

Exploring the effects of the economic crisis on the way construction projects are managed: The case of Greece^{1,2}

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Abstract

The objective of the specific research is to identify how the economic crisis has affected the way construction projects are managed and to determine how project management should be exercised amid an economic crisis.

The research identifies the adoption of more consistent project governance, more rigorous risk management techniques and a more careful project portfolio management as the main areas on which the economic crisis affected the way construction projects are managed. Most importantly it shows that the economic crisis has contributed to the reemergence of project management as a key competency within the organisational culture of construction companies. In terms of how project management should be exercised amid an economic crisis, the research shows that the main actions to be taken should include the development of an early warning system, the formation of crisis scenarios and the formation of a crisis management team in a context of tighter cost and risk control procedures throughout all the phases of the crisis.

Keywords: project management, economic crisis, construction industry, crisis effects.

Introduction

The financial crisis, which followed the collapse of the subprime mortgage market in the US in 2008, very quickly spread all over the world with disastrous consequences for many countries and a lot of people. One of the most severely hit industries both internationally and in Greece was the construction industry with thousands of jobs lost and hundreds of companies shutting down.

A lot has been written about the macroeconomic effects of the economic crisis on the construction industry. A quick statistical data search can provide useful information on how many employees have been fired, how many companies have shut down and how much value added has been lost in the construction industry all over the world during the crisis years. Regardless of how useful these statistical data are, they do not allow the understanding of how the economic crisis has affected the way construction projects are managed and how construction project management has changed and evolved during the crisis years. The specific research deals with this very subject and explores the effects of the economic crisis on project management, using the Greek construction industry as a case study. The objective of

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the research is to identify project management strategies adopted as a result of the economic crisis and to propose an appropriate approach from the project management perspective for dealing with economic crisis situations. In this sense the research questions to be answered are as follows:

- How has the economic crisis affected the way construction projects are managed?
- How should project management be exercised amid an economic crisis?

Understanding how the economic crisis has changed the way construction projects are managed is of vital importance, because it will allow the development of a roadmap from a project management perspective for confronting economic crises of similar size/nature and the identification of post crisis project management techniques adopted. The latter is also very important, because it will highlight whether the limitation of resources caused by the crisis has negatively affected the efficiency of the industry or else its capacity to deliver quality projects. It is the ultimate responsibility of the researcher to bring such inefficiencies (if applicable) to light and to propose corrective action.

Literature on the impact of the economic crisis on the way construction projects are managed

Scott (2015) claims that the economic crisis was the number one event to impact project management during the last 5 years and highlights that one of the most significant changes that it brought was the rise of project portfolio management and the need for project managers to wisely choose the projects that better fit their companies. The specific view is also supported by Byatt et al. (2012), who mention the greater emphasis on portfolio planning of projects as one of the key changes to the profession of project management after the global financial crisis. The argument is further supported by Hruzova and Brunet-Thornton (2011), who identify project prioritisation as one of the strategies that construction companies adopted in order to differentiate and survive the crisis. Finally, Babu and Sudhakar (2016) in their research for the favourable lessons learnt from the economic crisis have highlighted that investing only in the prioritised project was the number one lesson learnt.

So it seems that one of the most significant effects that the economic crisis had upon the discipline of project management was that it made companies understand that they should move towards an optimal mix of projects and towards activities that can lead to the best achievement of their operational and financial goals.

Another effect of the economic crisis upon project management, as the Project Management Institute (2015) proposes, is that companies need to follow more rigorous risk management practices. In order to strengthen this argument the Project Management Institute (2015) presents a survey, which shows that companies using risk management practices manage to have better project outcomes compared to the ones that do not (Figure 1).

Figure 1 Risk management and project outcomes



Source: PMI (2015)

The specific view is also supported by Byatt et al. (2012), who mention that the approach to risk management has become more sophisticated since the crisis and emphasise on the need to proactively manage risk.

It is a fact that the concept of risk management is of vital importance for companies nowadays and this can be largely attributed to the economic crisis. During the crisis years companies needed more than ever to assess risks, mitigate threats and identify opportunities.

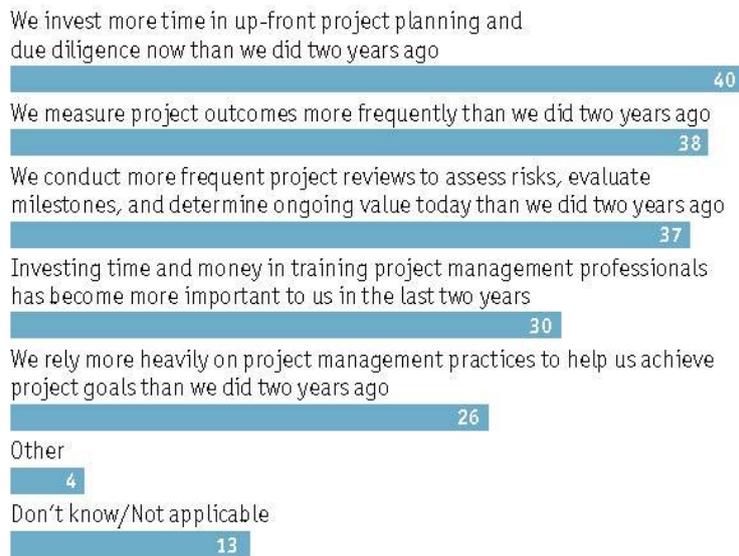
A further impact of the economic crisis on the way projects are managed seems to be the greater emphasis on ensuring that there is a genuine governance of projects. As Byatt et al. (2012) indicate there is a need for tighter control for authorising expenditure, budgets and scope changes. Scott (2015) also mentions that there is a greater focus on project governance since the economic crisis. Moreover, according to the findings of a survey conducted by Fister Gale (2009), the most important changes that organisations had made with regard to project management between 2007 and 2009 are: a) investment of more time in up-front project planning and due diligence, b) more frequent measurement of project outcomes and c) more often reviews to assess risks, evaluate milestones and determine ongoing value (Figure 2). All these practices are associated with the so called governance of projects.

Figure 2 Changes in project management procedures between 2007 and 2009

How has your organisation changed its procedures with regard to project management in the past two years?

Select all that apply.

(% respondents)



Source: Fister Gale (2009)

This effect is due to the limitation of resources observed during the economic crisis. The limitation made the need for enhancing effectiveness vital and it seems that it led companies to the adoption of tighter governance control procedures in order to make sure that the limited resources are not wasted.

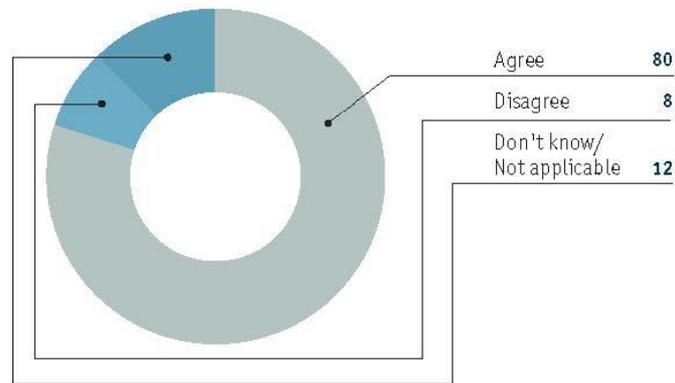
Other effects of the economic crisis on the way construction projects are managed mentioned by the literature are: diversifying to new markets, forming joint ventures with other Contractors and emphasising on human resource management. Ling and Lim (2010) point out that diversifying into new markets is a valuable strategy for construction companies when the demand for new projects is reduced due to an economic crisis, with Horta et al. (2012) also referring to this strategy as an important tool construction firms should apply. Forming joint ventures and partnerships with other Contractors is mentioned by Bassioni et al. (2008) and Jung et al. (2011) as an effective way of reducing costs and sharing risks. The management of human resources is also an important element of the whole strategy a construction company should adopt during an economic crisis. Zuo et al. (2015) state that retaining key staff members during a crisis is very important as opposed to what many construction companies have done in practice.

Finally, an effect that is widely mentioned in the literature is that the economic crisis has made companies realise the importance of the profession of project management in their attempt to improve their project delivery capability, as Scott (2015) suggests. Byatt et al. (2012) also agree on that, stating that during the crisis years project management has been established as a valuable way of providing surety and control to initiatives undertaken. In addition to this, Fister Gale (2009) indicates that the economic crisis has made companies reaffirm their commitment to project management practices and to support her argument she presents the findings of her survey in which 80% of the respondents agree that having project management as a core competency during a recession helps their companies remain competitive (Figure 3).

Figure 3 Project management as a core competency

Do you agree or disagree with the following statement? Having project management as a core competency helps my organisation remain competitive during a recession.

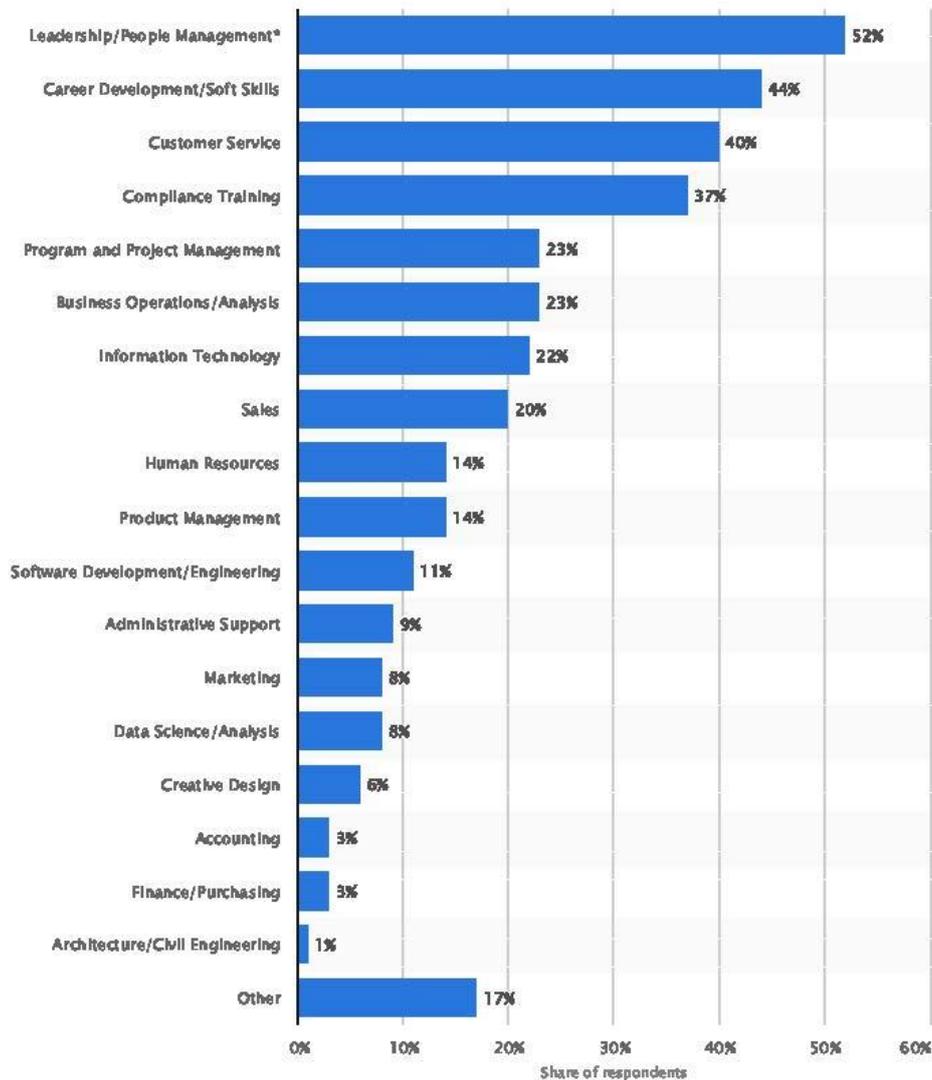
(% respondents)



Source: Fister Gale (2009)

The specific effect is also confirmed by examining the skills North American employers provided training for in 2016 (Figure 4). Project management places fifth, while leadership and people management, which rank first, are closely associated with the discipline of project management as well.

Figure 4 Important skills North American employers provide training for as of October 2016



Source: Statista Website

Hence, according to the literature although the economic crisis had disastrous effects on the global economy, the impact on project management as a profession was quite the opposite. It seems that the need of construction companies to use their resources to their best advantage, made them revise and upgrade the role of project manager within their organisational culture.

The above literature review on how the economic crisis has affected the way projects are managed can be summarised as follows:

- More careful selection of projects / greater emphasis on project prioritisation - project portfolio management
- More rigorous risk management practices
- Focus on governance of projects
- Diversification to new markets
- Formation of joint ventures and partnerships with other Contractors

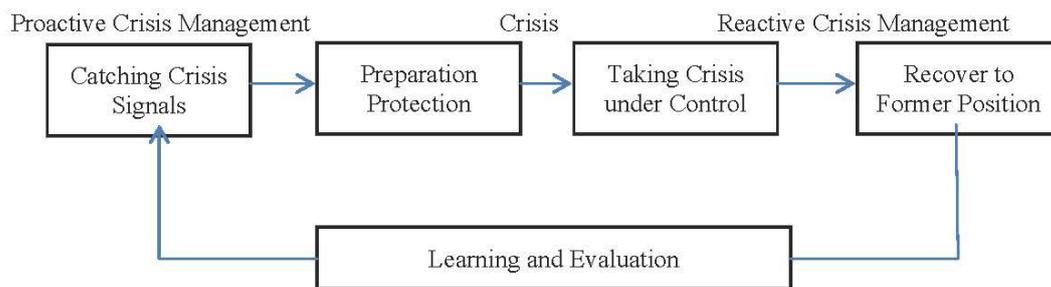
- Retention of key staff members
- Reestablishment of the discipline of project management as an important competency within a company

A closer look at these effects leads to the conclusion that they constitute fundamental principles of project management. It can therefore be said that according to the literature, the economic crisis made companies revisit the fundamentals of project management and go back to basics. Besides, this action is a general principle in life when things seem to go the wrong way.

