Comparing the major project management Bodies of Knowledge with Greek practice in the construction industry

By

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Abstract

A number of standard project management texts have appeared in recent years in the form of Bodies of Knowledge (BoKs), best practices and ISO standards. The literature on the comparison of the respective texts is, however, scarce and atypical. Moreover, the absence of a formal Body of Knowledge widely used in Greek construction projects, makes the comparison very complex. Project management Bodies of Knowledge are codified single references consisting of "generally recognized management practices" represented by different component processes. Greek construction processes are described by a multiplicity of Laws, issued since 1984. The legislative framework is complex, difficult to trace, time dependent and expands over thousands of pages. The absence of a codified guide makes the knowledge and the execution of the included processes difficult. However, no study comparing the Greek construction professional practices, regarding practitioners' opinion, to any widely accepted professional project management framework has been published yet. This research aims to present a comparison of major BoKs with the Greek project management practice.

Key Words: project management, construction industry, PMBOK, APM BoK, Knowledge management.

Word count: 10,300

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Chapter 1

Introduction

1.1 Identification of problem and problem 'owner'

Although the necessity for managing projects is as old as the human race's struggle to tame the elements, it was not before the 19th century that F.W. Taylor proposed a systematic approach to industrial production aiming at maximizing profits. Project Management is an even younger discipline; its growth in terms of professionals engaged, in methodologies, in generation off new knowledge and in new fields of applications is however, enormous. Memberships to the Project Management Institute (PMI), established in 1969 in USA, grew from 8,500 in the '80s to over 200,000 today in over 125 countries worldwide. Similarly, the International Project Management Association (IPMA) comprises over thirty National Associations representing approximately 20,000 members in Europe but also in Africa and Asia. One could argue about a rapidly growing project management culture, which however, presents significant differences in its dissemination in different countries, because of different local economic conditions and cultures.

In Greece a large number of infrastructure projects have been completed in recent years (e.g. the Egnatia highway, the Athens Metro, the upgrade of railway infrastructure, the Athens 2004 Olympic Games projects, etc.). The impact from the realization of these projects resulted in a yearly GDP increase of 4%. Approximately one quarter of this GDP is attributed to construction. The construction EU agenda, the FOCOPE (Forum in the European Parliament for Construction) initiative and others support the view that construction sector has proved to be one of the driving forces of the Greek economy.

How project management 'behaved' in this environment? In Greece until the early '90s project management was almost exclusively associated with

construction management. However, there is little evidence that project management was really applied in the construction projects since the mid '80s.

The need to apply project management techniques became apparently evident in both public and private sector after Greece joined the European Union (E.U.) and European funding was made available to facilitate the convergence of the economy to the E.U. norm. The necessity for rational and effective use of the investments, for timely project completion, the increased public interest for quality, the somewhat obligatory cooperation between the economy, the need to increase the public sectors efficiency are some of the reasons that resulted in an urgent need for competent project management professionals. This demand is expected to be sustained in the long term because of changes in the structure of the economy and for other reasons.

Since Greek project management has just ~~already~~ made the first steps to create a professional project management society, there is not any professional knowledge framework referring to Greek project management practice, and project management profession has not been yet qualified, questions about the future of project management in Greece, will motivate any research within the discipline the next years.

How could the experience from the Greek construction growth be explicit in order to form 'new' knowledge? Does Greek project management practice need to be supported by a professional knowledge framework? Is project manager qualification emerging? What is the relation of project success rate and the lack of a formal knowledge framework? Such questions will motivate this report.

1.2 Research objective

The study will concentrate on the comparison of the PMI's PMBOK, APM's BoK and the Greek construction professional practices. The aim will be to examine the relation of the content of two major professional standards with the Geek professional practice. How cultural and national differences influence the management process and if these should be covered by a knowledge framework, will be also mentioned. The research will also examine if a project management

qualification program would be a 'step forward' for the discipline in Greece. Moreover, will be examined the relation of project performance with the lack of a professional knowledge framework, as well as, project failure factors.

1.3 Value of the research in terms of possible outcomes

The aim of this study is to examine how useful can a widely accepted standard be, for improving Greek construction professional practices. Moreover, this study aims to be a reference for any further research on the topic. The scope regarding this research and any further research to be probably suggested is to provide Greek construction system with useful knowledge for improving practices and processes already used, as well as, how the knowledge came from the rapid growth of the construction sector the past years can be made explicit to formal knowledge.

1.4 Limitation of the study

Any professional body of knowledge is referring on the project management discipline regardless of the field of practice (i.e. construction projects, software development projects, business strategy projects). In the current research we will focus on construction projects only. However, the view of a qualified project manager will be also presented. Moreover, by the time that the research was being undertaken the sample of people joined the survey should be limited, in order the study to be completed on time. In other worlds, the sample may be not adequate enough to conclude to a general result, however, it can provide us with a general practitioners' view about project management practice in Greece within the construction sector.

Chapter 2

Project Management Guides: A Review

2.1 Introduction

Project management standards are being used extensively throughout the world in training and development of professional certification programs and corporate project management methodologies on the assumption that there is a positive relationship between standards and effective workplace performance. However, Crawford (2005) argues that there is no statistically significant relationship between performance against the widely used standards.

This chapter presents an overview of the current principal project management knowledge guides, including a briefly comparison of their context and coverage. Moreover, it includes a discussion about how BoKs have contributed to project management discipline, as well as, the project management discipline in Greece. The aim is to define the methodology which will be used later for this report.

2.2 What project management is?

There are found literally two different approaches about what project management is. On the one hand, the one defining project management as a group of tools and techniques to execute projects "on time, in budget, to scope". On the other hand, there are those which thinking project management on a broader view, including the setting up of the project and the delivering of it to achieve stakeholders' satisfaction (Morris, 2004).

The first approach is Project Management Institute's view on what project management is, as this is described in PMI's 'A Guide to the Project

Management Body of Knowledge' (PMI, 2004). Although, PMI's standard is the most widely used worldwide, arguers found within the academic and professional society, believe this model to have serious shortcomings. It contains nothing detailed on project strategy, nothing on project definition, little on value management, nothing on technology management, and little on the linkage with program portfolios. There is nothing on leadership and minimal on team-based development. In fact, it represents an 'old fashioned' view of project management as tool-based, ignoring the broader context and treating strategy and technology as a given, with people essentially as an interchangeable commodity (Morris, 2004).

There are many that believe this "old fashioned" approach is quite inadequate. Those people view on project management is broader, including project definition and development, as well as the linkages with business performance. For those people, business performance really is the important one in the successful accomplishment of projects. Although, there is not a clear outcome from these 'project definition debate', for what project management is, the 'dominant model' is now far from just project control. It is beyond PMBOK, but not the APM BOK (APM, 2006) or even the IPMA "Competence Baseline" or Japanese ENAA P2M Model (Cauptin et al., 1998; Engineering Advancement Association of Japan, 2001). *"It is the management discipline of how one initiates, develops, and implements projects for stakeholder success and includes portfolio management as much as the traditional areas of project control and organization"* (Morris, 2004; Crawford, 2004).

