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Organisational Innovations in Crisis Management of Project-Based Enterprises

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***Abstract* – Organisational innovations and crisis management have a lot in common. Crisis may come in many various forms. It can be a result of economic slowdown or recession influencing the industry and, therefore, some of its organisations. However, firm disaster can be a result of wrong management decisions or unexpected events. Each form of crisis has its own causes, which influence the company in a number of ways. The main objectives of the paper are to describe the nature of crisis management in project-based enterprises and to define the scope and role of organisational innovations in it. The conducted research shows that the organisational innovations are the crucial elements of crisis response strategies. Applying organisational innovations, the entity can gain short-term benefits because they aim at improving the flexibility and adaptability of the company and the supervision of the running projects.**

***Keywords* – Crisis management, organisational innovations, project-based enterprise.**

I. Introduction

The contemporary enterprise environment is changeable and little predictable. Additionally, the high level of competition among project-based companies increases the clients' expectations regarding time, quality, budget, and scope flexibility during the project execution. As a result of the above-mentioned conditions, a lot of entities balance between sustainability and unsustainability. In order to avoid deterioration, the organisation should constantly implement the concept of crisis management. In the above-mentioned conditions, the use of risk management that is one of the most frequently implemented instruments supporting the company operation seems to be insufficient.

The main objectives of the paper are to describe the nature of crisis management in project-based enterprises and to characterise the scope and role of organisational innovations in it. The research subjects are the entities that execute various projects for external clients. It is the core business of the companies, the main part of operation activity. The examples of project-based organisations are as follows: IT enterprises, construction companies, shipyards, custom-made machinery manufacturers etc. The project-based entities have their own characteristics. They need particular approaches regarding organisational framework and supporting management tools.

The studies of project-based organisations have been conducted by a number of researchers (Söderlund, 2008). However, there is a gap related to the role of innovations in crisis management. The issue is important because we can observe the increase of uncertainty in the environment. The fluctuation of the economy becomes unpredictable and influences the organisation in various ways causing development or deterioration.

The assumption of the paper is the statement that the organisational innovations are the crucial elements of crisis response strategies of project-based organisations and should be designed and implemented at least since the crisis hits the entity. Organisational innovation in a broader meaning could be defined as an implemented change, adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organisation (Damanpour, 1991). In a narrower meaning that dominates in the manuscript, organisational innovation is a change connected with organisational framework, or working (organisational) methods. To sum up, these can be changes in business practices, in workplace organisation or in the firm's external relations (OECD & Eurostat, 2005).

The issues presented in the paper are significant from theory and practitioners' point of views because the crisis of an enterprise defined as a decrease of strategic position in the market affecting the deterioration in economic situation of an entity may come in many various forms. It can be a result of economic slowdown or recession influencing industry and, therefore, some of its organisations. However, firm disaster can be a result of wrong management decisions or unexpected events, such as earthquakes, fire or flood. Each form of crisis has its own causes, which influence the company in a number of ways. It requires the introduction of different innovation types: product, technology, organisational, marketing (Marciniak *et al.*, 2015). The paper describes the organisational one.

II. Research Methodology

In order to verify the presented assumption and achieve the paper objectives, the research was conducted in the following steps.

First, the influence of business cycle on the economic position of project-based companies (thereof sustainability) and the fluctuation of innovation expenses (investments) in various types of entities were analysed. The presented conclusions were drawn on the basis of statistical analysis of correlation between an economic cycle and investment expenses performed for Polish economy in the period of 2000–2013 (Marciniak *et al.*, 2015), literature review, and indirect observation of research subjects since 2008 (done by the authors of the paper).

Next, selected research findings in the management literature related to risk and crisis management in general and project-based enterprises in particular were described and confronted with business practice. The analysis of main determinants and means was performed using the project-as-practice and traditional approaches.

The results of literature review and findings from previous steps of the research were compared with the selected examples (case studies) of crisis response strategies of project-based enterprises. The analysis of crisis response strategies was performed among construction companies (general contractors) operating in Poland in the period of 2008–2014. In the study,

our own direct observation and information from management board reports of research subjects were applied. Research sample was selected from well-known general contractors in the Polish market listed at Warsaw Stock Exchange due to availability of the data and information.