Literature on project management approaches under economic crisis conditions

Babu and Sudhakar (2016) have developed a five phases approach model, which is separated into three distinguished time periods: before, during and after the crisis (Figure 5).

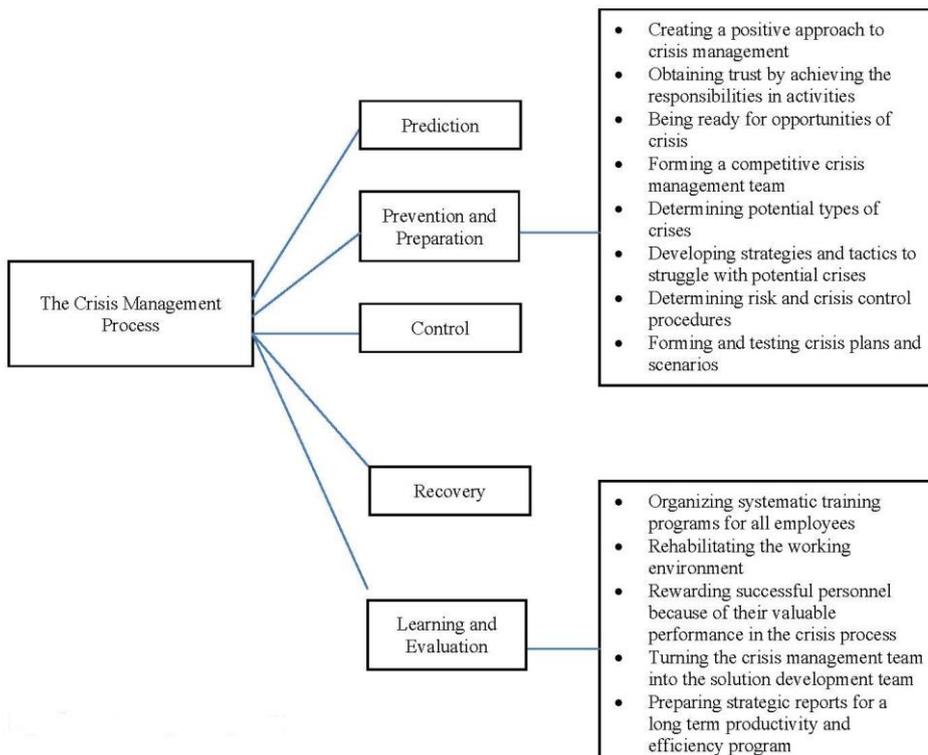
Figure 5 The flow of crisis management process



Source: Babu and Sudhakar (2016)

It is important to note that they perceive the whole approach as a continuous cyclical process that never stops, since the period after a crisis a company should be catching signals and preparing for the next one. The importance of always being prepared is also highlighted by Hansen (2012), who mentions that companies are judged by how well they prepare in advance for a crisis, not just by what they do after the crisis has hit. Going back to the Babu and Sudhakar approach, the objective for a company is to always be prepared to confront an economic crisis, be able to overcome the crisis with minimum losses and be able to regain or even better expand its market share after the crisis. The proposed analytical process to do so is shown below (Figure 6).

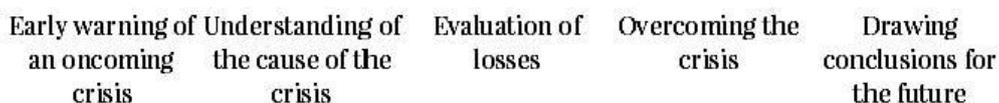
Figure 6 The economic crisis management process



Source: Babu and Sudhakar (2016)

In a very similar approach Goździewska-Nowicka et al. (2017) have recommended a five phases approach for exercising project management under crisis conditions, as follows (Figure 7).

Figure 7 The determined phases of a crisis

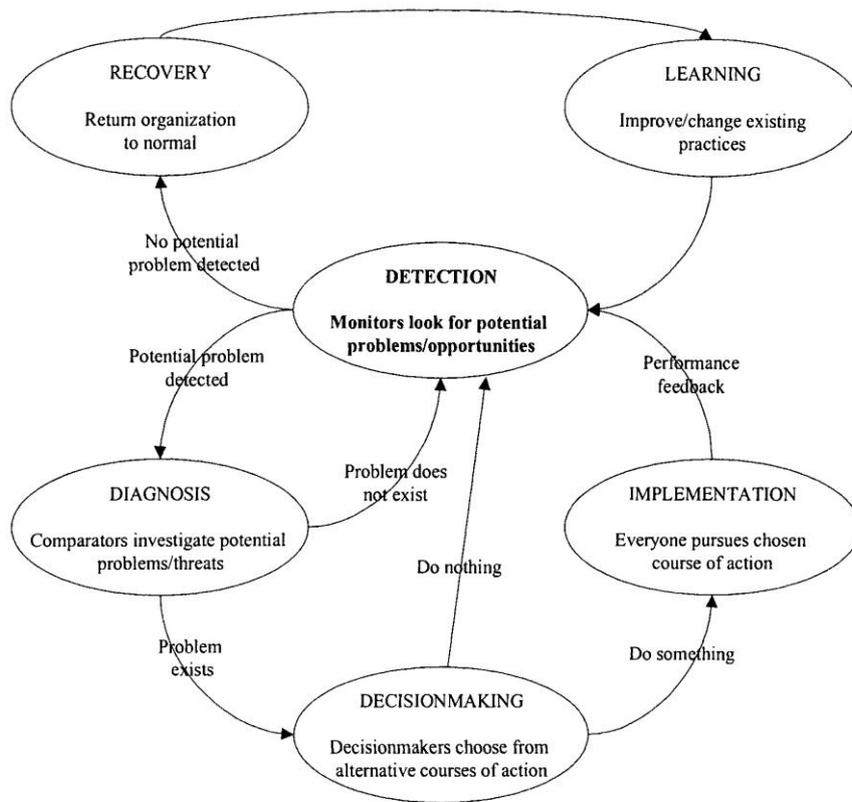


Source: Goździewska-Nowicka et al. (2017)

They propose five main actions, which can contribute to a company's survival during a crisis: costs optimisation, detecting warning signals, building scenarios, constant observation of the environment and searching for new markets.

Loosemore (2000) divides crisis management into seven phases and he proposes the following model for dealing with a crisis situation (Figure 8).

Figure 8 A model of crisis management



Source: Loosemore (2000)

Besides the integrated approaches for exercising project management amid an economic crisis proposed by some researchers, others attempt to provide single tools, recommendations or practical steps in order to increase the likelihood of project success under the harsh environment that an economic crisis implies. Towards this direction Mallak et al. (1997) propose a set of tools to help project managers plan for crises, as follows (Table 1).

Table 1 Summary of crisis planning tools

Tool	Output
Risk Analysis	Identification of risks
Contingency Plan	Steps to take based on identified risks
Logic Chart	Specific steps to take in a crisis
Tabletop Exercise	Rehearse, discuss, and solidify a specific emergency response

Source: Mallak et al. (1997)

Among others Mallak et al. (1997) recommend establishing a crisis management team before the crisis and always being mindful of the social and political consequences of crises. Gerald

et al. (2010) distinguish between organisational level, group level and individual level and suggest three pillars to successful response to unexpected crisis events, as shown below (Table 2).

Table 2 Three pillars to successful response to unexpected events

Successful Response to Unexpected Events		
<p>Organisational level Responsive and functioning structure</p> <ul style="list-style-type: none"> • High degree of freedom (C) • Pace to make and implement decisions (F) 	<p>Group level Good interpersonal relationship</p> <ul style="list-style-type: none"> • Engagement with stakeholders, including ability to negotiate solutions (A) • Communication, including availability of information as well as its communication (E) 	<p>Individual level Competent people</p> <ul style="list-style-type: none"> • Competence of leader and team (B) • Behaviour, including self-awareness and ability to deal with stressful situation (D)

Source: Geraldi et al. (2010)

Laufer et al. (2015) on the other hand, identify four roles that the project manager should assume in order to cope with frequent unexpected events (Table 3).

Table 3 The four roles of the project manager for coping with unexpected events

ROLE	DRIVEN BY	TIMING	KEY ACTIVITIES
Develop collaboration	Intention	Initially	<ul style="list-style-type: none"> • Select the right people • Develop mutual interdependence and trust
Integrate planning and review with learning	Intention	Periodically	<ul style="list-style-type: none"> • Develop stable short-term plans and flexible long-term plans • Conduct learning-based project reviews
Prevent major disruptions	Events	Occasionally	<ul style="list-style-type: none"> • Anticipate and cope proactively with a few major problems
Maintain forward momentum	Events	Continuously	<ul style="list-style-type: none"> • Resolve problems by hands-on engagement • Update and connect through frequent face-to-face communication • Move about (walk the floor) frequently

Source: Laufer et al. (2015)

The cornerstone of this recommendation is again the selection of the right people, the development of short-term and long-term plans and the anticipation of crises in order to always act proactively.

Towards the same direction of providing single tools and recommendations Engwall and Svensson (2001) propose the formation of what they call “cheetah teams” as a short term strategy when a crisis arises. Cheetah teams are small, elite groups which can be mobilised quickly and are usually formed with the single purpose of dealing with specific crisis challenges. On the same page Hällgren and Wilson (2008) have suggested forming on site teams to undertake replanning as a remedy to projects in crisis. Haggerty (2017) also highlights the importance of having a special team in place for dealing with crises. He recommends designating an insider, who will manage any crisis situation that may arise, appointing a rapid response team to help that person and giving the team a scenario training.

As it can be seen, the people dimension of project management is present in almost every approach or set of tools for dealing with crisis events. This should not come as a surprise, since no matter how effective the systems and the procedures in place are, it is people who eventually implement them. Besides as Morris (2013) suggests, in situations of urgency and uncertainty special attention should be given to resource usage, particularly people. As he very suitably mentions “projects ultimately are managed by people. Not systems, not contracts – people”.

At this point it should be highlighted that the existence of a proven well-evaluated model for confronting economic crisis challenges is vital for every company, because when an economic crisis occurs with its consequent urgency, learning from scratch would be extremely costly.

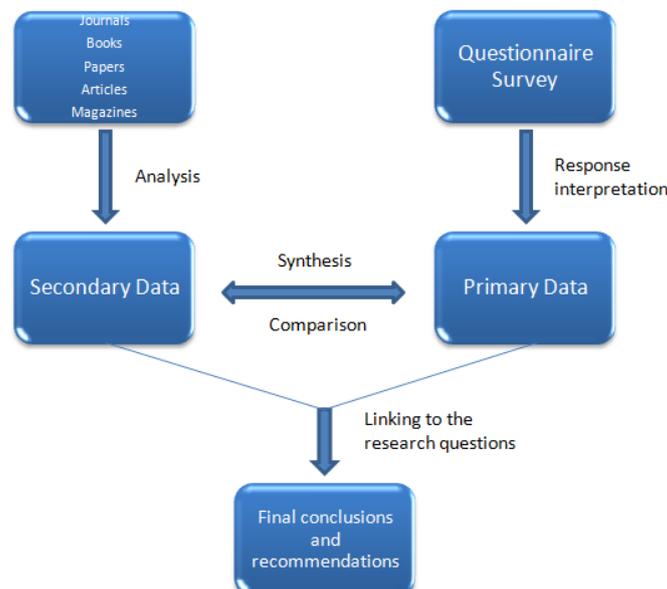
The examination of all the above approaches and tools for exercising project management under crisis conditions indicates that the most commonly found strategies in the body of literature are:

- Development of an early warning system
- Development of risk control procedures
- Formation of crisis plans and scenarios
- Formation of crisis management teams

Research methodology design

The research methodology consists of the collection of two types of data: primary and secondary. The secondary data are derived from journals, books, articles etc. and the primary data are derived through the distribution of a questionnaire to people of the Greek construction industry specialised in project management. The synthesis of these data and the linking to research questions leads to the derivation of the final conclusions and recommendations. A schematic representation of the research methodology implemented is shown below (Figure 9).

Figure 9 Research Methodology implemented



Methodology limitations

Obviously, just as with every research methodology, the chosen one has certain limitations, which are analysed below:

- Questionnaire sample size: Although the intention is to collect as many fully answered questionnaires as possible, there is always the possibility of ending up with an inadequate sample size, which does not fully reflect the real situation in the Greek construction sector.
- Closed-ended questions used in the questionnaire: This type of questions may confuse the respondents with many options or the respondents may choose the most similar answer to their true opinion even though it does not fully represent what they believe. In order to tackle this problem, an effort has been made to compose a clearly understood and precise questionnaire.
- One country concentration: Special attention should be given to the interpretation of the questionnaire responses, since some situations may be valid in Greece, but there is always the danger of not being valid in general.
- Validity of secondary data: Although an effort was made to use the most updated secondary data, some data may be out of date or inaccurate. This may affect the quality of the derived results and lead to imprecise conclusions.