2.3 Introduction on BoK's

The development of a body of theory is typical of a well-established profession. Mastery of theory, along with mastery of practical skills of the field, is a hallmark of professionals. Indeed, reliance on the theoretical is the single most important factor distinguishing a profession from a craft (Fugate and Knapp, 1998).

At the 1960s were founded the first project management associations, since then, project management associations around the world have made serious

attempts to conduct themselves as professional associations. An important element of a profession is ownership of a body of knowledge. Project management associations have spent considerable time and effort in developing professional Bodies of Knowledge (BoKs) and their associated certification programs. The most widely known project management associations worldwide are: Project Management Institute (PMI), Association of Project Management (APM), and International Project Management Association (IPMA).

There are currently three formal project management 'Bodies of Knowledge': PMI's, APM's, and by Japanese ENNA (Engineering Advancement Association of Japan) and JFPM (Japanese Project Management Forum). The International Project Management Association has a "Competence Baseline" document (Caupin et. al, 1999), on which are based the British, French and Germans BoKs. On table 1 are presented widely known and used guides and standards, however, the most accepted worldwide are: PMI's Guide to Project Management Body of Knowledge and APM's Body of Knowledge.

Standard	*Scope*
PMBOK (Project Management Book of Knowledge) Guide 2004	Is the base for qualification, categorization, for project management
ISO 10006 (Project management quality guide) 1997	Basic definitions and processes. Aims to provide a quality guide for project management
British standard BS 6079 (BSI, 1996)	Basic definition and processes. Guide to project management
DIN 69 900 (German standards DIN 69 900-69 903 and 69 905)	Basic definition and processes. National requirements
APM BoK (2006)	Qualification standard, provides educational knowledge
Prince 2	Definitions and processes for information projects
Japanese BoK (P2M)	Professional qualification standard

Table 1: Major project management BoKs and standards

Those standards and guides focus primarily on what the project manager needs to know to successfully manage project, and are used as the knowledge base or standards for professional qualification in many countries. BoK's include the

scope, the definitions, the content, and the relationships of project management. However, different BoK's published by different associations implements different approaches on project management knowledge context.

2.3.1 PMI's A Guide to Project Management Body of Knowledge

At the time of commencement of the report the PMBOK Guide in its 2004 version, some may argue, is the most widely distribute of the available knowledge guides, and is the basis for the most widely adopted project management certification program.

The last years, PMI had been working on defining or mapping what constituted the body of knowledge of project management since the middle 1980's. PMI's first project management standard was published at 1983 (Wideman, 1986).

The publication, at 1996, A Guide to the Project Management Body of Knowledge marked a major milestone in the development of project management as a field of practice and profession. It is this document that has been widely accepted throughout the world as a standard for project management knowledge, and has been an important factor in the growth of interest in project management since its first edition (PMI, 2004).

PMBOK is a codification useful to both practitioners and professionals. It doesn't aim to provide the reader with the knowledge of managing project. In addition, is an important tool that includes not only briefly the scope definition of the project management knowledge but provides a guidance in terms commonly used in project management practice and suggests a logical index of information and categories that can be used by professionals in preparation, storage and retrieval of project management information (Allen, 1995).

The PMI's PMBOK represents itself as the authority in such areas as:

- defining 'generally accepted practices of project management';
- defining the basis of certification testing for project management professionals;
- defining the basis for the accreditation of degree-granting education programs in project management.

The document specifically states that the 'generally accepted practices' described in the document are project management standards. These words are clearly moving the document in the direction of establishing a comprehensive set of professional standards, principles and practices that will be used publicly as a measure of project management performance.

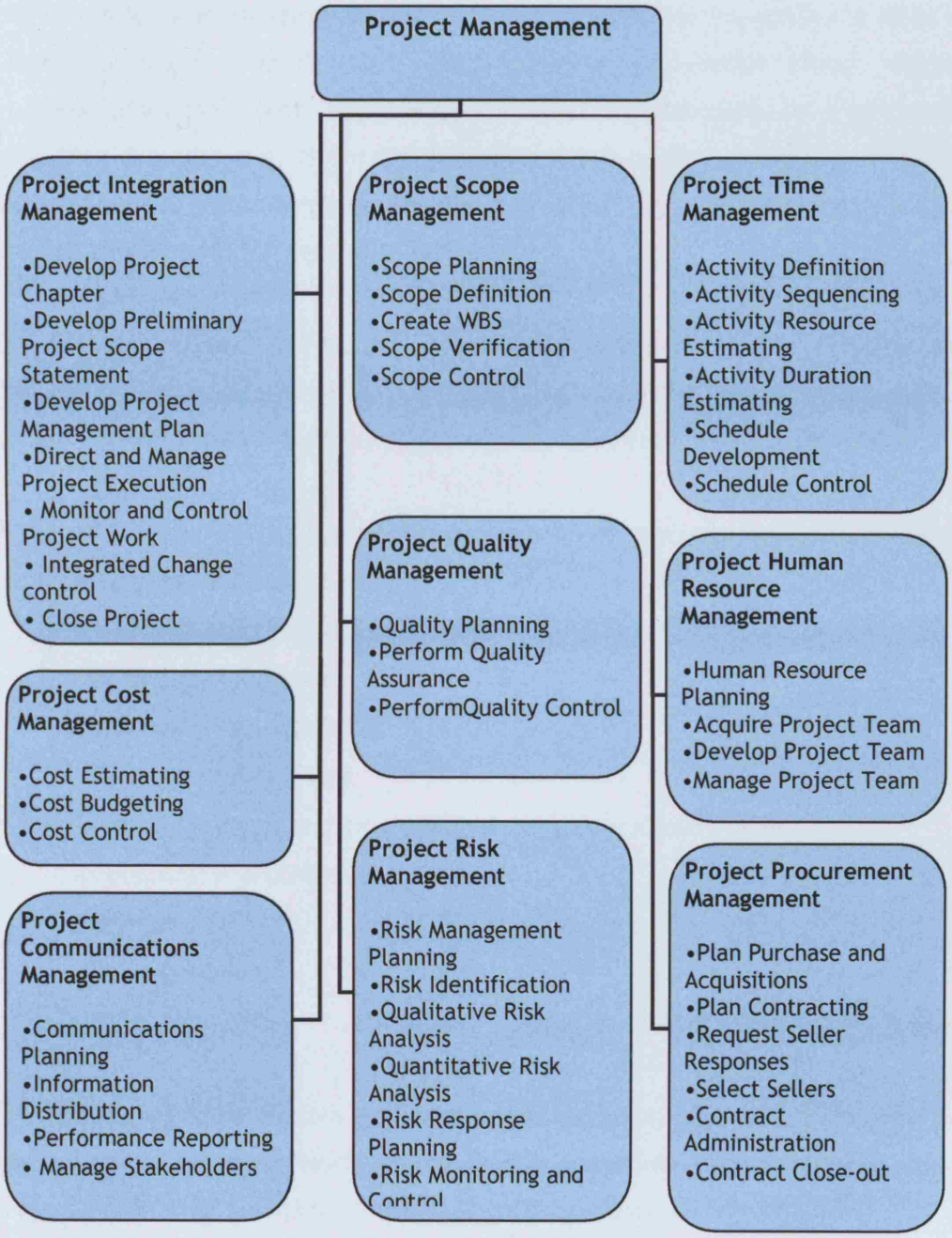

Figure 1: PMI PMBOK 9 knowledge areas, source: PMI 2004

In the updated document are included practices that are unique or almost unique in project management application and are widely accepted. By the term widely accepted are defined practices that are used in most projects and their value is widely accepted worldwide. It doesn't mean that these practices must be used united on all projects. Project team is responsible to examine which practices are suitable for each project (PMI, 2004).