III. Relationships between Business Cycle and Sustainability of Project-Based Enterprises

The economic crises lead predominantly to: fall in demand, high unemployment rate and often bankruptcy of many companies. It is a stage of economic cycle that can be divided into recession, trough, recovery and peak. The background of economic crisis has been examined by many researchers in the field of economic science (Keynes, 1936), (Marx & Engels, 2013), (Minsky, 1986). From a business point of view, crisis is an "unexpected event in an organisation's life, for which there are no contingency plans in place, which threatens high priority goals and demands a time pressure response" (Loosemore, 1998). It should be emphasised that "crisis does not discriminate – small companies or large, specialised or general, each sees its demise at some point" (Hällgren & Wilson, 2008).

Economic crisis can have the potential to disrupt or affect the industry, entire or selected units of organisation. In general, it does not know the boundaries of countries, regions, economic sectors, and the enterprises. Contemporary economy constitutes a network of countries, international corporations, other companies, and a lot of institutions that have built very strong financial links with each other. It affects the increase of uncertainty and unknown environmental conditions of running business. Prediction for the future is becoming much more complicated than in the past, and sometimes even impossible. The above-mentioned process has intensified since 2008, when the national economies in the US and Europe experienced the fiscal-financial crisis (Krugman, 2013). The recent economic crisis differs in intensity, duration, and the underlying mechanism that we know from previous ones. The reason is that many phenomena appear simultaneously (Kołodko, 2013, 54) because of deeply advanced globalisation processes. Additionally, the correlation between these aspects is strong but not yet fully examined. These aspects have macroeconomic and microeconomic backgrounds. The huge difference between the crises of the years 2008–2013 and others (e.g. Dutch Tulipmania in 1637, South Sea Bubble in 1720, Wall Street Crash in 1929, or Asian Financial Crisis in 1997) leads to a conclusion that, on the one hand, we should know the economic theories of crisis and history of activities regarding past depressions, on the other hand, we have to analyse the current one in an independent way.

A number of researchers have conducted studies on the topic of recent economic crisis. They examined especially: prime factors, which triggered the crisis (Lounsbury & Hirsch, 2010), general conditions of the crisis regarding the economic theories (Balcerzak, 2011), sociology of crime that constituted the background of crisis (Deflem, 2011), and various consequences of the present global crisis for the world society (Suter & Herkenrath, 2012), thereof the mutual influence of economic crisis and innovations. General conclusion of the mentioned research is that managers, before implementing recovery actions in organisations, should recognise an environment, especially factors affecting the industry and company, and design the recovery actions. Since an economic crisis may affect especially the financial position of enterprises, the response actions should cause a lot of changes in a short period of time. However, the sustainability of a company could be threatened by internal factors as well (Fig. 1).

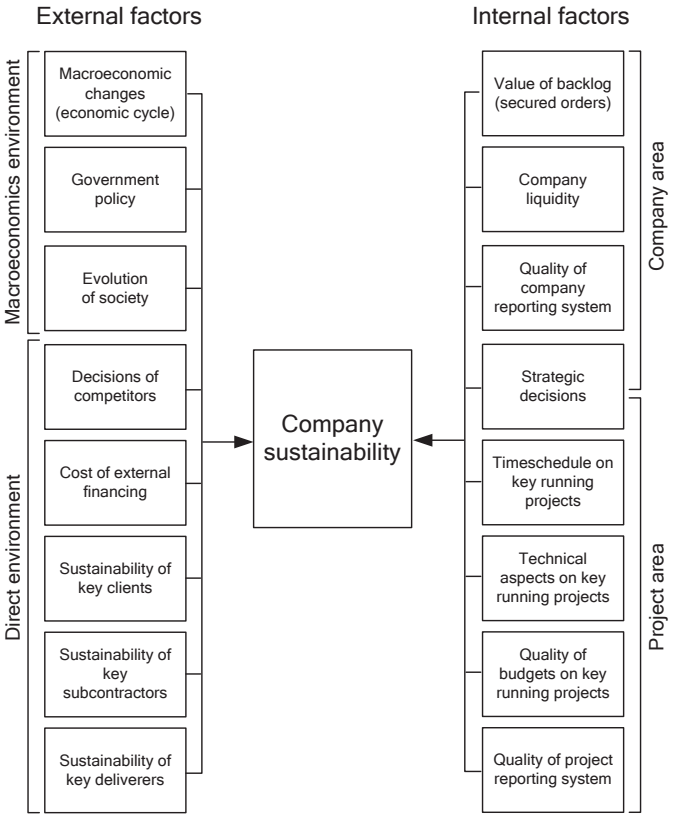

Fig. 1. Major sources influencing the sustainability of a project-based company (developed by the authors).

