to deal with ‘Project Communication Management’ - 24% respondents marked Initial or Evolving level of maturity. The most reasonable conclusion of the survey results might be that companies try harder to develop their capabilities in terms of those areas that are officially introduced into law regulations. Occupational safety and health regulations, public procurement law, standardization like in particular quality standards (e.g. ISO) or some accounting regulations make companies to improve their current practice (procedures, behaviour etc.) and at the same time it gives them an opportunity to develop their maturity in these areas [5].

Large-scale construction projects such as skyscraper, hub airport and rail network involve complex interfaces, varieties of stakeholders and integration of materials and technologies, which incur uncertainties and associated risks. It has always been critically important and challenging for major stakeholders such as clients and construction contractors to successfully manage the risk in those projects. Large-scale construction projects are practically always connected with risk factors that generally lead to adverse impacts and costly consequences in project management [1].

In the improvement of the project's maturity of the construction companies should envisage the 5 steps indicated in figure 3.

Fig. 3. Cycle diagram – a five-step model of continuous improvement of project maturity



Source: own elaboration based on [7]

Conclusions

As a matter of fact, project managers in construction industry should adapt to new constraints by choosing a right way to change the organization. Managers should understand a sociological background affecting employees' behaviour and then they should learn how to promote and foster some important opportunities (e.g. professional growth and development, work-life balance, variety, social interaction, responsibility and input, reward and recognition) in all aspects of the employee life cycle.

On the basis of some previous findings about project maturity, there is no doubt construction companies should try to improve their ability to manage projects. A need for improving a performance and perfecting the risk management can be a reason for creating a five-step model of continuous improvement of project maturity. It might be a solution for the companies to engage them into a constant pursuit of maturity. Indeed, it is a pursuit because as it was described before fully matured organisation is just a theoretical concept.

Construction investment projects consist in spending money on creating new or additional assets that a company intends to convert into future benefits. A typical goal of this kind of projects is to build/construct, renovate or improve a building or an infrastructure that is a result of the project. Due to a scale of the construction project, its physical dimensions and therefore a long-term work that occurs in one location with a duration of, on average, more than one year, management should be careful about

achieving project's goals that are prone to error caused by poor project planning.

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