PMI's PMBOK, seen by many as one of the most authoritative guides to what a project managers should know, identifies nine 'knowledge areas' (figure 1).These align well with this view of project management as a primarily execution management. However, deploying these project management areas alone is almost certainly no guarantee of ensuring the accomplishment of the project "on time, in budget, to scope".

For example, research carried out at Oxford and in the USA in the 1980s showed that many of the factors that cause projects not to meet their schedule or cost targets are not covered by the PMBOK type model (Morris and Hough, 1987).

Among this data, which showed the causes of why projects fail to meet their baseline targets, are factors such:

- client-driven changed specifications
- technology problems
- poor design management
- external price changes
- environmentalist and/or community or political difficulties
- geotechnical problems
- weather
- labour problems

(Morris and Hough, 1987).

Few, if any, of these factors are even addressed today in much of the project management literature. Much of the PMBOK material is helpful in managing projects, but is not sufficient to manage them successfully (Morris, 2002).

2.3.2 PMBOK construction extension

Construction industry is generally formed by projects. Since construction projects have certain characteristics which make them to be distinctive by other forms of projects, PMI at 2002 published a construction extension of PMBOK 2000 edition, to include information that specifically refers to construction projects (PMI, 2002).

In this extension the nine PMBOK knowledge areas are altered to meet specific elements referring to construction industry, and emphasize on process that are important in construction industry. Four knowledge areas were added:

- Safety management
- Environmental management
- Financial management
- Legal issues management

2.3.3 APM Body of Knowledge

The broader view of project management discipline as this is described by APM's BoK (4&5th edition; APM 2000, 2006) has an almost revolutionary impact on the way one thinks about relationship between performance and project objectives. It is, in fact, much more closely aligned with the project stakeholders. Here the issue is not so much simply whether the project will be accomplished 'on time, within budget, and to scope', but whether the business success justifies the effort, and the risk, expended in undertaken the project (Morris, 2002; Morris et. al., 2006) (Table 2).

The development of APM's BoK started at 1986, and was first published at 1992. The main aim of APM's BoK document is the qualification of a certain knowledge and ability to manage projects. APM's BoK was updated at 1994, 1996, 2000 and 2006 (on the 5th and current edition).

APM today counts more than 10000 members and APM's BoK consist the 2nd largest professional guide of knowledge (after PMI's). Defines all the subjects which APM considers that project management professionals should know. APM BoK 'deals' with technical, commercial or environmental subjects which often are thought to be critical in defining project success or failure (Morris et al, 2000; 2006).

Project Management in context	
Project Management Programme Management Portfolio Management	Project Context Project Sponsorship Project Office
Planning the strategy	
Project Success Criteria and Benefits Management Stakeholder Management Value Management	Project Management Plan Risk Management Quality Management Health, Safety & Environment

Executing the strategy	Techniques	Business and Commercial	Organisation & Governance	People & the profession
Scope Management Scheduling Resource Management Budgeting & Cost Management Change Control Earned Value Management Information Management and reporting Issue Management	Requirements Management Development Management Estimating Technology Management Value Engineering Modelling & Testing Configuration Management	Business Case Marketing & Sales Financial Management Procurement Legal Awareness	Project Life Cycles Concept Definition Implementation Hand-over and Close- Project Reviews Organisation Structure Organisational Roles Methods and procedures Governance	Communication Teamwork Leadership Conflict Management Negotiation Human Resource Management Behavioural Characteristics Learning & Development Professionalism & Ethics

Table 2: APM BOK, source: Morris 2006

APM's BoK document context is consisted of the basic academic and professional project management theories. The document reinforces the qualification of APM and the continuous development of professional projects.

Although, APM BoK was developed to satisfy the needs of APM's qualification program, satisfies as well, APM's continuous professional development program.

APM's project management qualification program is based on APM's BoK and is developed on three stages. The process was developed to define the candidate's knowledge, experience and ability. The qualification program has been designed the candidate not only to prove his technical knowledge but his professional practice as well (Willis, 1995).

2.3.4 Japanese BoK

In 1997 the Engineering Advancement Association of Japan published its own knowledge book. Industry's representatives, the Japanese academic society, and the Japanese Project Management Forum cooperated on the publishment of this document.

The Japanese BoK consist the base of professional certification in project management. Its difference to the corresponding European and American BoK is that it concerns the management of multiple projects and aims to the ways that project management can lead in the innovation, as well as, in the creation of improved business value.

The BoK is based on a pyramid structure and is called PM2. The 4 basic domains for certification are: goals, strategy, management of value and finance. The PM2 model separates the procedures of project management and the practices in nine knowledge fields of project management, and five procedures of project management following the knowledge base of PMI (Kwak and Ibbs, 2002).

2.4 Comparison of BoK's documents

2.4.1 Comparison of BoK's content

The content is what the BoK document includes. Document content is affected by three elements: context, approach, and structure. In the following table, is attempted to compare the contents of the two various BoK documents (PMI, APM) in such a way that none of the BoK documents is used as a baseline or benchmark against the other. That content is arranged according to what type of knowledge it appears to represent: business operations, general management skills, project-management concepts, or product-management processes.

PMI	APM
Business operations	
	4.1 Marketing and sale
	4.2 Operations/technical management
	4.3 Fianance and accounting
	4.4 Information technology
	4.5 Law
	4.6 Industrial relation
	1.11 Quality
	1.12 Safety
General management skills	
2.3 Organizational influences	2.1 Organization design
	2.2 Control and coordination
2.4.2 Communication	2.3 Communication
2.4.1 Leading	2.4 Leadership
	2.5 Delegation
	2.7 Conflict Management
2.4.3 Negotiating	2.8 Negotiation
	2.9 Management development
2.4.4 Problem solving	
2.4.5 Influencing the organization	

Project management concepts	
1.5 Related endeavors	1.2 Program management
1.2 What is project?	1.3 Project management
1.3 What is project management	
2.1 Project phases and the project lifecycle	1.4 Project lifecycle
2.5 Socioeconomic influences	1.5 Project environment
	1.6 Project strategy
3. Process of project management	1.9 Integration
Project management processes	
5.1 Authorization	3.12 Mobilization
2.2 Project stakeholders	1.8 Project success/failure criteria
5.2 Scope planning	1.7 Project appraisal
8.1 Quality planning	1.11 Quality
5.3 Scope definition	3.1 Work definition
6.1 Activity definition	
9.1 Organizational planning	
7.1 Resource planning	3.2 Planning
10.1 Communication planning	
12.1 Procurement planning	
12.2 Solicitation planning	3.11 Procurement
	3.3 Scheduling
6.2 Activity sequencing	
6.3 Duration estimating	
6.4 Schedule development	
7.2 Cost estimating	3.4 Estimating
7.3 Cost budgeting	3.5 Cost control
11.1 Risk identification	3.8 Risk management
11.2 Risk quantification	
11.3 Response development	
4.1 Project- plan development	1.10 System and procedures
9.2 Staff acquisition	3.12 Mobilization
9.3 Team development	2.6 Team building
12.3 Solicitation	3.11 Procurement

