School of Social Sciences
Master in Business Administration - MBA

Postgraduate Dissertation
Adopting Project Management in
Public Sector Organizations in Greece

Maria Gkeka

Supervisor: Maria Andri, PhD

Patras, Greece, July 2019
Theses / Dissertations remain the intellectual property of students (“authors/creators”), but in the context of open access policy they grant to the HOU a non-exclusive license to use the right of reproduction, customization, public lending, presentation to an audience and digital dissemination thereof internationally, in electronic form and by any means for teaching and research purposes, for no fee and throughout the duration of intellectual property rights. Free access to the full text for studying and reading does not in any way mean that the author/creator shall allocate his/her intellectual property rights, nor shall he/she allow the reproduction, republication, copy, storage, sale, commercial use, transmission, distribution, publication, execution, downloading, uploading, translating, modifying in any way, of any part or summary of the dissertation, without the explicit prior written consent of the author/creator. Creators retain all their moral and property rights.
Adopting Project Management in
Public Sector Organizations in Greece

Maria Gkeka

Supervising Committee
Supervisor: Maria Andri, PhD
Hellenic Open University

Co-Supervisor: Dr. Michael Galanakis
Hellenic Open University

Patras, Greece, July 2019
Aknowledgements

I would like to express my sincere gratitude to my advisor Maria Andri for her guidance and support towards completing this paper. Thank you for putting me on the right track.

I would also like to thank my tutors in the MBA Program at the Open University of Patras, for they have opened a door for me to a world of which I knew little.

Last but not least, I would like to specially thank my husband, Theofilaktos Theoharis and my three children, Sotiris, Argiri and Loukas for showing patience to my demanding work and study schedule. Their presence by my side lightened the heavy load and eased the burden.
Abstract

Project management is an application of knowledge, skills, tools and techniques in order to manage project resources, activities and deliverables. The widespread use of projects in organizations demands efficient management because they are critical to organizations' strategic objectives. This led the researchers and professionals of the field to devise methodologies through which projects can be managed efficiently and effectively. Public sector organizations differ significantly from the commercial ones. Most of the times, there are no earnings volume increase or profit maximization goals from the Board of Directors and no bottom-line figures upon which performance can be measured. State is the major income supplier of the vast majority of public sector organizations. At the same time, public sector organizations are under increasing stakeholder pressure to demonstrate accountability and transparency when implementing policies and adapting to changes. For the public sector to provide its services, is essential to the growth of the economy. In order to manage multiple projects, the need for project management expertise in public sector organizations has become fundamental. Public sector organizations can generate significant value from using project management to implement governmental responsibilities and therefore, they should take initiatives to invest in project management practices, in order to establish effective governance frameworks. Greek public sector has faced increased pressure during the last decade because of the economic crisis. Substantial budget cuts, minimum human resources hiring and widespread disappointment are the major drawbacks. Use of project management techniques may be one of the tools to overcome the limits and help revive the economy and bring development to the State.