The economic crisis, one of the crucial factors influencing company sustainability, causes predominately slowdown in production due to reduction of demand, and may lead to recession. It does not mean directly that the problems on the industry or organisation level will occur, but they may. However, the likelihood of disaster increases significantly comparing with other growth phases of a business cycle. Many entities, in order to avoid lack of liquidity or sharply decrease in profitability, postpone or cancel their investments, cut costs of advertisement and consulting.

The conducted macro analysis of changes in GDP and investment outlays (Fig. 2) shows the positive correlation between them. From 2000 to 2013, two main different trends could be observed. The first one, finished in 2006, was associated with economic growth and resulted in a high increase in private and public investment. Polish economy underwent the development phase, and the assessment of market conditions was very positive. The second one, connected with worldwide fiscal-financial crisis, hit investment outlays. The presented analysis shows that total investments are very sensitive to GDP changes.

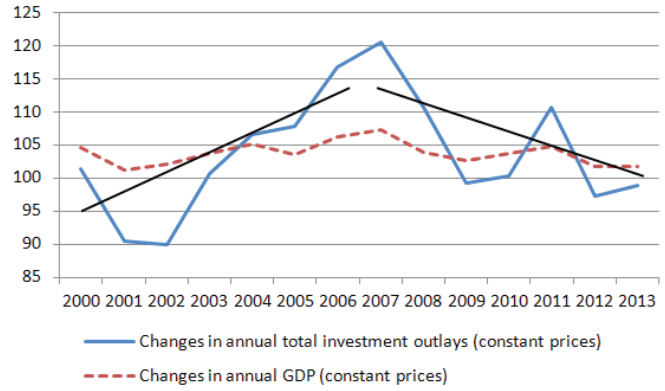

Fig. 2. Comparison of changes in GDP and investment outlays in Poland (Marciniak *et al.*, 2015).

Project-based companies that are executors of investments or providers of advertisements and consulting services are affected by the above-mentioned changes in a different scope and time, depending on the organisation type (Table I).

Some project-based enterprises (e.g. construction or machinery manufacturers) experience the economic crisis partly with some delays but mostly with double force (more than non-project organisations). The above-mentioned time-lags are mainly related to long duration of PLC (Project Life Cycle) that dominates in object investments. Lack of new investments influences predominantly the company backlog for next years and decreases the amount of turnover in the future. In such conditions, managers have to prepare the company for worst time by introducing crisis management (Mallak, Kurstedt, 1997), thereof design and implement organisational innovations. The process should "ensure that the project team is capable of addressing crises and has appropriate system in place to predict and cope with excursion from the project plan" (Anderson and Merna, 2003), and company managers have a clear idea how to apply the recovery actions. It is a difficult and complicated process because there are many factors, which weaken the market position of companies that needs to be strengthened.

On the other hand, during a regular operation on the market, all organisations face many threats that are related to risk, uncertainty and unknown conditions of an environment. They can be related to many unexpected events that may have been predicted (or not), but are not expected to happen in the future (Geraldi *et al.*, 2009). Crisis of a company can be a result of insufficient management as well. Wrong decisions taken by managers are the crucial issues in project-based enterprises. In most cases, a crisis is a shock for them. It is shock waves sent through company systems. For managers it should be important to know how these shock waves affect individual parts of an organisation, what they and employees can do in preparation for, containment, and recovery from crises, as well as in repairing operational systems (Kahn *et al.*, 2013).

To sum up, the normal operation of the company, when there is no information about serious threats to enterprise sustainability, needs the implementation of risk management to control the risks they are, or might be exposed to (Akintoye & MacLeod, 1996). It should be emphasised that there is an enormous drive and enthusiasm to implement risk management principles and methods in organisations, and international standards provide guidance on the way to proceed (Aven, 2012). However, in the situation of possible direct threat to company sustainability, the crisis management concept should be implemented. In the above-mentioned case, risk management is one of the instruments supporting crisis management.