12.4 Source selection	
4.2 Project-plan execution	
Project management concepts	
10.2 Information distribution	
12.5 Contract administration	3.11 Procurement
10.3 Progress reporting	3.6 Performance measurement
4.3 Overall-change control	3.10 Change control
5.4 Scope-change control	
6.5 Time control	
7.4 Cost control	3.5 Cost control
8.2 Quality control	1.11 Quality
	3.10 Change control
11.4 Risk control	3.8 Risk management
5.5 Scope verification	
8.3 Quality assurance	1.1 Quality
12.6 Contract closeout	
10.4 Administrative closure	3.13 Check out
Project management processes	
	1.1 Systems management
	3.7 Design management
	3.9 Value engineering

Table 3: Comparing APM's BoK and PMBOK content, Source: Wirth and Tryllof, 1995

In Wirth and Tryllof (1995) research, after comparing the various BoK's documents they conclude that there are many cause-and-effect relationships among documents attributes. Hence, the context in which a BoK document is written influences that document's approach. The document's context and approach, in turn, influence the document's structure. Finally, the document's context, approach, and structure combine to influence the document's content. Comparing BoK-document contexts, professional certification program requirements appear to be the dominant factor. Furthermore, two alternatives emerge. The first approach is focused strictly on a description of the project-management subject matter. The PMI has written PMBOK documents using this approach. The second approach focuses on a prescription for project-management performance quality: competency standards. APM has written BoK

documents using this approach. Comparing BoK document structures, several alternative structures are found, while comparing document contents, was found that the APM's BoK document addresses more business operations and general management skills than the PMI's PMBOK document does. The PMI's and APM's documents both cover project-management concepts and project management processes in a broad manner (Wirth and Tryllof, 1995).

2.4.2 Project management qualification programmes popularity

PMI's PMBOK it is thought as the most widely accepted project management standard worldwide. However, on a recent research of the University of ESC Lille (Giamalio, 2005) resulted that project managers qualification in Europe is mostly done according the IPMA's standard. More specifically although PMPs are for times more than IPMA qualified project managers (IPMA.QPM), almost 70% of PMPs are within the USA and Canada, while PMPs in Europe are less than IPMA.QPMs. On the same research are presented the results of the popularity of the standard within the countries members of the European Union (figure 2)

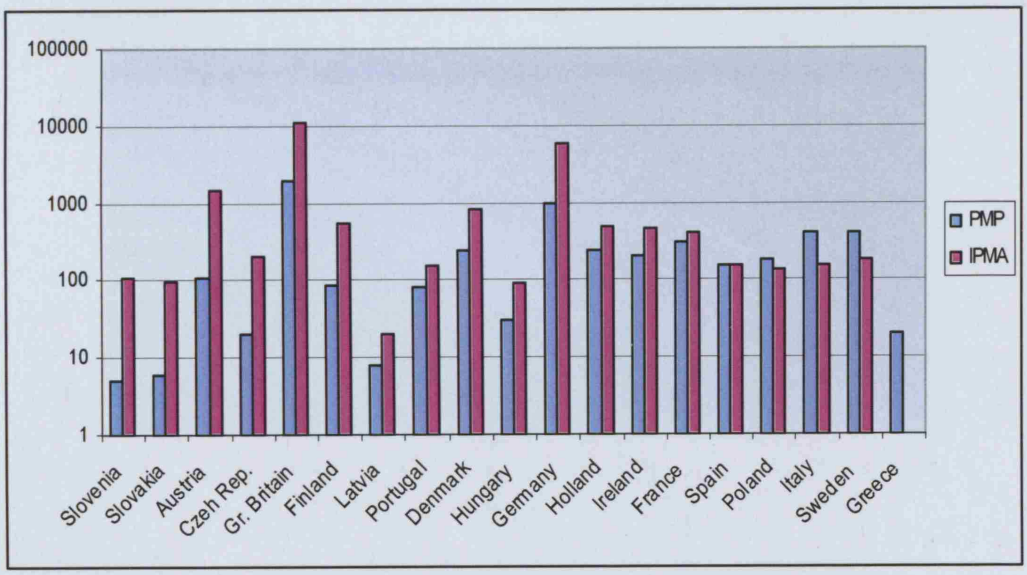

Figure 2: Number of PMP and IPMA qualification in EU Countries. Source: Giamalvo (2005).

2.5 The role of BoKs in project management discipline

An interesting question to be answered is how or how much, has the development of these professional documents aimed in successful project delivery? In fact, there is no a single answer. On the one hand, the emerge of the discipline has driven the BoKs development, on the other hand BoKs had 'boost' the research effort undertaken on the subject, and became a discussion subject in any academic or professional forum.

Some arguers state that 'standards' do not fit on project management discipline. They believe projects are unique, and so has to be the way they are managed. However, someone can answer on this argument that even this belief can be considered to be a 'standard'.

There are certain examples of project management benefiting from scientific knowledge. Network scheduling is classic example. We can model a sequence of activities and predict when the whole set, the work package, will be completed. We can even add risk and develop contingencies, using probability theory to estimate the total contingency that should be put on the overall network. Moreover, organization theorists have shown, that projects tend to meet their baseline targets more frequently if organized on a full project rather than on a matrix or functional basis (Gobeli and Larson, 1987; Might and Fischer, 1985).

There are certainly many examples to be stressed but this is not the aim of this report. In brief, significant parts of project management can be developed along 'theory' lines with reasonable scientific rigour- if project management does this; the result is likely to be better than if he does not (Morris, 2002).

All the professional associations' formal BoKs were initially formulated, and have been maintained in terms of their certifications programs. However, has certification resulted in improved project outcomes? Literally, this question is not clearly answered (Morris, et.al., 2006). In his research, Crawford (2005), found no significant correlations between performance and professional standards, there is little research evidence to show that mastery of the

'discrete body of knowledge', the area of 'exclusive competence', leads to improve project performance (Morris, et. al., 2006).

However, the important role of BoKs is not underestimated in any way, in studies found in literature. More, significantly many studies focus upon the 'boundary work', in other words the effort made to establish their field of action, to exclude other occupations from acting within this field, and exclusive strategies to regulate the supply of trained and able practitioners (Lakin, 1983; Schein; Williams, 2005; Zwermas et al., 2004).

In Morris (2005) research is stressed that, the biggest challenge is to decide who to certify, at what levels and who to license. An important benefit of certifications to the profession is that it helps to recognize those who are eligible to be licensed. In any effort to build a licensed and recognized profession, there is a serious need to be able to certify knowledge.