Keywords

Περίληψη

Η διαχείριση έργων περιλαμβάνει την εφαρμογή γνώσεων, δεξιοτήτων, εργαλείων και τεχνικών με σκοπό τη βέλτιστη διαχείριση των διαθέσιμων πόρων, των δραστηριοτήτων και των παραδοτέων των έργων. Η εκτενής χρήση των έργων σε οργανισμούς απαιτεί αποτελεσματική διαχείριση, διότι το αποτέλεσμά τους είναι κρίσιμο για την επίτευξη των στρατηγικών στόχων των οργανισμών. Η πρακτική αυτή οδήγησε τους ερευνητές και τους επαγγελματίες του τομέα να επινοήσουν κατάλληλες προσεγγίσεις ώστε να μπορούν να διαχειριστούν τα έργα αποδοτικά και αποτελεσματικά. Οι Οργανισμοί του Δημόσιου Τομέα διαφοροποιούνται σε σύγκριση με τους εμπορικούς τομείς. Τις περισσότερες φορές δεν υπάρχουν στόχοι όπως η αύξηση των εσόδων ή της μεγιστοποίησης του κέρδους εκ μέρους του Διοικητικού Συμβουλίου και κανενός είδους οικονομικός στόχος ως μέτρο σύγκρισης έναντι του οποίου, η απόδοση να μπορεί να μετρηθεί. Το κράτος αποτελεί τον βασικό χρηματοδοτή των περισσότερων Δημοσίων Οργανισμών. Ταυτόχρονα, βρίσκονται υπό την συνεχή αυξανόμενη πίεση του κοινού στο να επιδείξουν λογοδοσία και διαφάνεια κατά την εφαρμογή διαφόρων πολιτικών και από την ανάγκη προσαρμογής στις αλλαγές που συντελούνται. Η ικανότητα του Δημόσιου Τομέα να εκτελεί έργα με επιτυχία είναι καίριας σημασίας για την ανάπτυξη της οικονομίας. Ετσι, η ανάγκη για εμπειρογνωμοσύνη στον τομέα της διαχείρισης έργων έχει καταστεί σημαντική προκειμένου να αντέξει την ευθύνη της διαχείρισης πολλαπλών έργων. Οι Οργανισμοί του Δημόσιου Τομέα μπορούν να υιοθετήσουν σημαντικά από τη χρήση μεθόδων διαχείρισης έργων κατά την εφαρμογή πολιτικών διακυβέρνησης και από την ανάγκη προσαρμογής στις αλλαγές που συντελούνται. Η κατάσταση του Ελληνικού δημοσίου διαφόρων πολιτικών διακυβέρνησης και από την ανάγκη προσαρμογής στις αλλαγές που συντελούνται. Η κατάσταση του Δημόσιου Τομέα είναι καίριας σημασίας για την ανάπτυξη της οικονομίας. Δημόσιος Τομέας στην Ελλάδα αντιμετώπισε έντονη πίεση λόγω της οικονομικής κρίσης. Περικοπές στον προϋπολογισμό, ελάχιστες προσλήψεις και η ευρεία απογοήτευση όλων είναι τα σημαντικότερα προβλήματα. Η υιοθέτηση τεχνικών διαχείρισης έργων μπορεί να είναι ένα από τα εργαλεία που θα οδηγήσει στην υπέρβαση των προβλημάτων και θα βοηθήσει στην αναζωογόνηση της οικονομίας.
Λέξεις – Κλειδιά

Διαχείριση Έργων, Μεθοδολογίες Διαχείρισης Έργων, Νέα Δημόσια Διοίκηση, Οργανισμοί Δημοσίου Τομέα, Μοντέλο Ωριμότητας Υλοποίησης Έργων Οργανισμού, Διαχείριση Προγραμμάτων και Χαρτοφυλακίου Έργων, Γραφείο Διαχείρισης Έργων.
# Table of Contents

1. Introduction ....................................................................................................................... 1
   1.1. Dissertation Rationale and Objectives ................................................................. 2
   1.2. Dissertation Structure ......................................................................................... 4
2. Literature Review .............................................................................................................. 6
   2.1. What is Project ....................................................................................................... 6
   2.2. Types of Projects ................................................................................................. 8
   2.3. Project Life Cycle and Environment ................................................................... 12
   2.4. Project Environment ......................................................................................... 16
   2.5. Organizational Structures ................................................................................. 16
   2.6. Definition and Evolution of Project Management ............................................. 19
       2.6.1. What is Project Management .................................................................... 19
       2.6.2. Evolution of Project Management ............................................................ 20
   2.7. Development of Standards and Guides ............................................................... 21
   2.8. Program and Portfolio Management ................................................................... 22
       2.8.1. Program Management ............................................................................. 22
       2.8.2. Project Portfolio Management (PPM) ..................................................... 23
   2.9. Project Management Associations, Frameworks and Methodologies ............... 25
       2.9.1. PMI’s Project Management Body of Knowledge .................................... 26
       2.9.2. PRojects IN Controlled Environment 2 ............................................... 30
       2.9.3. IPMA Competence & Excellence Baselines .......................................... 34
       2.9.4. APM Body of Knowledge ...................................................................... 35
       2.9.5. Project and Program Management for Enterprise Innovation (P2M) ...... 37
       2.9.6. EU Commission Open Project Management Methodology PM2 .......... 39
       2.9.7. Other Project Management Approaches ............................................... 41
   2.10. Project Management Maturity Models ............................................................... 47
   2.11. Project Management Office – PMO ................................................................. 55
3. Dissertation Method and Design ..................................................................................... 57
   3.1. Introduction and Research Objectives ............................................................... 57
   3.2. Dissertation Design and Resources Searched .................................................... 57
   3.3. Document Selection and Data Extraction ......................................................... 61
   3.4. Synthesis, Validation and Results ...................................................................... 61
# List of Figures