Questionnaire design

The questionnaire consists of 11 closed-ended questions in 3 sections. It was judged that closed-ended questions are more appropriate for the purposes of this research, because they are easier to answer and more convenient to analyse and compare.

Section 1 was designed in order to recognise the situation in project management during the economic crisis years and to identify its implications both on the construction industry and on its employees as well.

Section 2 was created in order to identify the project management strategies adopted as a result of the economic crisis and how project management has changed after the crisis.

Finally, section 3 focuses on the aftermath of the economic crisis with the intention to derive useful data, which can contribute to the formation of a proposal for exercising project management effectively amid an economic crisis.

Sampling method

Expert sampling was used since the sample was drawn from experts in the field of project management. The methodology was executed in two stages. First, it was decided that the term "expert" corresponds to a person with at least ten years of working experience in the field of project management and then specific people, who meet the criteria were selected to form the so called panel of experts.

Questionnaire distribution and data collection

The questionnaire was created using the Google Forms platform and it was not distributed physically, but a link was sent directly to the email addresses of the selected experts. The data were collected automatically by the Google Forms platform in a standardised form.

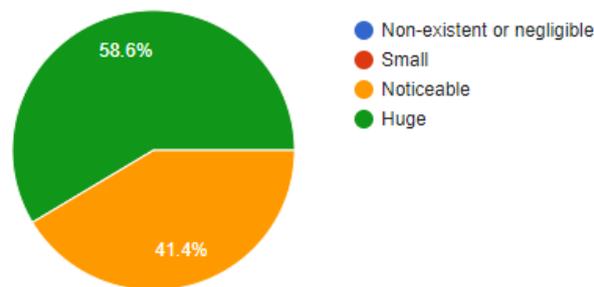
Effects of the economic crisis on the construction industry and its employees

Question 1

Figure 10 Responses on question 1 of questionnaire survey

1. How would you characterise the effect of the economic crisis on the size and quantity of construction projects? (Please choose only one answer)

29 responses



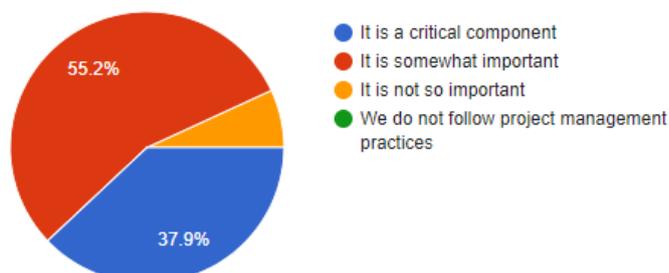
The examination of question 1 provides a remarkable indication about the severity of the crisis and its effect on the construction industry. All the respondents have answered that the effect of the economic crisis on the size and quantity of construction projects was either noticeable or huge. The results converge with the statistical data, which show that the construction industry was one of the most severely hit industries by the economic crisis.

Question 2

Figure 11 Responses on question 2 of questionnaire survey

2. How important is the role of project management to your company's ability to deliver projects successfully? (Please choose only one answer)

29 responses



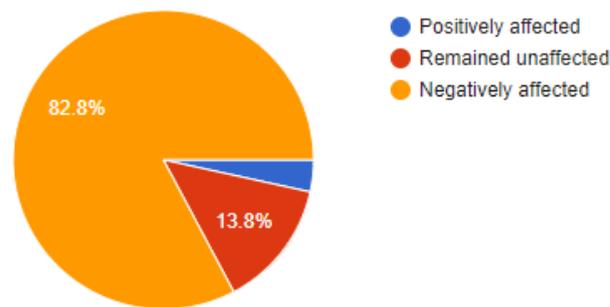
The literature review shows that project management has been reestablished as an important competency during the crisis years. The responses of the questionnaire survey seem to confirm the specific outcome, since about 95% of the respondents believe that the role of project management to a company’s ability to deliver projects successfully is either important or critical. This tendency of construction companies to give more emphasis on the role of project management after the outbreak of the crisis is also highlighted by the responses of question 7. It is therefore evident both by the questionnaire survey and by the literature review that although the economic crisis has severely affected the construction industry, the effect on project management was on the contrary beneficial.

Question 3

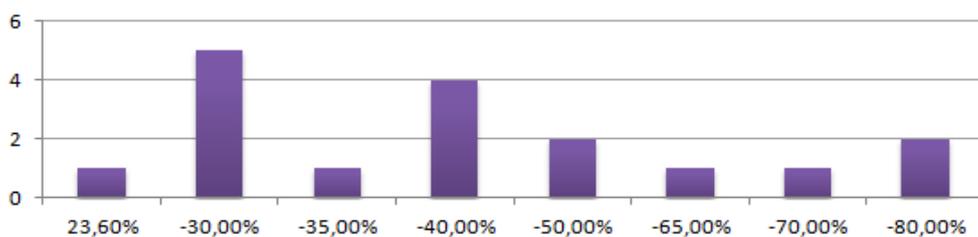
Figure 12 Responses on question 3 of questionnaire survey

3. Since the outbreak of the economic crisis would you say that your company has been: (Please choose only one answer)

29 responses



If it has been affected in any way, please provide an estimated percentage change since the outbreak of the crisis



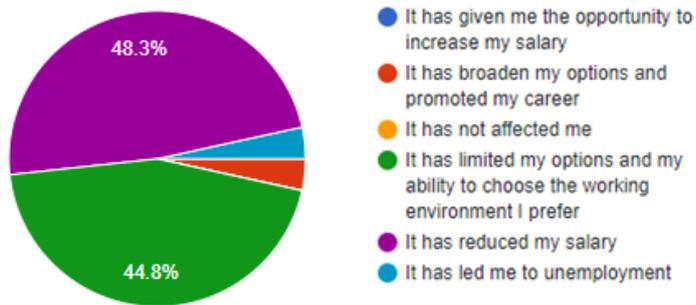
The responses on question 4 of the survey is another proof of the severity of the economic crisis on the construction industry. Above 80% of the respondents stated that their companies have been negatively affected since the outbreak of the economic crisis. Concerning the size of the effect in terms of turnover, the most common responses ranged from -30% to -40%. The specific decline is quite big and can significantly affect the operational capacity of a company.

Question 4

Figure 13 Responses on question 4 of questionnaire survey

4. On a personal basis how has the economic crisis affected your professional career? (Please choose only one answer)

29 responses



The specific question focuses on the effect of the economic crisis on the employees of the construction industry and their career prospects. The responses reflect the fact that the vast majority of construction companies have been negatively affected by the crisis, since almost all the respondents have answered that they have also been negatively affected one way or another. The statistical data show that thousands of employees in the construction industry lost their jobs during the crisis years. On the contrary, the results of the question show that only a small percentage of the respondents were led to unemployment; however it should be taken into consideration that the sample of the questionnaire survey consists of middle and upper management executives. It seems that the effect of the economic crisis on such executives was milder than the effect on lower management executives and other workers of the industry, who were the main recipients of the budget cutting policies adopted by the Greek construction companies.

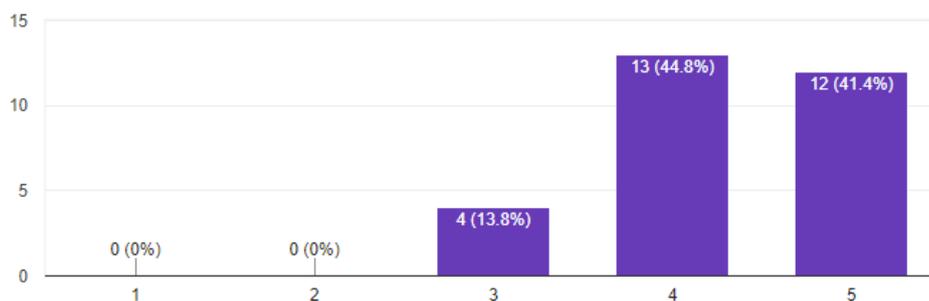
Question 5

Figure 14 Responses on question 5 of questionnaire survey

5. Which were the factors with the biggest negative impact on the construction industry during the economic crisis? Please grade on a scale from 1 to 5 (1: no impact at all, 5: huge impact).

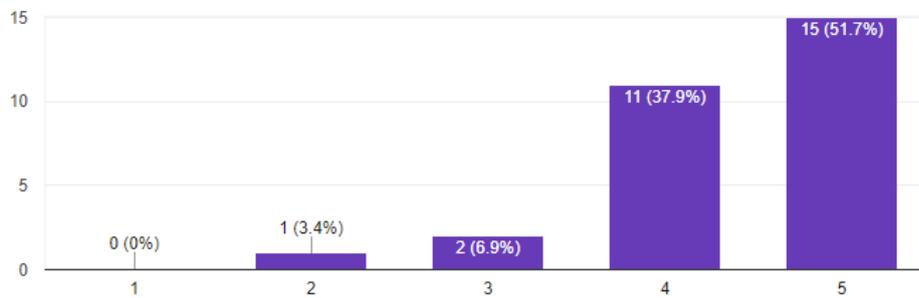
a. The cutting of public investment programmes

29 responses



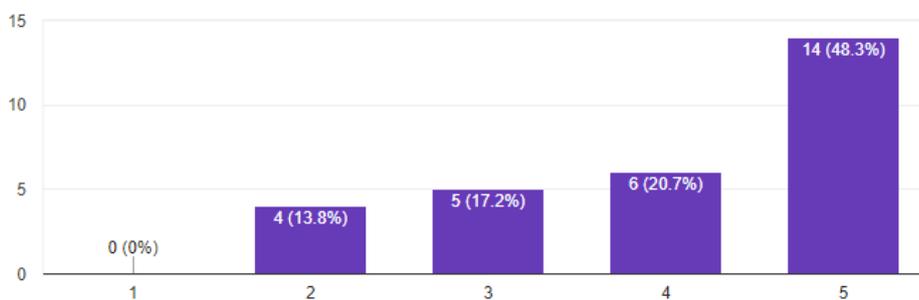
b. The decrease of private construction activity

29 responses



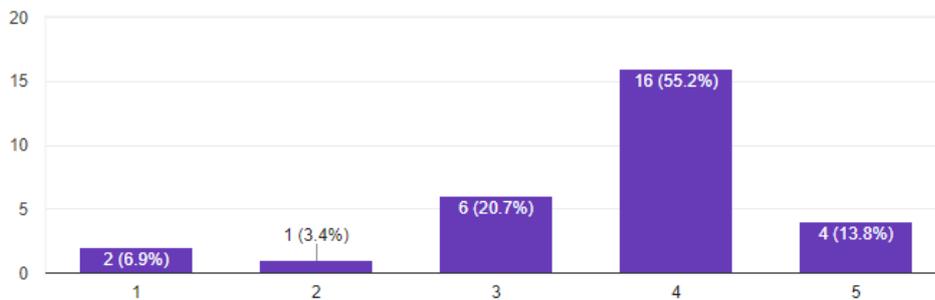
c. The decrease of housing demand

29 responses



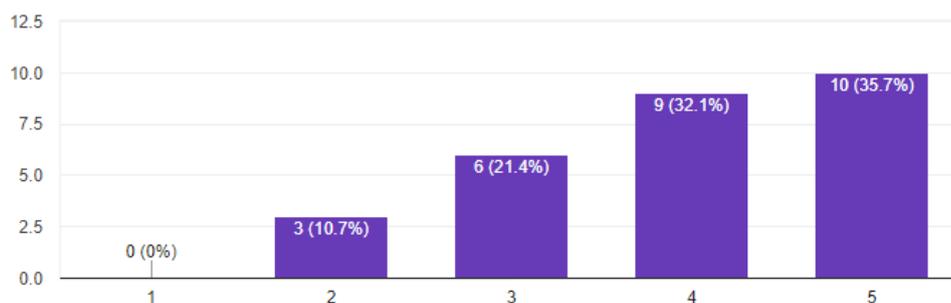
d. The tightening of bank lending

29 responses



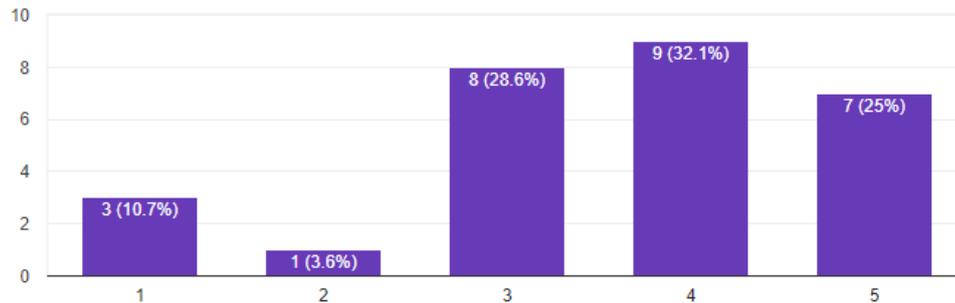
e. The insolvency of the Greek state concerning project payments

28 responses



f. The past incorrect administration/management of construction companies

28 responses



The results of question 5 show that the respondents believe that the factor with the biggest negative impact on the industry was the decrease of demand for projects, which was mainly driven by the cutting of public investment programmes, the decrease of private construction activity and the decrease of housing demand. The other factors, which have to do with the shortage of liquidity that a lot of construction companies suffered from during the crisis, were also considered important and additionally detrimental to the construction industry.