TABLE I

Influence of Economic Slowdown/Recession on the Selected Types of Project-Based Entities (developed by the authors)

Type of project-based entity	Core business	Highly possible scope of effect	Highly possible time of effect after economic crisis
IT enterprise	Implementation of IT software	Decrease in the number of IT products implemented / upgrades in the companies – cancelations or postponements Decrease in the value of IT products implemented / upgrades in the companies – postponements	Generally in the short or mid-term
Construction company	Construction of building and engineering objects	Decrease in the number of new object investments – cancelations or postponements Reduction of scope of running projects Suspension of running projects	Decrease in the long term (due to long PLC) Reduction and suspension in the short term
Machinery manufacturer	Manufacturing of high-value custom-made machinery	Decrease in the number of new object investments – cancelations or postponements	Decrease in the long term (due to long PLC)
Research and development centre	Design and development of product and technology innovations	Decrease in the value of expenses on a long-term project in the first or mid-term stages of execution – slowdown Suspension of new projects in the first stages of execution	Generally in the short term
Entertainment industry	Organisation of social events	Decrease in the number of events – cancelations Reduction of scope of events	In the short term
Consulting company	Providing consulting services	Decrease in the number of consultancies related to development, especially in sectors deeply affected by the crisis Increase in the number of consultancies related to the design of crisis response strategies	Generally in the short term, but it is less affected than the other types of project-based companies
Advertising agency	Design and management of marketing campaigns	Decrease in the number and value of marketing campaigns – cancelations or postponements	In the short term

IV. Organisational Innovations in Crisis Management

Crisis requires the reworking of previously established and standardised procedures/norms to adopt to new market conditions, using existing organisational theories (Dynes & Aguirre, 1979). Economic crisis calls the enterprises for many changes in organisational and strategic activities, e.g. in financing strategies, competitive positioning, innovation, scaling of production (Foss, 2010). These changes could be divided into five groups of efforts: strategic, technical and structural, evaluation and diagnosis, communicational, psychological and cultural (Pauchant *et al*., 1991). Successful crisis management should refer to communication and information flow, the exercise of authority and decision-making, and the development of co-ordination and loosening the command structure (Quarantelli, 1988). These are important, because a company crisis is especially caused by organisational problems and lack or late adaptation to a changeable environment. The response actions in times of crisis should bring about the fastest feedback possibly. The first reaction should prevent farther deterioration of a company and avoid coming from the first to next stages of company crisis (Fig. 3). It is important because in the second stage of the crisis the company does not pay all its overdue liabilities and decreases the production capability, selling first manufacturing assets. Business partners lose trust in the company that results in decline of new orders, increase of costs of external financial capital and price of purchases (material, equipment, subcontractor services etc.).

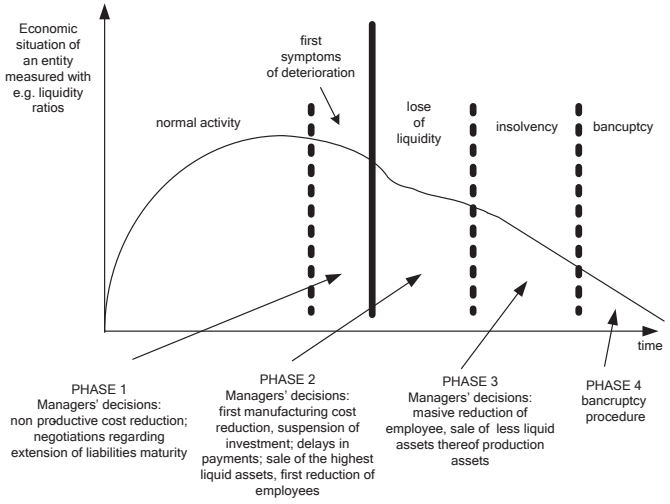

Fig. 3. Stages of company crisis (Marciniak & Głodziński, 2009).

Investigating the examples of recovery actions taken by managers, concentration on psychological, social-political, technological-structural, and economical aspects may be observed. The "effective crisis management involves minimising potential risk before a triggering event. In response to a triggering event, effective crisis management involves improvising and interacting by key stakeholders so that individual and collective sense making, shared meaning, and roles are reconstructed. Following a triggering event, effective crisis management entails individual and organisational readjustment of basic assumptions, as well as behavioural and emotional responses aimed at a recovery and readjustment" (Pearson & Clair, 1998). In this sense, crisis management could be understood as disaster management or emergency management (Larson *et al*., 2009).

Some authors explain that crisis management represents a more reactive scope of activities, which focus on the situation after crisis has occurred (Jaques, 2007). Before crisis management, the managers have to implement issue management that looks into the future to identify potential trends and occurrences that can especially negatively influence an organisation. The presented proactive actions should prevent in a long-term period negative impact of environment on the company. However, the company needs the implementation of reactive steps that can benefit in a short-term period. Despite the definition of distinction, the most important activities should be the ones related to widely understood crisis management: crisis preparedness, crisis prevention, crisis event management, post-crisis management (Jaques, 2007), (Larson *et al*., 2009), (Pearson & Clair, 1998).