Figure 1: Organizational State Transition via a Project (PMBOK, 6th Ed., pp. 6) ...............7
Figure 2: Categories of Complexity & Associated Causes (Navigating Complexity, pp. 11) .........................................................................................................................9
Figure 3: Goal-and-Method Matrix (Turner and Cochrane, 1993) ......................................11
Figure 4: The NCTP Framework (Lennon Edward, 2015) ................................................11
Figure 5: Cost & Staffing Levels Across the Project Life Cycle (PMBOK 4th Ed.) ..........12
Figure 6: Predictive Life Cycle Model or “Waterfall”........................................................13
Figure 7: Iterative Life Cycle Approach ..........................................................................14
Figure 8: Incremental Life Cycle Approach .....................................................................14
Figure 9: Adaptive Life Cycle Approach .........................................................................15
Figure 10: Project Environment Influences (PMBOK 6th Ed.) ........................................16
Figure 11: Advantages of Using Best Practices (ILIES et al., 2010)..................................22
Figure 12: Portfolio Management Lifecycle (Acquity PPM, 2018) .................................25
Figure 13: PRINCE2 Structure (Wikipedia, 2019) ..........................................................31
Figure 14: Elements of APM Body of Knowledge (APM-BOK) .......................................36
Figure 15: P2M Framework (PMAJ Mission, 2018) ..........................................................37
Figure 16: P2M - Project Management Tower (Prof. Shigenobu Ohara, 2005) ...............38
Figure 17: The House of PM² (Kourounakis and Maraslis, 2018) ....................................40
Figure 18: PM² Swim-lane Diagram ................................................................................40
Figure 19: EVM Basic Concepts: Chart Form (PMI, 2011) ...............................................42
Figure 20: Organizational Project Management (Project Management Institute, 2018) ....48
Figure 21: The 5 Levels of PMMM (Mark C. Paulk et al., 1993) .....................................49
Figure 22: The five levels of maturity (Kerzner, 2009) ....................................................51
Figure 23: The Structure of P3M3 ....................................................................................52
Figure 24: OPM and Organizational Strategy (OPM3 3rd Ed., 2013) ............................53
Figure 25: Portfolio, Program and Project Management Interactions (OPM3 3rd Ed., 2013) ..................................................................................................................54
Figure 26: Individual, departmental, and corporate PMOs (Giraudo and Monaldi, 2015) 56
Figure 27: Literature review process ..............................................................................59
Figure 28: Public Sector Environment ...........................................................................64
List of Tables

Table 1: Project Typology (Khazanchi and Zigurs, 2006)................................. 10
Table 2: Organizational Structures for Projects (Mulcahy, 2018)......................... 18
Table 3: Project Management Process Group and Knowledge Area Mapping .......... 27
Table 4: PRINCE2 Seven Themes (AXELOS Limited, 2017)............................... 32
Table 5: Earned Value Management Calculations Summary Table (PMI, 2011) ....... 43
Table 6: Project Management Maturity Levels (Mark C. Paulk et al., 1993)............. 50
Table 7: Overview of Portfolio, Program, and Project Management (OPM3 3rd Ed., 2013) ............................................................................................................................................. 54
Table 8: Differences in public and private organizations ........................................ 65
Table 9: Competences of Public sector project managers (Jałocha et al., 2014)......... 72
List of Abbreviations & Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>APM</td>
<td>Association of Project Managers (UK)</td>
</tr>
<tr>
<td>APMBOK</td>
<td>APM Body of Knowledge</td>
</tr>
<tr>
<td>CMM</td>
<td>Capability Maturity Model</td>
</tr>
<tr>
<td>CPM</td>
<td>Critical Path Method</td>
</tr>
<tr>
<td>CSF</td>
<td>Community Support Framework for Greece</td>
</tr>
<tr>
<td>EEFs</td>
<td>Enterprise Environmental Factors</td>
</tr>
<tr>
<td>ELOT</td>
<td>Hellenic Organization for Standardization</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EVM</td>
<td>Earned Value Management</td>
</tr>
<tr>
<td>IAPM</td>
<td>International Association of Project Managers</td>
</tr>
<tr>
<td>IPMA</td>
<td>International Project Management Association</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>MOU</td>
<td>Management Organization Unit</td>
</tr>
<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NAPA</td>
<td>National Academy of Public Administration (US)</td>
</tr>
<tr>
<td>NPM</td>
<td>New Public Management</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>OGC</td>
<td>Office of Government Commerce (UK)</td>
</tr>
<tr>
<td>OPAs</td>
<td>Organizational Process Assets</td>
</tr>
<tr>
<td>OPM</td>
<td>Organizational Project Management</td>
</tr>
<tr>
<td>OPM3</td>
<td>Organizational Project Management Maturity Model</td>
</tr>
<tr>
<td>PERT</td>
<td>Program Evaluation and Review Technique</td>
</tr>
<tr>
<td>PM3</td>
<td>Project Management Maturity Model</td>
</tr>
<tr>
<td>P3M3</td>
<td>Portfolio, Program and Project Management Maturity Model</td>
</tr>
<tr>
<td>PMI</td>
<td>Project Management Institute</td>
</tr>
<tr>
<td>PMO</td>
<td>Project Management Office</td>
</tr>
<tr>
<td>PMBOK</td>
<td>Project Management Body of Knowledge</td>
</tr>
<tr>
<td>PRINCE2</td>
<td>Projects in Controlled Environment 2</td>
</tr>
</tbody>
</table>
1. Introduction