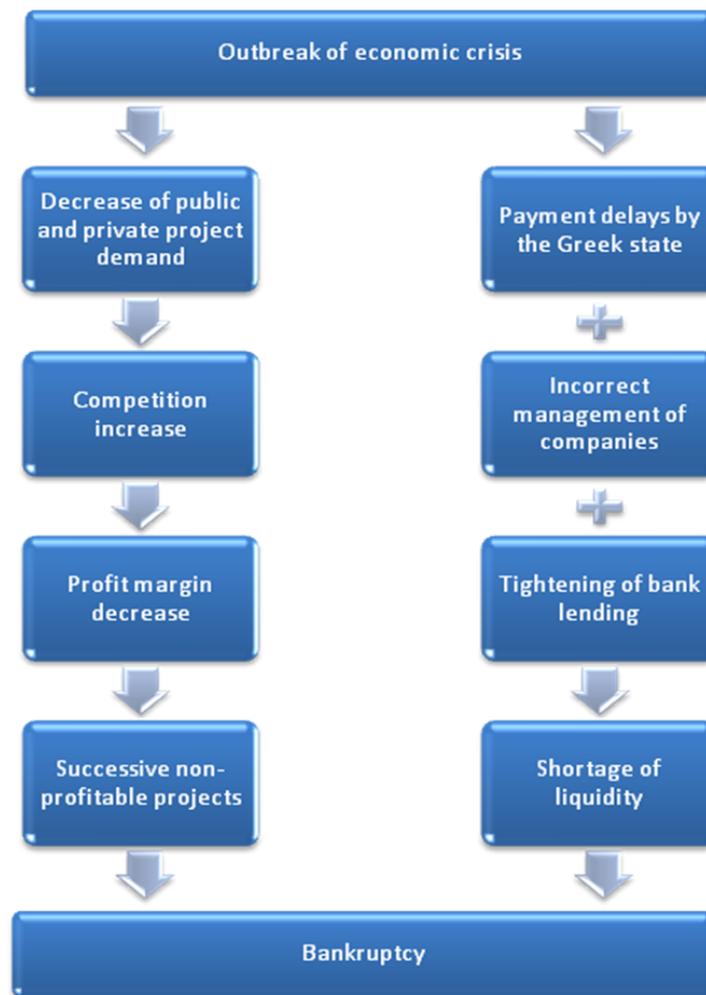
The examination of the above responses and the analysis of the above factors can explain the mechanism under which many construction companies went bankrupted during the crisis. This bankruptcy mechanism is an important element for understanding how the economic crisis has affected the way construction projects are managed.

Due to the economic crisis there was a significant decrease of public and private demand for projects, which led to an increased competition since the same number of companies was competing for a considerably lower number of projects. The increased competition led in turn to a profit margin decrease and for many companies to successive non-profitable projects.

On the other hand, the insolvency of the Greek state concerning project payments, together with the incorrect administration/management of construction companies the years before the crisis and the tightening of bank lending led many companies to a suffocating shortage of liquidity. The deadly combination of successive non-profitable projects and liquidity shortage is eventually the reason why a lot of construction companies went bankrupted during the crisis years.

The whole bankruptcy mechanism is presented schematically below (Figure 15).

Figure 15 Bankruptcy mechanism of construction companies



Overall, the responses of the specific part of the questionnaire survey reflect the situation of the Greek construction industry as it is now after all these years of crisis. There is no doubt that it is a severely hit industry with its companies recording significant turnover decreases and its employees finding difficult to promote their careers. It is very encouraging however that despite the difficulties the construction industry faces, the role of project management has been strengthened during the crisis.

Project management strategies adopted as a result of the economic crisis

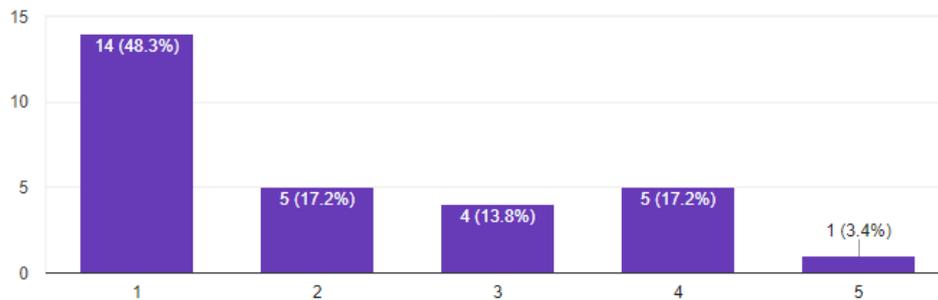
Question 6

Figure 16 Responses on question 6 of questionnaire survey

6. How did your company respond to the emerging challenges after the outbreak of the economic crisis? Please grade on a scale from 1 to 5 depending on the emphasis that your company gave on each of the following subjects (1: No emphasis at all, 5: Huge emphasis).

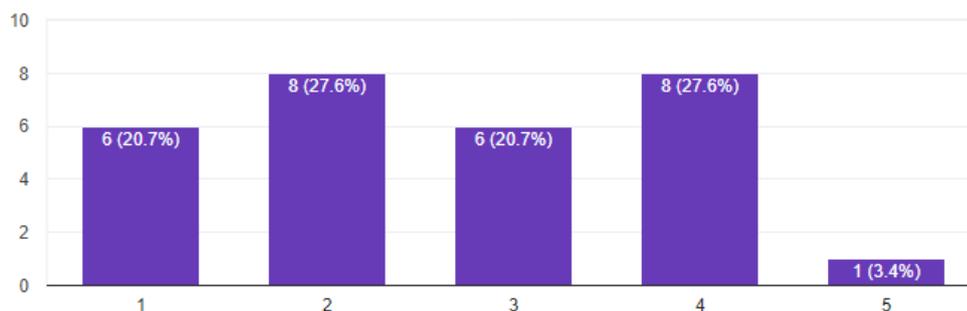
a. Cancellation of projects already initiated

29 responses



b. Postponement of projects already initiated

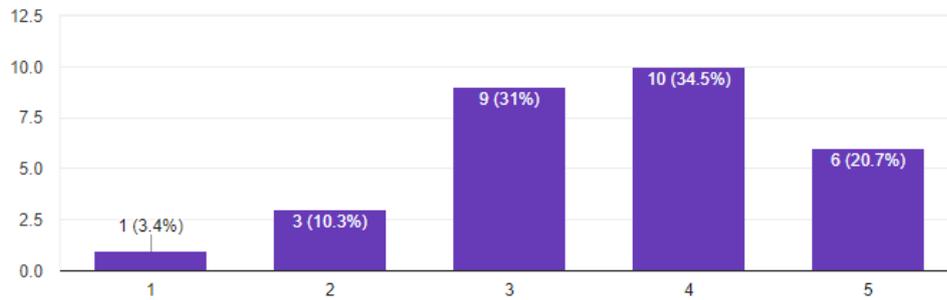
29 responses



The findings of the first two sub-questions show that the majority of construction companies did not choose to cancel already initiated projects, however the outbreak of the crisis and the resulting financial difficulties certainly caused disruptions to the timetable of construction activities. This seems quite sensible, since the shock of the crisis and the consequential conditions required time from the Contractors' side to readjust their strategies and rethink their whole approach towards the economic crisis.

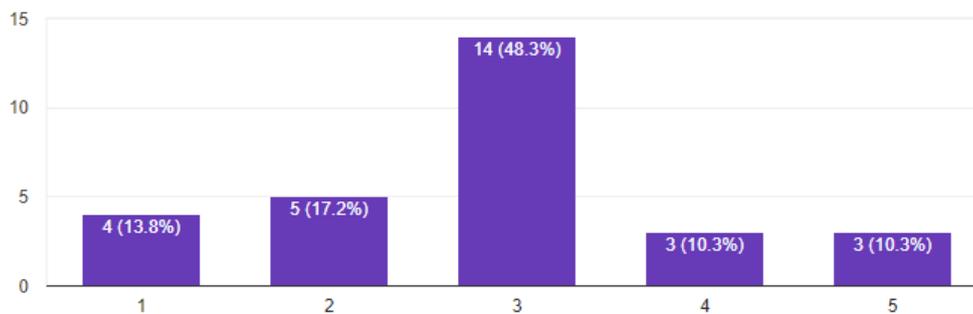
c. Reduction of the number of new projects

29 responses



d. Undertaking of smaller projects

29 responses

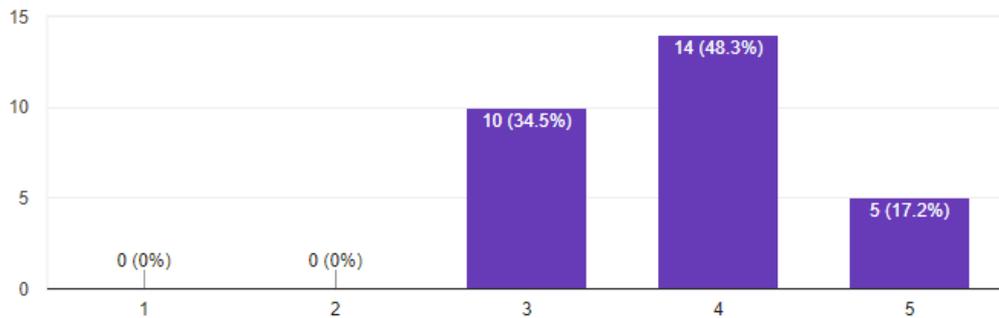


The undertaking of new projects amid the crisis was inevitably reduced as the demand for new projects was significantly decreased. However, it should be mentioned that the respondents believe that little emphasis was given by the Greek construction companies on undertaking smaller projects. It seems that the intensification of competition caused by the crisis and the need of construction companies to mobilise their resources in order to secure cash flows prevented them from limiting their construction activities. This fact proves that reducing construction activities, which is their main product is perhaps not the most efficient way for companies to control their cost amid a crisis. By doing so companies will only manage to reduce their cash flows, loose any competitive advantage they may possess and eventually find themselves out of business.

The right strategy is to continue aiming for new projects and to ensure a profitable operating activity, which is the lifeblood of a company and can ensure its future sustainability. Of course cost control is a strategy, which should be implemented during a crisis, however to a certain extent and on specific company operations.

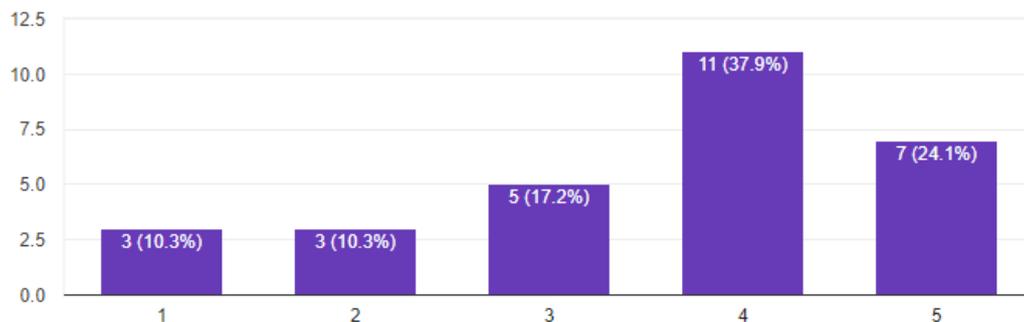
e. Budget cuttings while maintaining project scope

29 responses



f. Staff reduction in projects already initiated

29 responses

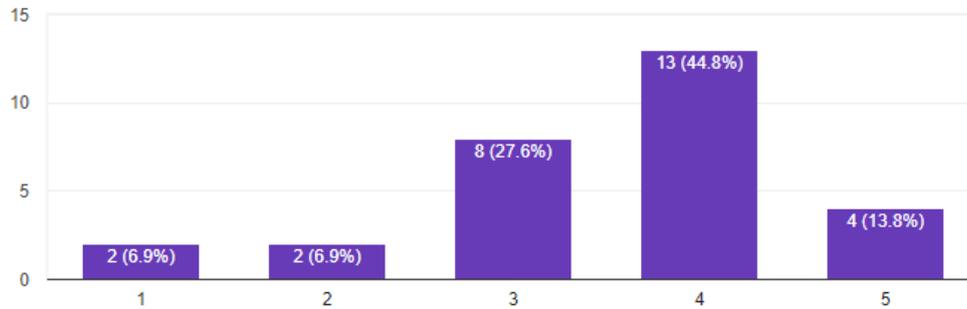


Concerning cost control strategies, it seems by the above responses that the Greek construction companies have adopted budget cutting policies giving emphasis on staff reduction. This finding is in accordance with the statistical data, which show that thousands of construction industry employees lost their jobs during the crisis. It is true that staff reductions are usually among the first cost control measures that a company takes in order to reduce expenses, mainly due to the fact that it is easy as a procedure and with an immediate financial result. However, there are certain researchers, who disagree with the specific policy stating that retaining key staff members during an economic crisis is crucial for a company as they form a critical asset regardless of the state of the economy. Some of them even suggest maintaining and training workforce as a way of building a competitive advantage amid a crisis.