An important outcome of development of formal bodies of knowledge has been the increase in the number of participants in the knowledge industry. However, as the development of BoK is made by professional associations the remaining questions is by who and in which way is the structure developed or updated.

An other important question to be answered is in what level do bodies of knowledge represent the current research on the discipline? The PMI's PMBOK Guide is found literally that inadequately reflects the research made the last years. In fact, PMI's PMBOK structure has remained unchanged since its first publication (Morris, et. al., 2006; Morris, 2004; Zwerman, 2001). On the other hand, APM's body of knowledge on its both 4th and 5th update was based on large research programs aiming to reflect the research effort made the last years within the discipline, as well to introduce a broader view of project management (as it is already stressed above; Morris et al., 2006).

2.6 Different views on project success and the relation with BOKs

Literally are found many practioner-focused textbooks on project management, defining project success criteria in terms of the time, cost, and product

performance compared to the plan (Wysocki, Beck, and Crane, 1995). Although, these textbooks on their front-page 'promise' a guide: "How to plan, manage, and deliver projects on time and within budget", in their bodies is acknowledged the need to define success criteria more completely during the early stages of project definition. De Wit (1988) stresses, that success of project management and the success of the project are differentiated by wide range of measures. The importance of the distinction is also emphasized by Munns and Bjeirmi (1996), who draw attention to the short-term goals of the project manager (in delivering the required product or service to schedule and within budget) as opposed to the long-term goals of the project (to deliver promised business benefits).

Kerzner makes a similar distinction between "successful projects" and "successfully managed projects". *"Successful implementation of project management does not guarantee that individual projects will be successful... Companies excellent in project management still have their share of project failuires. Should a company find that 100 percent of their projects are successful, then that company is simply not taking enough risks"* (Kerzner, 1998).

Baker, Murphy, and Fisher's (1974, 1988) research, concludes that "if the project meets the technical performance specifications and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people in the parent organization, key people in the client organization, key people on the project team and key users or clients of the project effort, the project is considered an overall success". A definition that includes elements of both project management success and project success.

It is clear that there is a "debate" about project management success definition and that the two opponent approaches criteria cannot always be coincidently satisfied. While project management BOKs aim to improve project success rate, it seems that different approaches on project management BOKs content, are related with different views of the various associations about what project management and project success is.

2.7 The project management profession in Greece: Reinventing the wheel?

In Greece, the last few years, thousands of projects have been completed. A great proportion of these projects are towards the effort of modernizing the country's infrastructure. New motorways of total length of 1,400 km, the upgrade of the 2,500 km railway infrastructure, the longest cable bridge in the world at Rio-Antirio, the new Athens International airport, the extension of the Metro system, the new 70 km Ring-road in Athens are among the most well-known such projects. A number of other projects, such as the Athens suburban railway, the Athens tram, new recreational areas, as well as the construction and upgrade of stadiums, are among the infrastructure projects directly or indirectly related to the organization of the Olympic Games: Athens 2004.

In Greece until the early '90s, project management was almost exclusively associated with construction management. There is a little evidence, however, that project management was really applied in the construction industry, or in fact, in any other industry until the mid '80s. The small size of most construction projects, the social-economic conditions at the time, the absence of large organized construction companies and the lack of know-how are some of the reasons explaining this fact.

The disciplines of construction management, construction economics, project management, quantity surveying, and construction software applied in Greek construction projects are included among the Network of the PM-Greece membership.

PM-Greece was founded on September 2001 to link together people from Universities (Academics and Students), contractors, construction management companies, designers, specialized software houses, with an active interest in the application of project management procedures and practices in Greece. In April 2002 PM-Greece joined SENET (Central and South East Europe Project Management Network) (Pantouvakis, 2004). The last period PM-Greece is working on the development of a Greek project management qualification standard based on IPMA's document. Pantouvakis (2006) on a recent article reports that a Greek qualification standard should be based on an already

established standard, appropriately altered to meet the requirements of the Greek practice.

PM-Greece is not the only step forward to the application of project management profession in Greece. In May 2002 was formed the Athens/Greece PMI Chapter. However, never worked and the Chapter members had never had a single Chapter meeting or any other process until 2004. Although, there was not any activity of the chapter for two continuous years, after four years and hard efforts of the few Chapter members the Greek PMI Chapter was eventually founded on 8th June 2006.

Theofanis Giotis, cofounder of the Greek PMI Chapter, in a recent interview on the PMI Newsletter, July 2006, explains that the Chapter members have increased about 400% since January 2005. Today there are 109 certified PMPs in Greece, when two ears ago only 18 individuals were certified. Theofanis Giotis on the same interview stresses, *"This a big step forward. The acronym 'Project Management' did not exist in the press three years ago. No references to it, no advertisements, nothing; unknown by the Greek Government".*

Today, three Universities degrees are offered in project management: an undergraduate degree and two Master degrees. One of the master degrees offered by Aristotle University of Thessalonica, Department of Civil Engineering has started the procedures to accredit the degree by PMI GAC.

Although, there is acceleration on the discipline in Greece, there is not any professional Body of Knowledge or certification program. Moreover, there is not until today any plan for development of a formal knowledge framework, and Greek Government has not published any planning for the development of a qualification program for project management profession. However, there are no clear educational or training paths and project managers do not enjoy special professional rights, an analysis performed by PM-Greece two ears ago showed that the demand for project managers has been growing steadily in recent years, a trend expected to be continued in the foreseeable future.

In engineering, for example, an analysis of the jobs advertised in the Technical Chamber's of Greece bulletin (TCGb), the major promoter of engineering jobs

in the country, an analysis of the jobs offerings from January 2003 to March 2004 revealed that 1 in 5 jobs advertised was related to project management (figure 2) is quite impressive keeping in mind that jobs advertised in TCGb are related to all engineering disciplines.

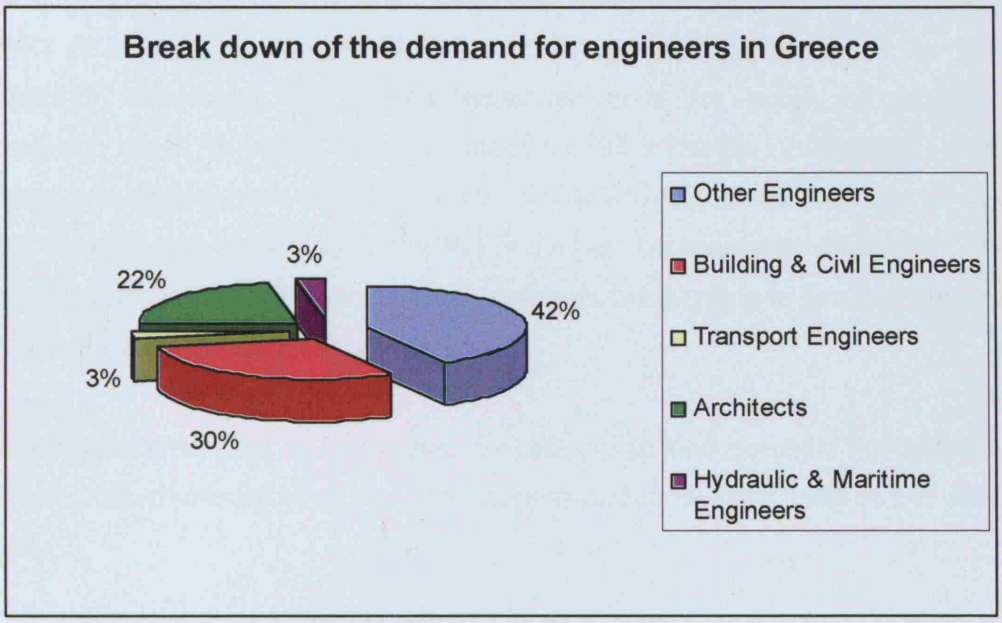

Figure 3, Break down of the demand for engineers in Greece. Source: Technical Chamber of Greece (2004)

A further analysis of the data revealed that the particular skills sought were related to time and cost control (32% of the jobs), construction management (26%), site supervision (24%), quality, safety and environmental aspects (18%), figure 3.