In the literature regarding a project-as-practice approach, the research on communication inside a project team and other project stakeholders was conducted, and crisis response strategies on exchange information were created (Ki & Brown, 2013). In general, the project-as-practice approach is one of the fastest developing research streams in project management. It focuses on activities that comprise the project work, social and other embedded aspects of project organisation (Hällgren & Söderholm, 2012). The approach is concentrated on a bottom-up study, observation what people really do, analysis of community activities, inter-organisational and extra-organisational issues, building an understanding of management problems into communities and intertwined practice (Blomquist *et al*., 2010). Owing to the above-mentioned characteristics, it is very useful for the analysis of interaction between the project and crisis management. Therefore, the project-as-practice approach underlines the crucial role of organisational innovations in crisis management, from the operational and strategic point of view.

However, the traditional approach shows a lot of recommendations to project management in times of crisis. It focuses on organisational forms, routine, leadership style and development of the management methods. Many of them can support managers in crisis conditions. Most significant methods include risk analysis, contingency planning, logic chart helping with the design of crisis procedures, tabletop exercises, early warning system based on critical indicators (Mallack & Kurstedt, 1997).

Crisis management in project-based companies has mainly been evaluated from the organisation theory. As a result, the organisational changes are significant in the company restructuring process. In project-based companies, the managers should always anticipate a negative influence of external factors compared i.a. with the nature of a project life cycle, characteristics of a project type, and the organisational framework of an entity. But at the same time, due to equal mechanisms, during project planning and especially project execution, additional opportunities may appear (Hällgren & Wilson, 2008), (Kahn *et al*., 2013).

In regular operation conditions, the innovations in project-based companies involve developing new or improved services for current or prospective customers, or developing new technologies that can be used to solve clients' problems better

than existing technologies (Blindenbach-Driessen & Van den Ende, 2006). The presented innovations directly support core business of the researched organisations and help increase the strategic position, to be more competitive. However, the PLC of, e.g., product innovation, especially design and diffusion, is quite long, expensive, and may benefit with time-lag. Therefore, they should not be the first line response activities under crisis conditions.

V. Organisational Innovations: Case Studies of Construction Companies

The macroeconomic analysis of changes in GDP and innovation expenses in Poland performed between 2008 and 2014 showed the slowdown of economy and construction industry (Głodziński, 2015). A lot of enterprises cancelled, reduced, or postponed the object investment. The number of company bankruptcies increased significantly. In the above-mentioned conditions, the entities had to apply a crisis management concept that consists of operational and strategic actions (Fig. 4).

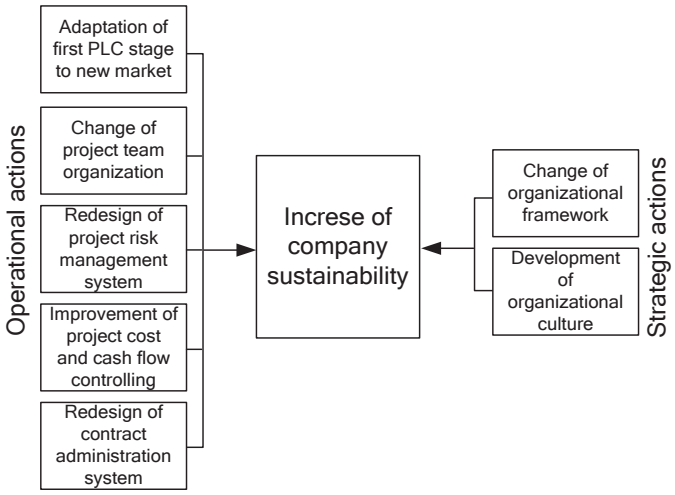

Fig. 4. Examples of organisational innovations under crisis conditions (developed by the authors).

In order to explore these actions, the qualitative research process in the years of 2008–2014 was conducted. The research subjects were large companies operating in the Polish market and listed at Warsaw Stock Exchange. The research main parts were direct observation of one of general contractors being an international company, studies of professionals' sector press, analysis of management board reports published on the Internet (research sample: 10 enterprises), and analysis of case studies published in scientific journals. Next, the scientific induction was conducted to show the most frequent organisational innovations.

The operational innovations should improve the economic situation of the organisation in a short period of time. They have to protect against farther company deterioration (transition to next crisis stages). Strategic actions should implement the changes that ensure sustainability in a new environment.