In any case, it seems that the adopted strategy on this matter depends on how each company perceives itself and whether it has long-term or short-term goals. Perhaps a more efficient approach is to limit lay-offs to those necessary and make use of internal transfers within a company in order to maximise the usefulness of human resources.

g. Reassessment of project risks

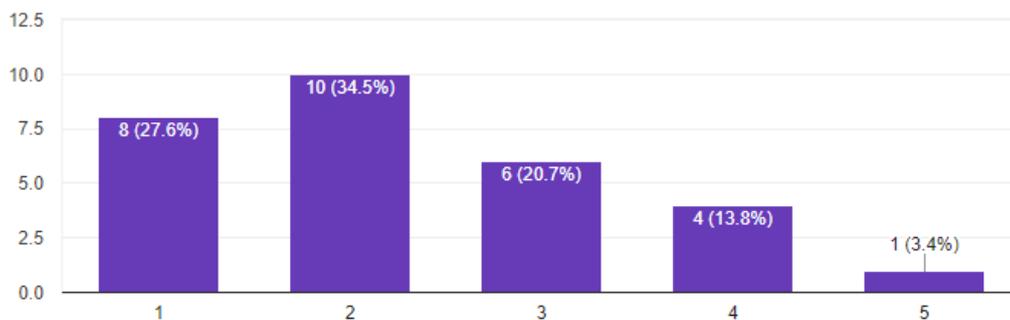
29 responses



Based on the responses on this question, it seems that the Greek construction companies have put considerable emphasis on reassessing the risks of projects already initiated and implementing more rigorous risk management practices. This means that one of the outcomes of the literature review on how the economic crisis has affected the way construction projects are managed seems to be confirmed by the questionnaire survey. Besides all the sufferings that the crisis has brought to the Greek construction industry, it seems that it also brought a benefit and this is the emphasis that the companies at last decided to put on risk management. It is true that prior to the economic crisis such policies were considered a luxury by the majority of Greek construction companies, which were undertaking projects without correctly assessing the risks involved. This was particularly detrimental for many of them when the crisis started, because they were unprepared to deal with the situation and they were practically unaware of the true nature of the projects they had undertaken.

h. Merging of projects

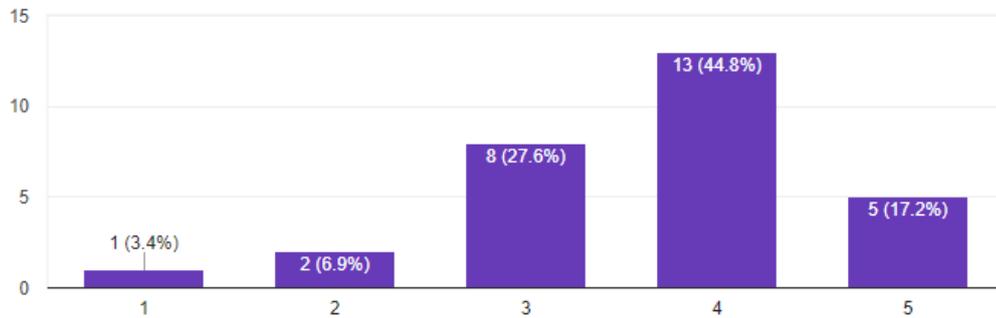
29 responses



The respondents of this question lean towards the belief that the merging of projects was not much of a priority for the Greek construction companies during the crisis. This means that the majority of companies did not emphasise on achieving synergies with other companies and decided to face the crisis alone. It is believed that this decision is towards the wrong direction, since by merging projects and achieving synergies construction companies can make a more efficient use of the limited resources they possess amid an economic crisis. The unwillingness of the construction companies to form alliances should be attributed to the special characteristics of the Greek construction industry, which is fragmented and highly competitive with the big Contractors having major conflicts of business interest. It is quite unfortunate for the Greek construction companies that they cannot make use of a strategy, which has been proved quite valuable amid an economic crisis as the literature dictates.

i. Shifting to other construction fields with growth potential

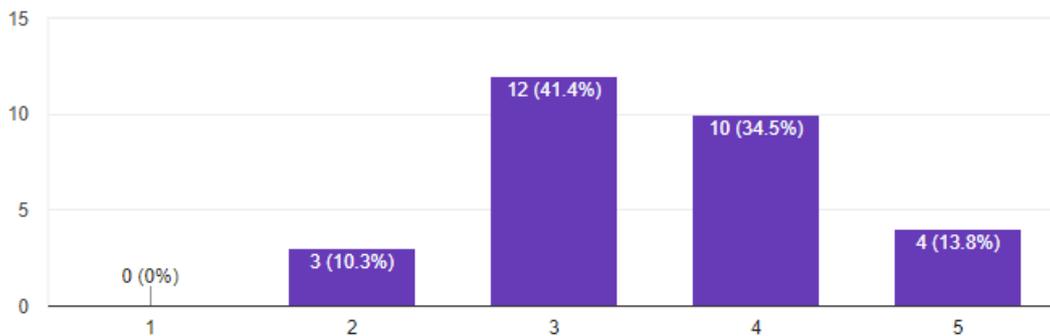
29 responses



Shifting to other construction fields with growth potential and diversifying to new markets is one of the most frequent strategies in the construction industry when an economic crisis arises, as proposed by the literature. The findings of this question confirm that the Greek construction companies did so by investing in new markets in which there are bigger profit margins and more optimistic prospects. A thorough examination of the project portfolio of the biggest Greek Contractors shows an increase in projects focusing on renewable energy (e.g. wind farms, photovoltaic power stations, sustainable buildings) and touristic development (e.g. hotels on Greek islands). The specific fields are currently the ones with the biggest growth potential in Greece and shifting to them is definitely a wise practice for the Greek construction companies.

j. Redefining of project portfolio

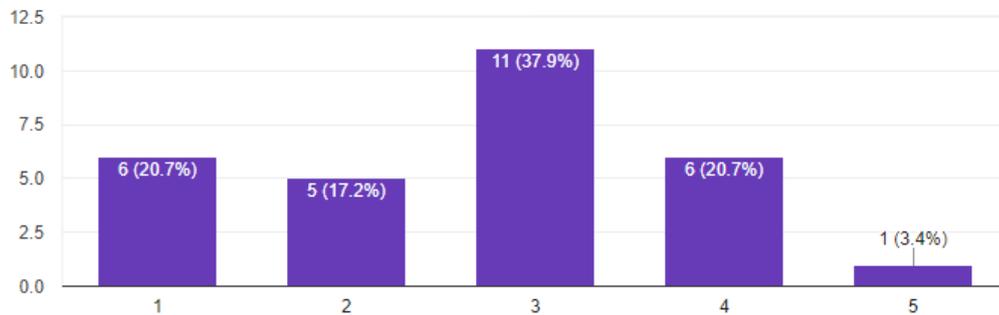
29 responses



According to the majority of the respondents, the Greek construction companies have gone through a redefinition of their project portfolios in order to respond to the challenges of the economic crisis. It seems that the shift to construction fields with growth potential analysed in the previous paragraph has been made in this very context. The literature highlights the importance of project portfolio management during an economic crisis and based on the questionnaire survey responses the Greek construction companies seem to adopt this approach.

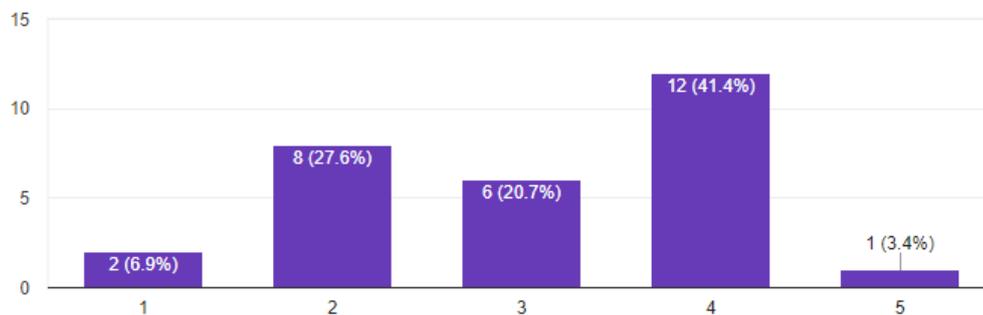
k. Limiting the scope of project already initiated

29 responses



l. Redefining the objectives of a project

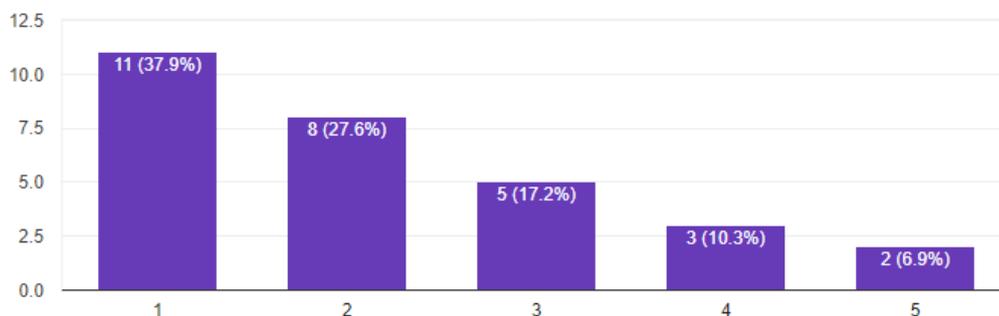
29 responses



Limiting the scope of projects was not among the first priorities of construction companies during the crisis years, according to the respondents of the questionnaire survey. On the contrary, more emphasis seems to have been put on redefining the objectives of projects. This probably means that the objectives were wrongly assessed and needed to be redefined taking into consideration the special circumstances of the economic crisis.

m. Less priority to project quality

29 responses



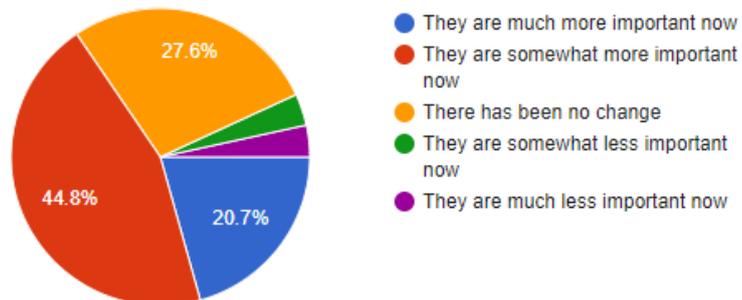
The findings of the specific question show that from the respondents' perspective construction companies did not give less emphasis on the quality of projects during the crisis years. Therefore, the assumption that the difficult economic position of the construction companies would force them to deliver less qualitative projects does not seem to be confirmed by the respondents. This is an encouraging finding demonstrating that despite their difficulties the construction companies exhibited a sense of responsibility by deciding not to compromise the durability and functionality of their products.

Question 7

Figure 17 Responses on question 7 of questionnaire survey

7. How has the economic crisis changed the importance of project management practices within your company? (Please choose only one answer)

29 responses



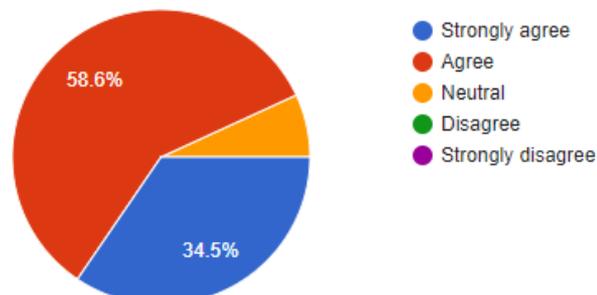
Above 65% of the respondents replied that project management practices are somewhat or much more important for their companies now, compared to what they used to be prior to the crisis. This is a very important and encouraging finding for project management as a discipline and it confirms one of the main outcomes of the literature review, which is the reestablishment of project management among the core competencies that a company should possess. Construction companies identified that project managers are the ones, who have the expertise to deal with the special circumstances of the economic crisis during the construction of a project and decided to upgrade their role within their organisational structure. Project managers themselves should make use of this opportunity to promote their career prospects.

Question 8

Figure 18 Responses on question 8 of questionnaire survey

8. Does having project management as a core competency help your company remain competitive during the economic crisis? (Please choose only one answer)

29 responses



The findings of the specific question are complementary to the ones of the previous question. Above 90% of the respondents agree or strongly agree that having project management as a core competency has helped their companies remain competitive during the economic crisis. It

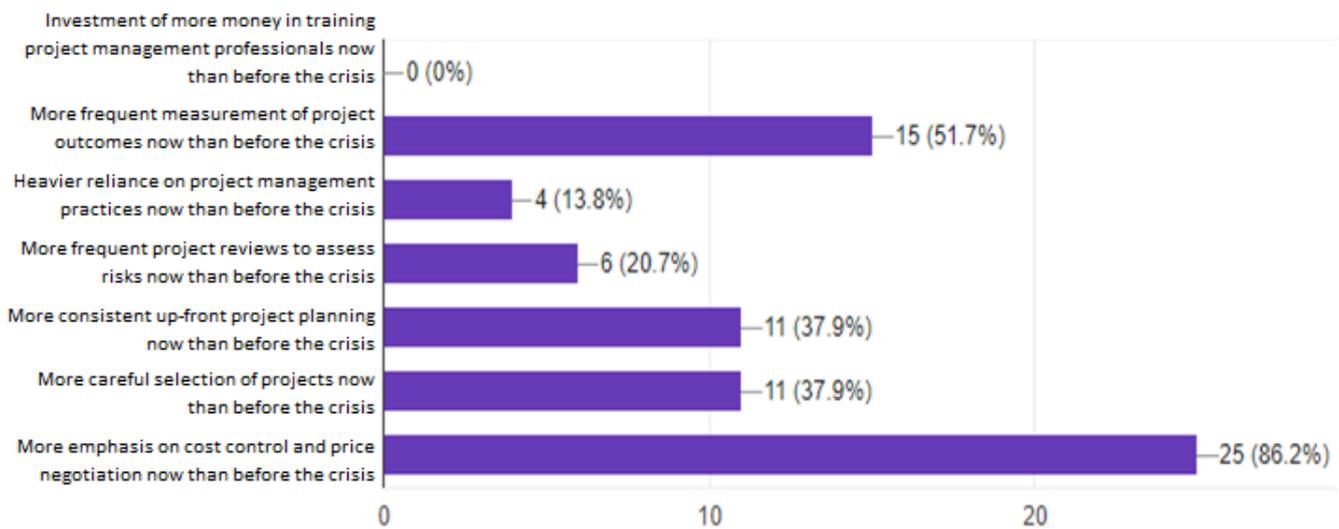
is important for the discipline of project management that it is perceived as a solution to the challenges of an economic crisis.