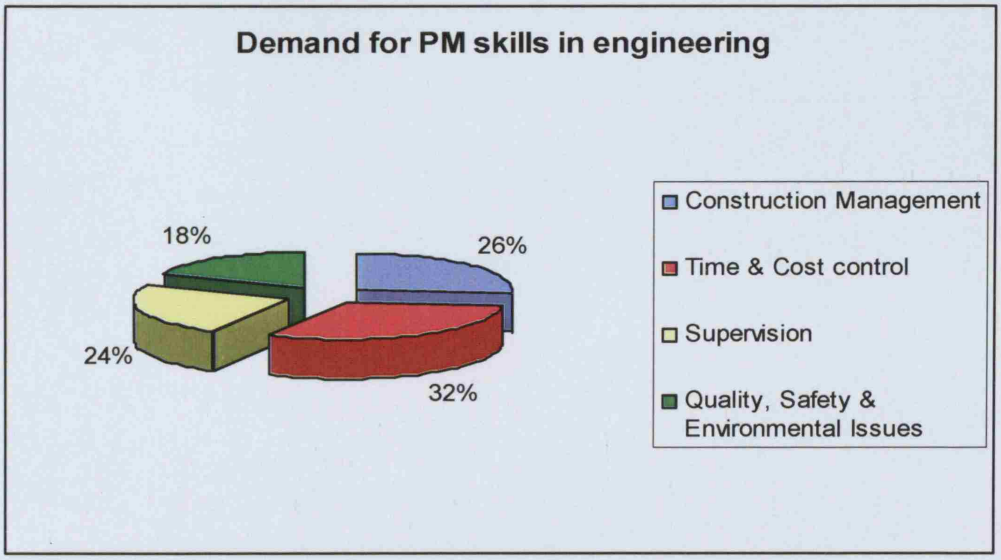

Figure 4: Demand for PM skills in engineering, Source: Technical Chamber of Greece (2004)

By the date this report was undertaken, there was a little evidence of research on the project management field in Greece. On a recent report, Pantouvakis and Voulgari (2004), tried to compare the Greek legislation code for public infrastructure project with the processes, tools, and techniques included by PMI's PMBOK for three knowledge areas (time, cost, quality). On the same research was found that Greek legislation code for public infrastructure projects, cover the most issues included in PMI's PMBOK Guide 2000 for the three knowledge areas stressed above. However, they concluded that it does not cover in any sense the definition of project management discipline. They suggested that project management profession is emerging in Greece, and that more research is needed on the field.

In a following section of this report we will try to find out how important for Greek project managers is the knowledge included in PMI's PMBOK and APM's BoK.

Chapter 3

Research methodology

A qualitative survey methodology is used based on a questionnaire developed to answer the main issues found literally about the content of professional BoKs and the need for project management qualification in Greece. The aim of the questionnaire is to identify the tools and practices used by firms within the construction industry for managing projects, and project managers' thoughts about the need, or not, for a possible project manager qualification program in Greece.

Due to the nature of the data espoused to be collected the questions were designed to allow discussions to take place rather than confining responses to true or false type responses. For this reason the following four topics were discussed:

- Relation of BoKs' content with Greek practice: Professional Bodies of Knowledge are thought to include all these that a project manager should know to successfully manage projects. The most widely used of these BoKs, PMI's PMBOK and APM's BoK, follow different approaches, while defining what project management is. How relative do you think the elements[1] included in the two BoKs are with project management practice in Greece? How different do you think project management is in Greece comparing with your experience from other countries? What should a Greek project management BoK include?

- The need for qualification: How important do you think would the development of a qualification program in Greece be? What should a fortune 'association' responsible for this program implement?

[1] Interviewees were supported with the topics discussed in the two BoKs while they were not familiar with the content of the two BoKs.

- Formal or practical knowledge: Do you think formal knowledge is more important for successfully managing projects than the knowledge that comes from the practice?

- Project performance: What is the relationship between these issues and project performance? Is project failure rate related with the lack of a formal knowledge framework?

The data was collected through interviews that were conducted with a representative (project manager) of the firms which were investigated. While there are only a few project managers certified by international certification programs asking their practice in Greece, there was not found any certified project manager by the firms examined. The representatives were almost unfamiliar with any professional body of knowledge, however, knowledgeable about project management discipline. Four firm representatives were interviewed within the construction sector in Greece, one design consultant, two site managers, and one project manager working for a speculative development firm.

Moreover, a project manager who is member of the Greek PMI Chapter's steering committee was interviewed. Although this interviewee is not related with the construction sector and is working for a big communications company, it was considered that the opinion of one of the few certified project managers in Greece would be of a great value.

Chapter 4

Review of Data collected

4.1 Research findings

In this section research findings related to the practices used by the relative firms on project management, as well as the personal opinion of the interviewees will be presented. The data will be presented on four different paragraphs corresponding to the four topics discussed on the previous chapter. A discussion of the findings will be carried out in the next chapter.

4.2 Relation of BoKs' content with Greek practice

When the interviewees were asked, they answered that all the elements included in the two BoKs are important and relate to Greek project management practice. They also agreed that they are required especially for large scale projects; however, they expressed contradictory opinions on their for small scale projects, where project managers tend to pay less attention to some of the processes or even neglect some of them. One consultant mentioned that some processes are not usually used even in large projects. As an example she adds: "We do not always make a risk analysis in our projects. However, in some cases we may think that it is necessary. I can remember a project where the bidding process had not finished and the time period left for the completion of the project continuously decreased since the client would not change the deadlines originally imposed; thus, we had to decide if we were going to start the project even with the risk of not earning it. Such a decision could only be made on the basis of a proper risk analysis".

One site manager pointed out that all these elements are applicable in Greek project management practice; however, they are not followed in a systematic

way. Another site manager argued that Greek project managers have not realized what project management is, however, they use processes described by knowledge frameworks. "They have learned to manage projects empirically", he added. They all agreed that the growing competition, as well as the rising demand for professional managerial skills, has forced project managers to use professional techniques for managing projects, and that the way the projects are managed has changed dramatically within the last ten years.