The study showed that operational innovations were mainly related to:

- Adaptation of the first PLC stage (prequalification and budget offer preparation) to new market conditions that are characterised by high completion and uncertainty. The main elements of innovations were new procedures regarding preparation of budget offers, and a new acquisition process supported by IT tools. The employees were trained in reading contracts written on the FIDIC (International Federation of Consulting Engineers) procedures, negotiation techniques with private clients, qualitative and quantitative methods of risk assessment, and project calculations.
- Change in project management team organisation (mainly in the execution of PLC) to be more flexible and informed. The innovation was focused on increasing flexibility, improving an information flow and cooperation with service departments of the company (e.g. risk management, controlling, and procurement).
- Redesign of project risk management system to contain a procedure of risk maintenance, appropriate supporting IT tools (including a risk matrix and more complex risk & chance checklist), and inform a project team and company management without delays about project threats and opportunities. The activities in that field had to improve the anticipation of unexpected events (e.g. bankruptcy of deliverers and subcontractors, delays in subcontractors' work progress, changes in design documentation) that could not be predicted in earlier stages of PLC due to complexity and other characteristics of construction projects.
- Improvement of project cost and cash flow controlling. The innovations were related to the development of controlling methodology and upgrade of supported software. The main objective of the activities was to increase the supervision of material purchase, ordering works to subcontractors, invoicing, incoming payments, and supervision. The controlling process was developed to provide project and company managers with additional information without delays.
- Redesign of the contract administration system by putting more effort during project execution into monitoring all changes in the contract and preparing necessary documentation evidencing changes in the project.

The research showed that strategic innovations were mainly related to the change in the organisational framework and development of the organisational culture. The first group of innovations included:

- Selling some units (parts of organisation) that were not the elements of a company value chain. The purpose was to concentrate only on valuable operations where the company has sufficient knowledge to be competitive.
- Removing or merging the units / departments that do not provide enough added value (are expensive but the benefits for an organisation are not sufficient).
- Reorganisation of the company to a lean structure that enables faster decision-making and decreases disturbances during the decision and reporting process.

The development of the organisational culture involved:

- Introduction of BIM (Building Information Modelling) that consisted not only of ICT tools – software and hardware (Azhar, 2011), but brought about the change in people thinking. They had to start with wide collaboration during the work and information exchange among all people taking part in the PLC.
- Revaluation of critical project success factors from product into client approaches. A client approach aims at client satisfaction by means of the product that is evaluated not only during planning but also executing phases.

The above-mentioned examples of organisational innovations are limited to the construction companies under consideration that are responsible for execution of a project as general contractors. It should be pointed out that the research subjects are segment leaders regarding the share in the construction market. In other types of project-based enterprises (e.g. IT or machinery manufacturers), some other organisational innovations can be recognised. However, other studies that analysed the innovations in project-based organisations (Söderhlund, 2008) confirmed a number of described changes. Above all, strategic innovations presented in the paper (maybe without introduction of BIM) have universal application from a sector point of view.

VI. Conclusion

The study has confirmed that organisational innovations play a vital role in crisis management of project-based organisations. The product, process, and marketing types of innovations are significant for the entity as well but require a lot of input, financial expenses and can yield bonuses in a long-period of time. They can support crisis management but may not be the first line crisis response actions and strategies. The conclusion presented above has been made because crisis management is mainly related to deterioration of company position in the market, decreasing profitability and liquidity, or increasing liabilities. In order to avoid further company deterioration, the managers should implement recovery actions that can generate fast feedback. It can be done by implementing the changes in daily work of the employee through innovations in company procedures, working methods, and further evaluation of the organisation culture and framework.

The study has shown that the project-based organisations may be affected by an economic crisis much deeper than other types of entities. Project-based organisations archive profits from new investments, which are very often cancelled, reduced or postponed by customers. By doing these activities, the customers are willing to increase short-term efficiency. As a result, project-based organisations can be affected. The preparation of an organisation to crisis conditions and the ability of adaptation to a changeable environment are crucial factors. However, economic crises differ in scope, input factors, and consequences. It means that proactive actions are important but cannot be an explanation for the lack of the reactive decisions.

The study has indicated that in crisis management supported services are very important. The analysis has been performed on the basis of case studies in the construction industry. In first stages of company crisis, more attention should be focused on acquisition stage (responsibility of tender departments), supervision of project execution (responsibility of risk management and controlling departments), and more efficient cooperation with clients (the need of improvement in contract administration).

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