Question 9

Figure 19 Responses on question 9 of questionnaire survey

9. Which were the main changes your company made with regard to project management due to the economic crisis? (Please choose all that apply)

29 responses



The most popular answer among all the available choices is that construction companies give more emphasis on cost control practices and price negotiations now than before the crisis. It seems that one of the cost control measures that the Greek construction companies have adopted is the renegotiation of agreements with suppliers and subcontractors. In addition to this, the majority of the respondents have also replied that there is now a more frequent measurement of project outcomes and a more consistent up-front project planning. The specific actions have to do with the so called governance of projects, which the literature review has also highlighted as one of the strategies adopted as a result of the economic crisis. In the context of giving emphasis on project portfolio management, many respondents have replied that there is now a more careful selection of projects. The zero responses on investing more money in training project management professionals should not be seen as an indication that the Greek construction companies do not give emphasis on the role of project managers, but it should be attributed to the difficult financial position of the Greek construction companies and the shortage of training culture within the Greek construction industry in general.

From the examination of the specific section as a whole, it can be said that the main outcomes of the literature review chapter on how the economic crisis has affected the way construction projects are managed, are also confirmed by the responses of the questionnaire survey. There is therefore a convergence of primary and secondary data on the effects of the economic crisis particularly on the subjects of project portfolio management, risk management, project governance, diversification to new markets and most importantly on the upgrade of the role of project managers within the organisational structure of construction companies. The main divergences observed concern the merging of projects on which the Greek construction companies do not seem to emphasise.

Aftermath of the economic crisis

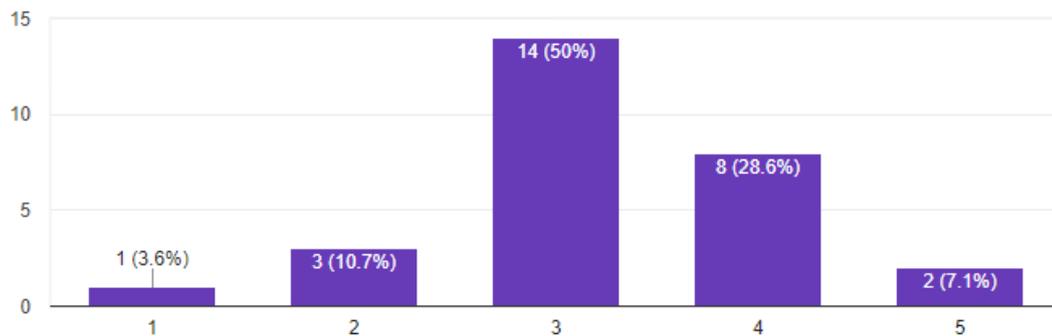
Question 10

Figure 20 Responses on question 10 of questionnaire survey

10. What are the main lessons learnt from the economic crisis in terms of project management? Please grade on a scale from 1 to 5 depending on how important you consider each subject (1: not important at all, 5: very important).

a. Invest only in prioritised projects

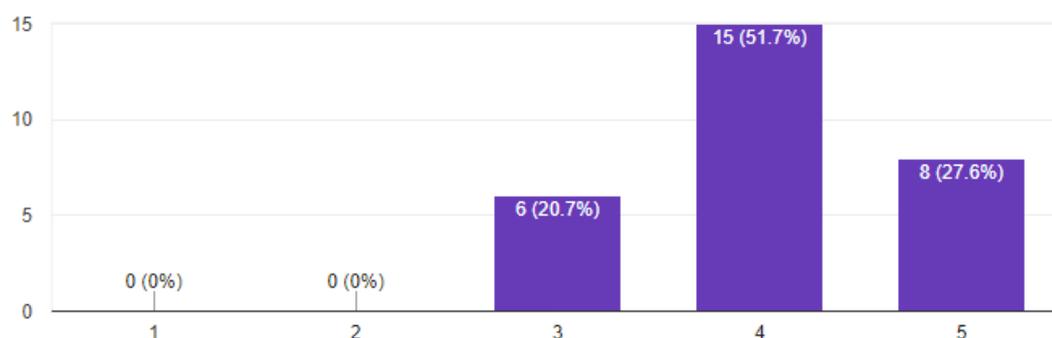
28 responses



Emphasising on project prioritisation as a component of project portfolio management is highlighted by the literature as one of the effects of the economic crisis on the way projects are managed and is also selected by the respondents as one of the lessons learnt from the crisis. In their attempt to secure sustainability during an economic crisis, companies should reassess their priorities and make sure that the projects they undertake are profitable.

b. Better risk management

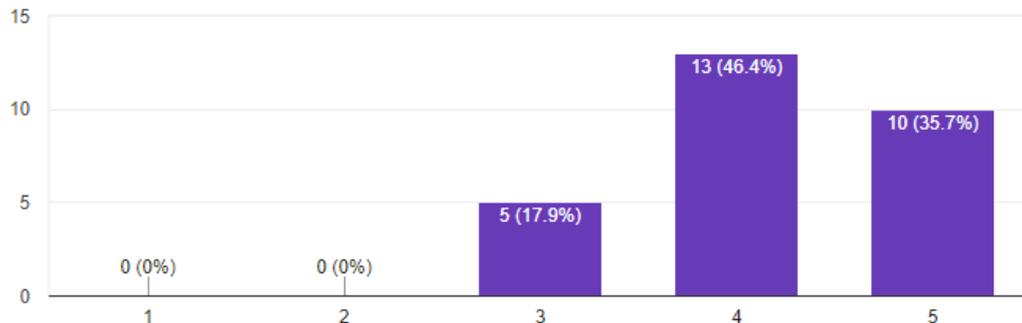
29 responses



Better risk management is valued by the respondents the most as a lesson learnt from the economic crisis. The persistence of the respondents on this matter probably has to do with the fact that risk management was not among the priorities of the Greek construction companies prior to the crisis.

c. Greater emphasis on project planning

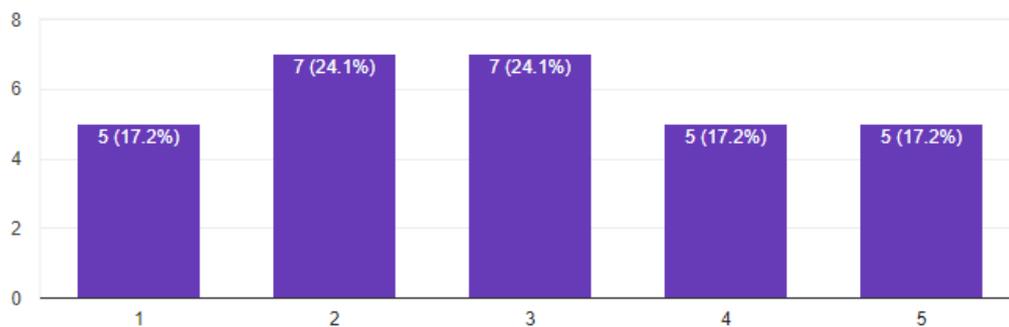
28 responses



According to the respondents, another important lesson learnt from the crisis is that companies should give greater emphasis on project planning. The specific action is part of the wider strategy of focusing on project governance. It is true that most of the Greek construction companies had not paid particular attention to project governance the years before the crisis and this explains the fact that the respondents are too persistent on this matter.

d. Reduction of human resources

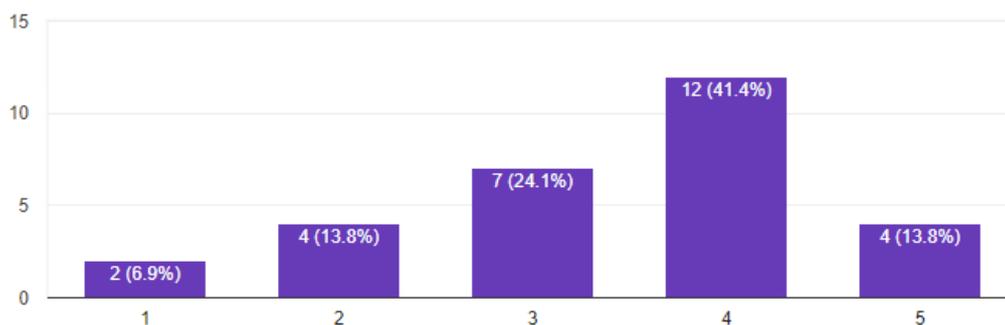
29 responses



Just as the literature is divided concerning the reduction of human resources as an effective measure of cost control, so is the sample of the questionnaire survey. The respondents do not seem convinced that staff lay-offs are useful for a company during an economic crisis and this reflects on the answers they have given.

e. Better training of workforce

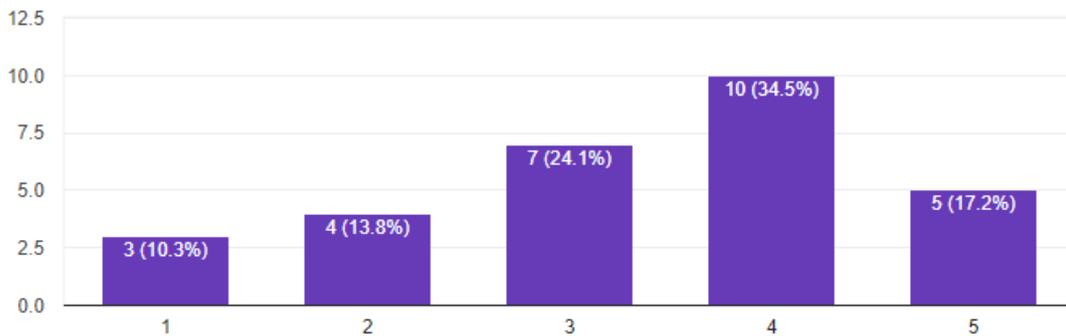
29 responses



Although the Greek construction companies seem not to spend a lot of money on training programmes, the majority of the respondents believe that better training of workforce is an important component and a significant lesson learnt from the economic crisis.

f. Better communication between employees

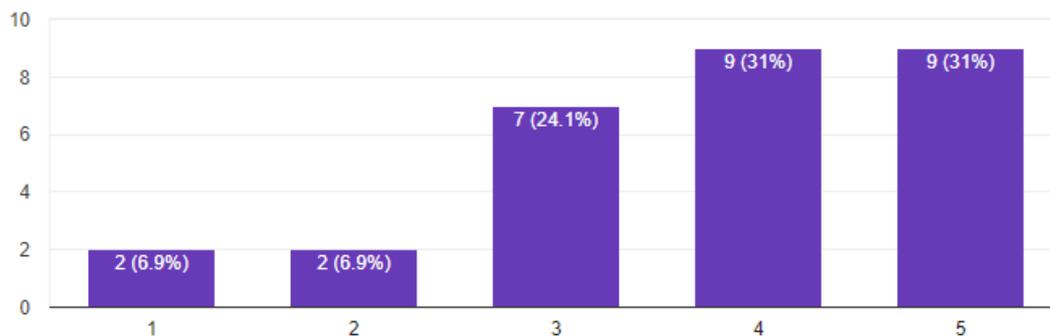
29 responses



Better communication between employees is another lesson learnt from the crisis according to the responses of the questionnaire survey sample. Even though the literature does not give particular emphasis on communication issues between employees during an economic crisis, it seems that the employees themselves consider it as an important element.

g. Greater sense of responsibility

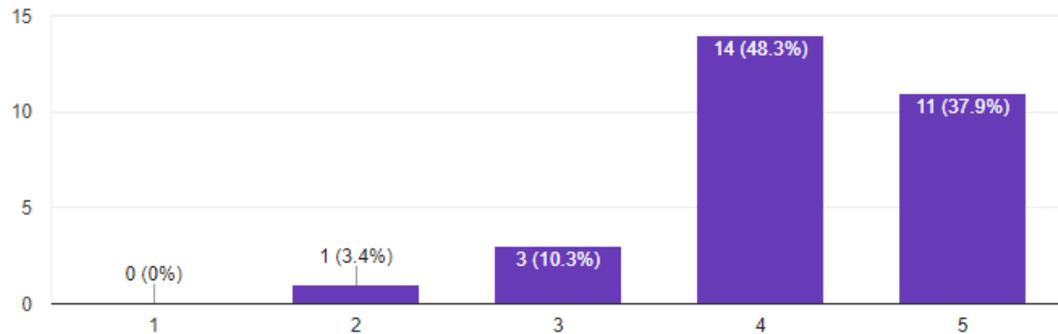
29 responses



A finding that perhaps comes as a surprise is that the majority of respondents believe there should be a greater sense of responsibility throughout the whole construction process. This is something that the literature does not give particular emphasis on and is underestimated by most researchers. However, the respondents consider it as an important component. Perhaps the specific situation has to do with peculiarities of the Greek construction industry and the unreliable behaviour of many companies towards employees, which has been observed in some cases. It should be mentioned however that according to the responses of question 6(m), the Greek construction companies have exhibited the required responsibility in terms of paying attention to project quality, despite the difficulties during the crisis.

h. Better project monitoring

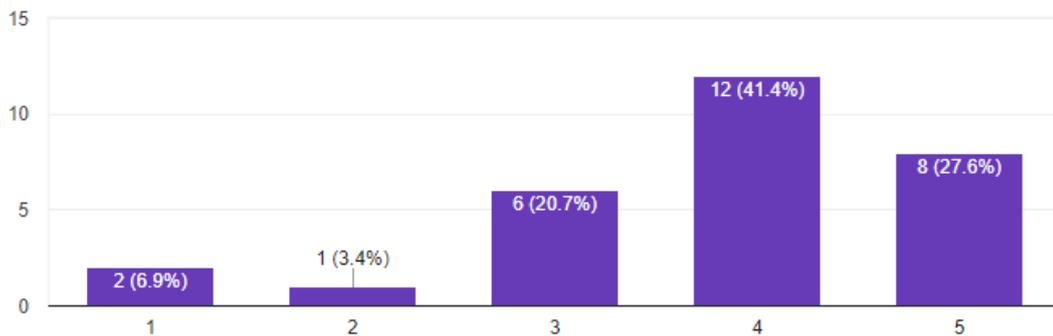
29 responses



Project monitoring is another component that falls into the wider strategy of project governance. Again the respondents value the specific action as an important lesson learnt from the crisis mainly due to the fact that little emphasis was given on it the previous years.

i. More careful selection of project manager

29 responses



Another finding that confirms the reemergence of project management as one of the core competencies that a company should possess, especially amid an economic crisis. The majority of the respondents believe that the careful selection of project managers is one of the main lessons learnt from the crisis. This is because they are convinced about the ability of a project manager to successfully deal with the special circumstances of an economic crisis.