Responding to the potential diversity of project management between the various countries, they all agreed that Greece makes no specific exception from the general principles. "Large scale projects need to make use of certain processes to be completed successfully and these are followed by project managers", is what an interviewee said. One site manager questioned said that there are many cultural differences in Greece that may alter the practice, but not in a way that can be described in a knowledge framework. Another interviewee highlighted that Greek project managers have learned through partnership with international contractors while working for major infrastructure projects and mentioned Rion-Antirrion Bridge and the Athens metro project as examples.

It is important to note that two of the interviewees mentioned some serious differences of Greek projects in comparison with those in other countries. These differences mainly concern the constructional part of the project and focus on safety and health issues. On these issues, Greece seems to be far away from the international practice. The 'on site accidents' rate is too high in Greece, however, Greek contractors and project managements seem to be working hard on this issue during the last years.

The four interviewees could not explicitly realize the distinction between the two different approaches, while discussing the relevance of the topics included in the two BoKs with the Greek practice. One consultant and one site manager focused their interest on project execution topics, which are included in both BoKs. The consultant stated that "Greek project managers have a more practical view on what project management is"; however, explained that "although they are not familiar with definitions like leadership and team-

working, they consider project management as something more than time, quality and cost management". Her conclusion was that "a handbook discussing practical issues about how to successfully follow project management tools and techniques would be more helpful for the Greek construction practice". On the other hand, the two interviewees representing contractor firms think leadership, governance and organizational techniques are issues more important for a successful project management. The project manager working for a speculative building firm mentioned that the definition of project management largely depends on the strategy followed by the manager's firm or even its field of competence. "When I was working for a contractor, project management was all about successful project execution. In the firm which I am working now project management is related to fulfilling the aim of the business plan".

4.3 Qualification program

All interviewees agreed that a qualification program is necessary and would be a big step forward in project management discipline. However, the consultant revealed a rather obvious controversy on the issue: although she realizes that qualification is important for any employer as a reassurance of a specific level of knowledge, she seriously doubts the necessity of this knowledge for the Greek managing practice. "Paying more for a qualified project manager is not one of our top priorities" and added that "I do not believe that the amount of extra knowledge a qualified manager possesses can balance a generous raise in his salary. The requirements of an average Greek projects are not so high as to demand any sophisticated type of qualification. Practice has shown that most civil engineers can meet the above standards".

Another interviewee said that is important to distinguish different groups of project managers. Their scientific background is important according to the sector they would use their practice. Internationally, project managers may have different scientific and experience backgrounds. In Greece project management is almost exclusively related with managing construction projects. They all agreed that the construction sector needs project managers with an

engineering background, defining this as the most important characteristic of a successful project manager.

Another interviewee argued that project management qualification cannot be applied in present in Greece. He highlights the fact that since project management has recently been introduced in Greek universities as a distinct field of study and we have not yet any graduates, we are far away from a successful project management program. One of the interviewees pointed out that it will be hard for qualification to be incorporated in the managerial business. He referred to the example of ISO qualification that affected many production sectors in the last few years, and how difficult it was for the various actors to include it in their production process. With this example he tried to highlight the difficulty of applying any change to a Greek professional community.

4.4 Formal or practical knowledge?

"Theory contours practice. This 'motto' summarises my view on how useful knowledge from practice is in any science. Since engineering is a practical science, knowledge from practice is important for construction projects; however, this practical knowledge is always within the limits the general project management framework sets", is what the consultant interviewed said. She also mentioned that working improves one's skill on a certain practice and that the fact that any 'good' practice or knowledge is included in a professional knowledge framework is of utmost importance.

The other three interviewees persisted that in a practical science, formal knowledge is not as important as the knowledge that comes from practice. In brief they stated that a project manager's experience is critical when managing a project on site. Skills which are required for in-situ problems cannot be described by theory. In many cases, theory can be far away from practice, unable to give answers to certain problems. "Theory can give you a set of different answers to a set of possible problems. However, only through practice can a project manager gain the ability to decide which solution is applicable to a specific problem. He should be able to determine not only the 'best' solution

but also the most appropriate in financial terms", is what a project manager said. Another interviewee concludes that "never any 'theorist' could come on site and face the problems of a real project".

Another interviewee said that topics such as leadership, which are crucial for a project manager, "can be included and analysed in a book but never taught by a book. A project manager's character qualities and experience through practice are most important for developing leadership skills".

Finally, an interviewee working for a contractor made the following remark: "In my professional experience I have never seen an international contractor working on a Greek project without having at least one Greek partner. Cultural differences between nations or even within smaller regions, are critical for successfully managing projects. Culture cannot be 'confined' in a knowledge framework".

4.5 Project performance

Although bodies of knowledge theoretically exist to accommodate the need for an increased project performance, all interviewees agreed that project performance in Greece and the lack of a formal body of knowledge are not related in any way. They also argued that, in general, Greek project managers do not suffer from any particular lack of knowledge. The successful completion of a large number of complex large scale projects (Athens 2004 Olympic projects, Egnatia highway and generally the upgrade of the infrastructure of Greece) within the last years proves this belief. However, the interviewees admitted that the project success rate is too low and mentioned different reasons for which projects may fail.

The major reason is that, in most projects, the client is the Greek Government. The inability of the second party to (a)follow the time schedule (b)provide the contractor with the necessary authorizations in time and (c)fund the project in a way that will keep the cash-flow positive are the most common reasons for which a project may fail. It is true that many PFI contract type projects have been successful in contrast to projects funded

exclusively from public. The above seems to be a Greek 'privilege' since all professionals highlighted that publicly funded projects carried out by their companies in other countries tend to be more successful.

The interviewees noted that the main reason for the apparent 'public inefficiency' is that those working on behalf of the Government do not have adequate knowledge on project management. "In almost every country, those working for the Government are usually not the most efficient ones. People more often choose to work for the private sector where salaries are higher", is what a project manager said. Moreover, he pointed out that Government representatives do not have a direct interest on the success of a project, since it does not affect their work status. He suggested that project management qualification could be a way to ensure a minimum level of knowledge of people working within the discipline and added that this may not affect the private sector too much, however, it will definitely improve the performance of people working on behalf of the Government.

The consultant interviewed also mentioned that the high level of corruption within the sector is the main reason that causes project delays and over-cost. In many cases, Government's representatives deliberately provoke problems and delays so that afterwards they will have the chance of making illegal profits (better known as 'tips'). He concluded that finding an efficient way of confronting corruption would be a major step for the management of public works and the course of the Greek economy in general; however, he added that "corruption could never be an issue concerning a body of knowledge".

A site project manager highlighted that in many Greek projects the 'design as you built' technique is used. In these projects project planning techniques described by knowledge frameworks are of low value, because one cannot predict what the requirements of the next step would be. The same professional mentioned that projects are unique, having different characteristics and different problems. The reasons that projects fail in most cases cannot be predicted by common project management techniques. However, he concluded that knowledge of any kind would definitely increase the success rate of construction projects, with the knowledge related to 'people handling' techniques believed to be more critical.

Another reason mentioned by a project manager interviewed was the high level of design difficulty. "The complexity of the Greek geology, the diversity of the various formations as well as the rapid change in the types of rock mass/soil types met, render the construction of a large scale project in Greece a far more difficult task than in Great Britain. In addition, the intense tectonic activity, due to the large number of active faults existing all over the Greek territory impose limitations and demands for immediate solutions to any occurring problems. No project management technique and no body of knowledge can incorporate solutions to problems which are unknown even to the Greek engineers prior to the construction. However, we should never underestimate the importance of management processes, since they have proved to be extremely useful in dealing with all the difficulties which can be predicted".

4.6 The PMI's view

As mentioned in chapter 2, during the last two months, the Greek PMI Chapter has been established. This constituted an excellent chance for one of its representatives to be interviewed. Right from the beginning, she mentioned that the aim of the Greek PMI Chapter is to promote the activities of the international PMI association in Greece. In parallel, as sample of their activities in Greece she mentioned that in cooperation with the PM-Greece Network, they translated and published the Greek version of PMBoK.

On the relevance of the content of the APM and the PMI BoKs with the Greek practice, the representative of the PMI Chapter commented that the Greek project managers use most of the techniques and tools described in the professional guides, but in an empirical manner; more specifically, they use several techniques without knowing that they belong to the general project management framework.

Furthermore, she highlighted the fact that the way of managing projects in Greece has changed dramatically in the last few years. Since Greece began

cooperating with other countries on project management issues, the demand for professional project management skills arose.

As far the content of the two BoKs is concerned, she commented that there is a different approach in how each association defines project management. The PMBoK approach is far from confronting project management as a business case; on the contrary, the PMI defines through the PMBoK an 'ethical code', according to which projects managers have to deliver the projects that they have promised in the best possible way. In addition, the PMBoK contains all the elements which are required for the treatment of project management as a unique project execution. Notions such as 'strategy' do not concern project management according to the PMI, however, they are rigorously analysed in other PMI publications, cited in the PMBoK.

The representative clearly stated that it is the market itself the one who determines the potential need for qualification. For example, in the IT & Information Systems sector, the requirements of some of the world's biggest clients, caused a dramatic increase in the demand for qualified project managers. On the contrary, the construction sector, which is the pioneer in project management issues in Greece, has not yet posed any similar demands. A possible explanation for the above observation is the difference in the profit margin which exists between the two sectors. The relatively limited profit margin which characterises the IT & Information Systems sector has made the use of qualified project managers necessary, while the vast profit margin of the construction sector implies that qualification is only a 'luxury': the demand for qualified project managers changes according to the number of clients who are willing to pay for them.

On the need for a future qualification program, the representative noted that a project management standard should be conceived as a common code of communication and thus it would be preferable for it to be based on an existing and widely renowned standard. The differences in project management among the various countries mainly involve legislative issues, which do not concern any professional standard.

Her answer on the importance of theoretical knowledge was that it always makes the difference among professionals. Although practical knowledge should never be underestimated, a formal knowledge framework gives to any professional the ability to develop a structured way of thinking and to determine the hierarchy of the actions to be carried out.

The performance of projects is not solely dependent on qualification. The success of any particular project is influenced by numerous and complex factors. Nevertheless, professional qualification guarantees a minimum level of knowledge and experience of the project managers; its penetration in the market reveals the maturity of the latter, often connected to the performance of projects.

Chapter 5

Conclusions - Recommendations for further research

5.1 Conclusions

According to the answers given, they all agreed on the fact that almost everything mentioned in the two BoKs[2] is relative to the Greek practice. It is clear that most professional techniques are mainly used in large scale projects, whereas Greek project managers have the tendency to degrade the importance or even omit certain processes. It is also concluded that, in general, there is not a systematic way of using the project management principles, as project management in Greece is largely influenced by the Greek mentality and culture. It is clear that the management techniques used by Greek project managers are mainly based on knowledge resulting from practice.

The need for the use of professional project management techniques was in fact one of the outcomes of Greece becoming a member of the EU. The cooperation between Greek and European companies defined the demand for professional project management techniques, usually from the client's side. The ravelling tendency for an increase in the profit margin can explain why several processes included in the two BoKs are omitted by Greek project managers. More specifically, it was mentioned that the treatment of safety and health issues on site constitutes a major difference between Greek and international projects; it would be no exaggeration to say that the above issues are completely ignored in Greek projects and are rather considered as cost increasing factors.

[2] Due to the lack of knowledge of the interviewees on the content of the two BoKs, they were provided with various notes and comments during the interviews, in a way which did not influence the objectivity of their views.

Judging from the answers of the interviewees, it is obvious that there is not a unique definition of project management. There seemed to be a divergence of opinions on the validity of a single BoK and the interviewees were incapable of fully supporting the principles of any BoK. In general, they consider that Greek practice can be described by the existing professional standards. Two of them give emphasis on the practical aspect of the PMBoK, expressing the belief that a practical guide may prove to be very useful at the moment; the other two admitted the significance of several issues mentioned in the APM BoK but insisted that these issues should be taught from experience rather than through a professional guide. It is therefore concluded that the definition of project management and the content of the BoKs is largely dependent on the type of the project and on the sector where the project manager acts.

The project management profession is a rapidly growing one and the need for qualified project managers is still increasing. In present, there are large differences between the various sectors of the market, due to its instability. The same applies for the demand for qualification, which varies significantly among the aforementioned sectors. Although the demand for qualification in the construction sector is low nowadays, the professionals believe that it is only a matter of time before it will dramatically increase. The argument concerning the need for a project management qualification program is actually restricted to socio-economical criteria. In other words, there are serious doubts on whether the employers, and subsequently the clients, are willing to pay for professional project managers as well as whether the latter are willing to accept a qualification program. Furthermore, it can be concluded that the content of a professional standard, on which a future qualification program will be based, should not actually differ from the content of the existing ones.

Greek project managers tend to give more emphasis to practical knowledge than to theoretical knowledge. This mentality seems to be in contrast to the attention they pay to the content of BoKs and to the establishment of a future qualification program. Nevertheless, they have acquired a large quantity of practical knowledge from the successful completion of large scale projects; it is very important for this knowledge to be evaluated and transformed into explicit knowledge.

Moreover, the answers given involving the performance of projects also seem to be contradictory. On one hand, the interviewees supported that the lack of a professional guide is not related to the performance of projects and that the knowledge of Greek project managers is not inadequate; on the other hand, they consider the lack of knowledge of professionals working on behalf of the Government as one of the major reasons for low performance and add that a professional guide could improve the relevant project rates. In addition, the design difficulty level of Greek projects has been pinpointed as another reason for low performance, a fact which highlights the need for a professional guide.

Finally, it is concluded that the reasons for which Greek projects may fail come to prove the Morris and Hough (1987) research, according to which only few of the potential factors of failure of a project are addressed in project management literature.

5.2 Recommendations for further research

The main outcome of the present thesis is that Greek project management is taking its first steps in a long maturing and adaptation to the international standards procedure. Futher research should focus on the following three aspects: (a)the relevance of the professional project management techniques with Greek practice for all sectors of the market (b)the legislative framework of any potential qualification program and (c)the transformation of tacit knowledge into formal.

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