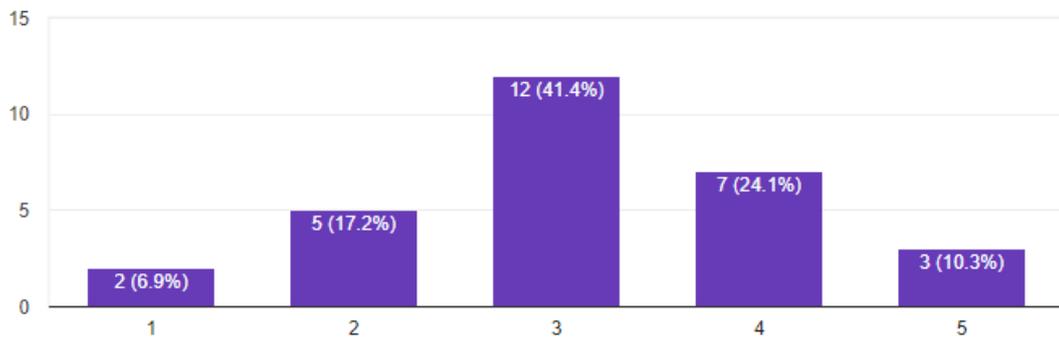
Question 11

Figure 21 Responses on question 11 of questionnaire survey

11. In your opinion which is the most effective way of dealing with economic crisis conditions from the project management perspective? Please grade on a scale from 1 to 5 (1: not an effective way at all, 5: very effective way)

a. Form a competitive crisis management team

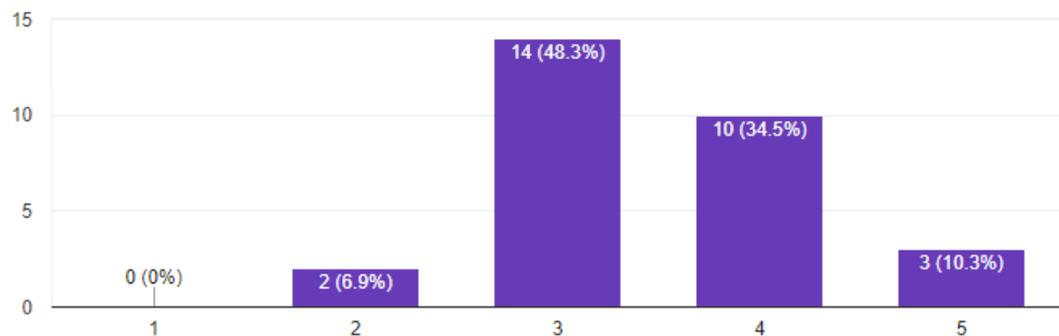
29 responses



The formation of a crisis team, which is so strongly proposed by the literature is also supported by the respondents, however just barely. The hesitation of the respondents to support this action stronger should be attributed to the administration model of the majority of the Greek construction companies, which heavily depends on the CEO or the owner of the company, who is perceived as the person responsible for every operational activity.

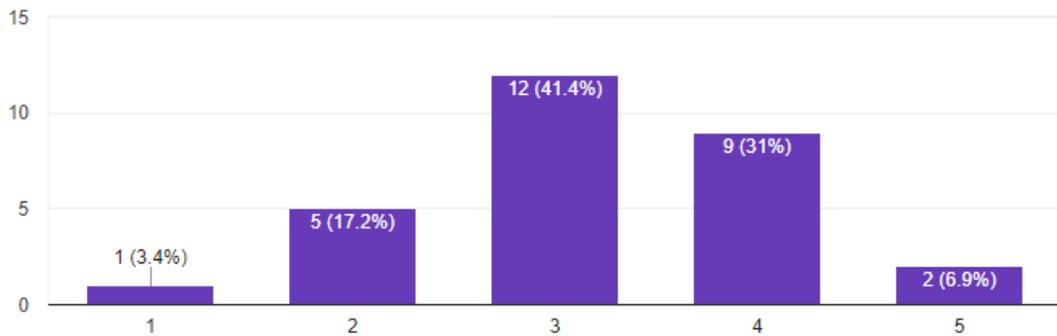
b. Develop an early warning system

29 responses



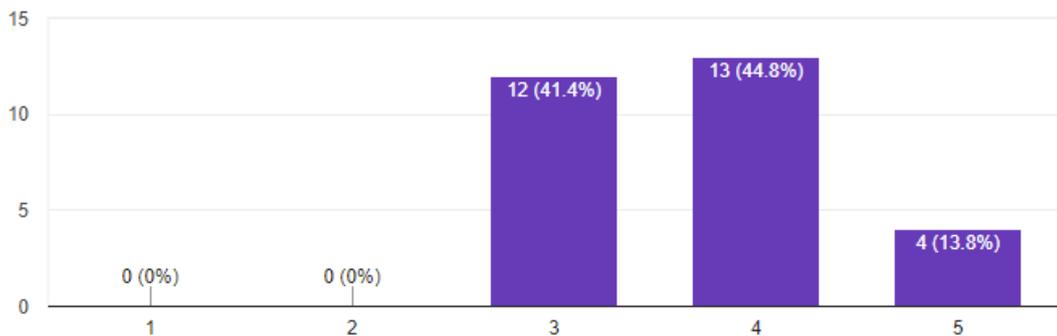
c. Form and test crisis plans and scenarios

29 responses



d. Develop risk and crisis control procedures

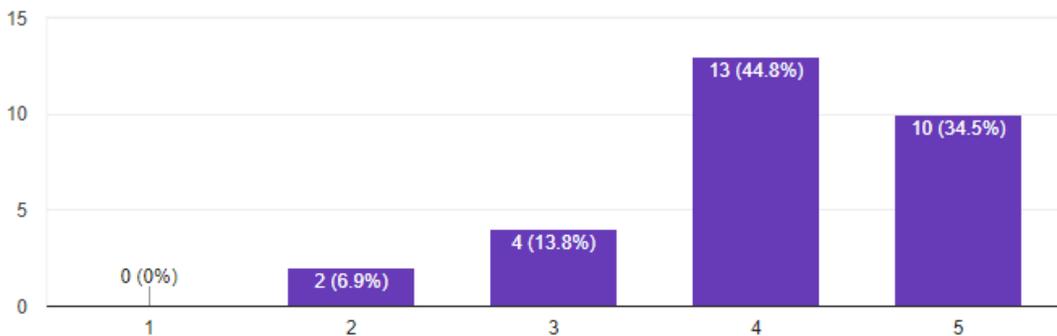
29 responses



The development of an early warning system, the formation of crisis scenarios and the development of risk control procedures are all tools that have been identified in the literature review chapter and are also supported by the respondents, with a stronger preference for the development of risk control procedures. The respondents seem to understand the importance of these tools to confronting economic crisis challenges from a project management perspective and this reflects on their replies.

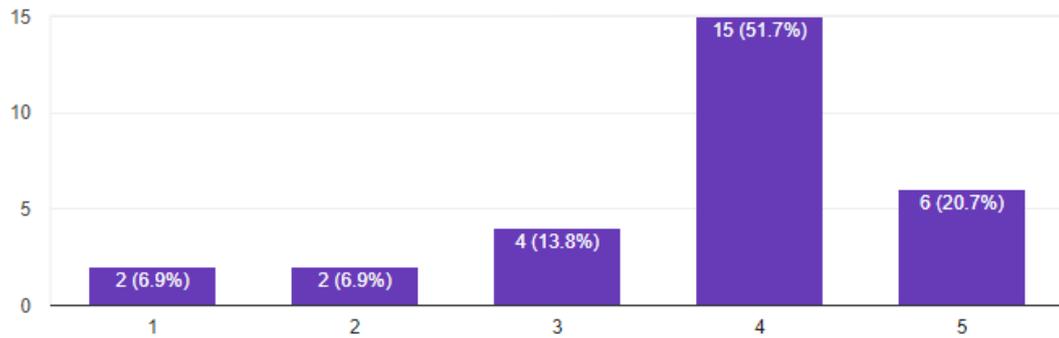
e. Carefully select projects that better fit the company

29 responses



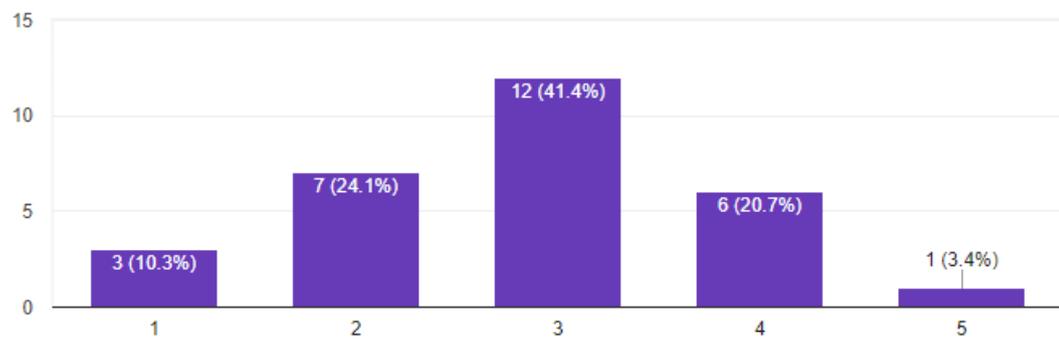
f. Upgrade the role of project management and emphasise on the people dimension

29 responses



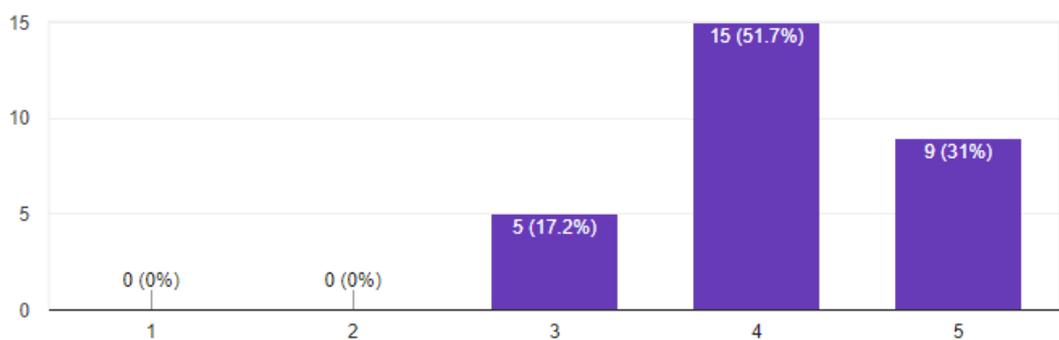
g. Cut down costs and reduce activities

29 responses



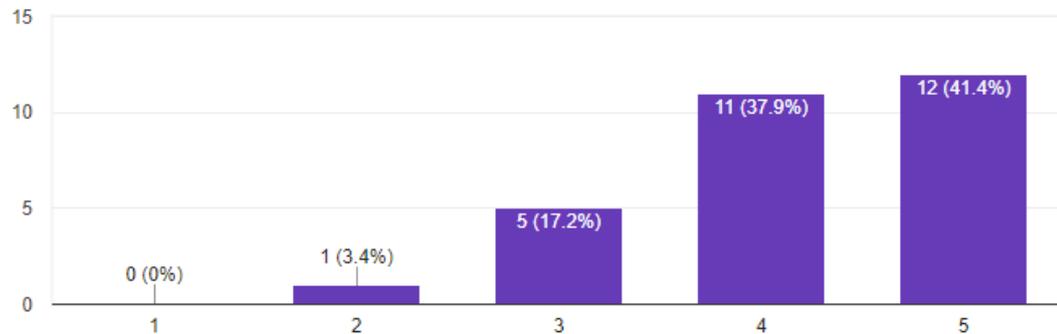
h. Emphasise on project planning and control

29 responses



i. Search for other fields with growth potential

29 responses



All the above tools and strategies have already been analysed and according to the respondents are all effective ways of dealing with economic crisis conditions. The only exception is again the reduction of activities in which the respondents do not seem to believe.

Overall, the respondents' views seem to converge with the main outcomes of the literature review on project management approaches under economic crisis conditions. Certain differences between the literature review and the questionnaire survey are observed in the fields of communication between employees and the responsibility a company should exhibit throughout the construction process.

Conclusions

There is no doubt that the effect of the economic crisis on the construction industry was of great proportions. The size and quantity of construction projects was significantly reduced and construction companies recorded turnover losses, which affected their operational capacity. Within this environment, the employees of the industry find considerable difficulties in advancing their careers and many of them have received salary reductions. Lower management executives and other workers have been laid off in great numbers as a measure of cost control adopted by the Greek construction companies.

The final conclusions concerning the research questions set in the introduction chapter are presented below.

Conclusions on how the economic crisis has affected the way construction projects are managed

Concerning the construction process, the Greek construction companies did not choose to cancel already initiated projects, however there were certain disruptions to the normal construction activity. The undertakings of new projects were inevitably reduced, but it was not part of the Greek construction companies' strategy to limit their main construction activities by undertaking smaller projects.

Budget cuttings were certainly observed with a preference to staff lay-offs as a measure of cost control with an immediate financial result. Another measure of cost control that was widely used during the crisis was the renegotiation of contract prices/agreements with subcontractors and suppliers. Risk management was established as a priority and more rigorous risk management techniques were put into practice. Synergies and alliances were not sought to the desired extent, due to the highly competitive nature of the Greek construction industry and the conflicts of business interest observed. Project portfolios were redefined with the intention to achieve the

optimal mix of projects, which can ensure a profitable operation activity. In this context, the Greek construction companies increased their involvement in fields with growth prospects, such as renewable energy and touristic development. A sense of responsibility was exhibited concerning project quality, which was not compromised during the crisis years.

Another important conclusion is that the economic crisis changed the way construction companies perceived project management and made them realise that possessing project management as a core competency can help them remain competitive during an economic crisis. As a result, they now put more emphasis on project management and they have upgraded the role of project managers within their organisational structure.

More emphasis on project governance was also given in the form of more frequent measurement of project outcomes and more consistent up-front project planning.

Conclusions on how project management should be exercised amid an economic crisis

The formation of a crisis team together with the development of an early warning system are the first steps towards an effective confrontation of an economic crisis in terms of project management. The testing of crisis scenarios and the development of crisis control procedures are also of vital importance, since they can raise the level of readiness of a company.

Projects should be selected more carefully depending on the expertise and the competencies of a company and particular emphasis should be given on project planning and control, so that a company has at all times the required data of all the projects it has undertaken.

Openness to new markets with growth potential should be existent and a company should always be ready to take advantage of new opportunities should these emerge. For all the above, the role of project managers is crucial and this is why companies should upgrade their role within the organisational structure and adopt stricter selection criteria. At the same time companies should pay more attention to the people dimension and particularly to training of workforce and facilitating the communication channels between employees in order to improve interpersonal relations. Due to the seriousness of the situation, a greater sense of responsibility should be exhibited by all employees of a company throughout the whole construction process. The reduction of human resources should not be among the first priorities during an economic crisis, since people is perhaps the most valuable asset for every company.

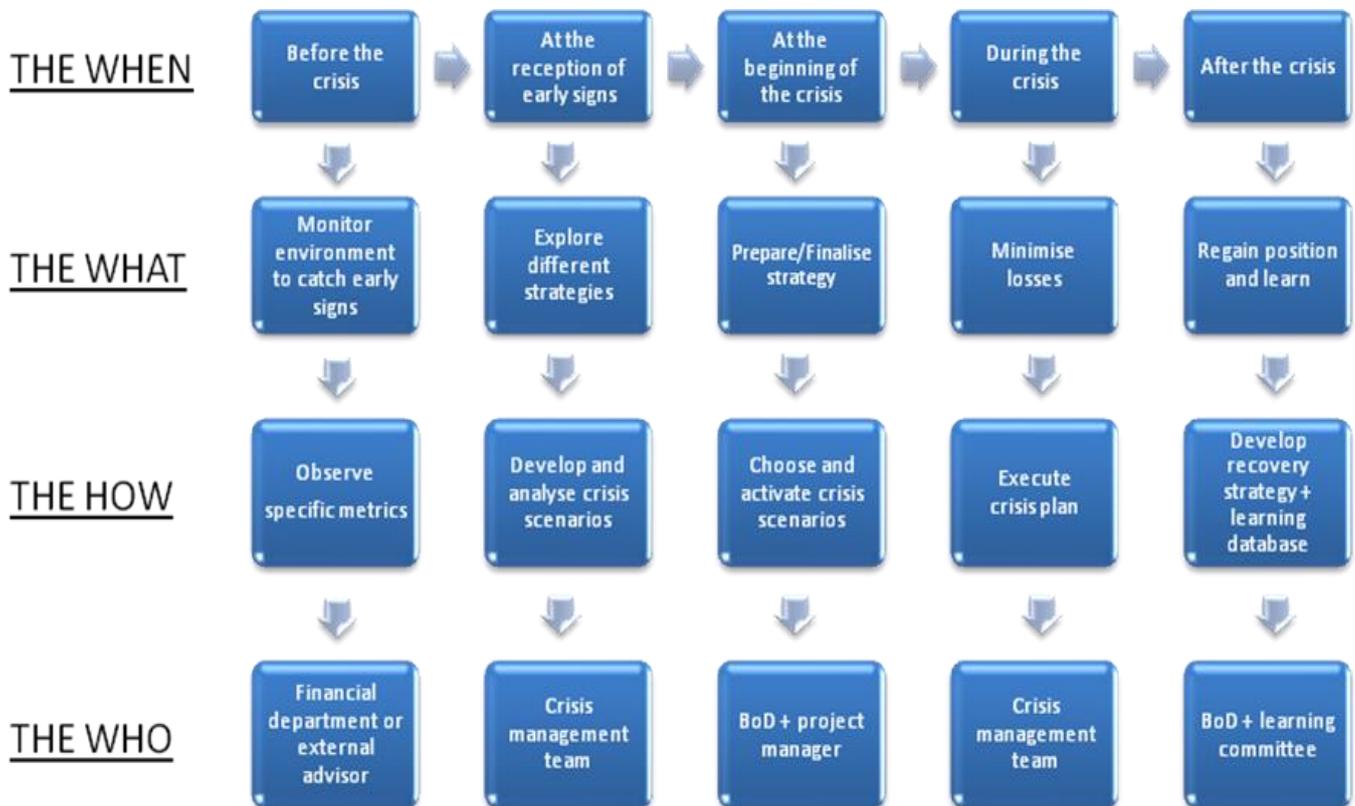
Recommendations

The weakness of the existing models for confronting economic crisis conditions with respect to project management is that they either suggest single tools and strategies, which are too general or they do not propose targeted and specific actions for each phase of an economic crisis. Most importantly they do not explain how to implement the proposed actions.

It is believed that a complete model/approach for dealing with economic crisis conditions from the project management perspective should include four basic elements. It should clearly define who should do what, how he/she should do it and when to do it.

The originality of the approach proposed by this research is that it assigns specific actions to specific people in a specific time frame explaining at the same time how these actions should be implemented. A schematic representation of the recommended approach is shown below (Figure 22).

Figure 22 Recommended approach for confronting economic crisis conditions in terms of project management



Before the crisis

The term “before the crisis” refers to the interval between two successive economic crises.

Action: Monitor economic environment to catch early signals of an economic crisis

It is absolutely necessary for a company to be aware of the economic environment in which it is called to operate at all times. The purpose of the specific action for a company is to always be prepared and to optimise the use of its resources depending on the prevailing economic climate.

Implementation: Observe specific economic indices and metrics

There are a lot of indices or metrics, which depending on their fluctuation can give signals of an upcoming economic crisis. It is believed that especially for the construction industry some of the most appropriate indices to be observed are:

- Housing prices
- Construction sector output
- Banking interest rates
- Specific commodity prices such as iron and oil

Responsible: Financial department or external financial advisor

The action of monitoring the economic environment can be implemented by a small financial department within the company run by the Chief Financial Officer or by an external financial advisor hired to provide this kind of service.

At the reception of early signs

The second phase of the proposed approach is just after the reception of warning signals indicating that there is an upcoming economic crisis. At this point, the monitoring of the economic environment has shown that a crisis is on the horizon and has revealed some initial characteristics of its nature.

Action: Explore different strategies

Having received signals of an upcoming economic crisis, it is time for a construction company to act and get ready to confront the challenges ahead. It is important for a company not to rush into things, but to start preparing after some initial characteristics of the economic crisis have been identified, so that the whole process is towards the right direction. On the other hand, acting too late would be pointless; therefore timing is crucial for this phase of the approach.

Implementation: Develop and analyse crisis scenarios

The process involves the development and analysis of crisis scenarios relevant to the upcoming crisis. How detailed each crisis scenario would be depends on how proactive a company wishes to be. It is believed that each crisis scenario should include at a minimum:

- How to manage the personnel of the company
- How to manage the Project Client/Sponsor of each project
- How to manage the suppliers and subcontractors
- How to manage the equipment and machinery of the company
- How to manage the portfolio of projects

It is proposed that a company should develop and analyse at least three scenarios depending on the intensity of the expected crisis (one mild, one more severe and one extreme scenario).

Responsible: Crisis management team

A crisis management team should be formed upon the reception of early signals of an upcoming economic crisis, with the task to develop and analyse crisis scenarios. The importance of the team's task means that it should operate with the maximum possible efficiency. In order to achieve this, it should be relatively small, flexible and contain or directly report to a C – level executive of the company. Of course the project manager should have the leading executive role.

At the beginning of the crisis

The third phase of the approach is at the brink of the crisis outbreak. At this phase the early warning signals have been confirmed, the crisis has just started and its intensity and characteristics are evident and pretty much existent.

Action: Prepare for the crisis/Finalise strategy

With the economic crisis in place and its characteristics revealed, a company has all the data it needs to decide on its strategy. Again timing is crucial, since a possible delay in finalising the adopted strategy can be extremely detrimental.

Implementation: Choose and activate crisis scenario

Out of all the scenarios developed during the previous phase, it is now time for a company to choose the one that better fits the economic crisis in progress and activate it. From the time a crisis scenario is chosen, it becomes the crisis plan of a company and its successful implementation is critical. Of course certain adjustments and improvements can and should be made at all times.

Responsible: Board of Directors + project manager

Activating a crisis scenario is a very important decision, which has a strong impact on all the operational activities of a company and therefore the Board of Directors should be responsible for making such a decision. However, due to the fact that a company has usually a number of projects and each project has some unique characteristics, the project manager of each project should always be consulted.

During the crisis

The most critical and difficult phase of the whole approach is when the economic crisis is at its peak. It is the phase during which a company should intensify its efforts to ensure sustainability.

Action: Minimise losses

The harsh environment of an economic crisis inevitably leads the majority of construction companies to loss recordings. The objective of a company at this phase should be to keep these losses to a minimum. This of course does not mean that if an opportunity emerges a company should ignore it. Openness to new opportunities is desired and should be exhibited at all phases of the recommended approach.

Implementation: Execute the crisis plan

The successful execution of the crisis plan is crucial. If developed correctly, the crisis plan should ensure the exit from the crisis with minimum losses. Project governance is a key element in doing so and all the projects of a company should be thoroughly monitored throughout the construction process. The risks involved should be reviewed constantly during this phase.

Responsible: Crisis management team

The crisis management team, which has prepared all the crisis scenarios, should be responsible for implementing the chosen one. Again the project manager should have the leading executive role, however the plan should not be executed dogmatically, but as the economic crisis evolves so should the crisis plan.

After the crisis

The last phase of the approach is after the crisis, when the economy starts to grow again. It is equally critical to the phase during the crisis, because the longevity of a company heavily depends on its performance during this phase.

Action: Regain position and learn from the crisis

During this phase a company should have two distinct objectives: a) to regain its market share and why not expand it and b) to develop a learning mechanism, which will allow the embodiment of lessons learnt from the crisis for future use.

Implementation: Develop recovery strategy + create learning database

After the mitigation of the crisis effects, a company should develop a recovery strategy in order to regain the recorded losses and normalise its operation. For the development of this strategy a company should:

- Reassess its objectives
- Review its relationship with suppliers and subcontractors
- Reevaluate its resource base
- Reassess the economic environment in order to detect possible new opportunities created by the crisis

For the purposes of the learning process, a database should be created containing all the processes followed, lessons learnt and mistakes made during the crisis. During this phase a company should adopt a learning orientation, which through the development of new routines can eventually change its operational behaviour. Training of employees should be provided, embodying the lessons learnt from the crisis.

Responsible: Board of Directors + learning committee

Regaining former position is a process, which requires important decisions to be made and therefore the Board of Directors should be responsible for this task. For the task of learning from the crisis, a committee should be formed consisting mainly of the crisis management team members with the project manager having a central role.

Epilogue/Further research

Concerning the recommended approach for exercising project management amid an economic crisis, it should be noted that due to the fact that every country and every project has its unique characteristics, there is not a general model, which can be applied in all cases. The recommended approach is a sound model providing a good framework; however certain modifications and adjustments should be made in every distinct case.

The derivation of primary data was based on a questionnaire survey addressed to people from the Greek construction industry specialised in project management. Greece certainly provides a good base for research; however it is a relatively small market. It would be interesting if further research could be carried out in a bigger, more developed market, such as Germany, the UK or the US, or even better in many countries simultaneously.

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