The evolution of civilization and human society is entangled with the implementation of various projects. Throughout the years, successful project implementation has evolved into a highly developed scientific and systematic concept that attracts considerable interest in the academic community as well as both in the private and the public sector of the economy. Despite the widespread use of project management techniques and methodologies in the private sector, the public sector administration, especially in Greece, faces substantial difficulties in adopting modern PM policies, techniques and tools used internationally. According to a study contacted by the Management Organization Unit of the Community Support Framework (CSF) for Greece (Management Organization Unit (MOU) of Community Support Framework, Athens, 2005), the majority of Greek public organizations had not adopted modern PM practices, tools and methodologies. The main causes of this phenomenon were the labyrinthine public sector processes, the lack of flexibility due to legislation and other specific characteristics of public sector projects.

During the recent years, public sector projects have become more complex and more difficult to manage. Due to the economic crisis in the last few years, Greek public sector has faced increased pressure. The substantial budget cuts of Public Investments Program, as part of the Fiscal Austerity Programs and the complete absence of political envision and initiatives led to an “almost lost decade” in country’s growth.

Nevertheless, opposed to past perceptions and practices, during the last fifteen years, public sector organizations have shown significant interest to become more involved in the management of their projects, whether they’re implemented with the use of internal resources or by third party contractors. Thus, the adoption of PM may be one of the reforms to overcome the boundaries of the past and help them evolve and thrive.

This Dissertation describes the evolution of project management, the scientific framework and the methodologies that have emerged, examines how public sector can benefit from adopting it, makes reference to the Greek initiatives taken so far and suggests possible strategies and policies in order for the State to overcome the obstacles and further adopt PM in public organizations in Greece.
1.1. Dissertation Rationale and Objectives

According to OECD’s Public Governance Review for Greece in (2011), “the country faces an immense, perhaps unique and urgent challenge, because it needs to find the will and the way to make in-depth reforms and to reconcile emergency fiscal measures with long-term restructuring reforms”. These reforms are still critical but less imperative to the goal of restoring public finances. As social and political discontent rises, “the country’s future crucially depends on the government’s ability to link short-term austerity measures with a long-term vision aimed at restoring growth and improving the people’s welfare, backed up by wide-ranging structural reforms of the public sector” (OECD / OCDE, 2011).

Project management and public sector performance measurement have attracted much attention in literature during the last decades. Public administrations of all countries face increasing demand for higher effectiveness, efficiency and quality of services (ŽURGA, 2018). Development is associated with public governance and performance of public sector organizations. Even though PM concepts are quite old, its usage in public organizations and its role to institutional development got broader attention only in the 1980s, as part the doctrines of the New Public Management movement. Development needs innovative capacity and investments in new technologies, which in turn requires effective management and successful projects execution.

Public organizations play a significant role in the economy in EU countries. Since 1980, with the introduction of the management techniques associated with the NPM movement, most of the EU countries underwent through significant reforms. Various EU democracies have been successfully utilizing most of the NPM techniques, although in certain cases, the depth and the width of the reforms exhibited significant differences (Pollitt et al., 2007). These countries “have adopted and re-interpreted many of the Anglo-American ideas underpinning the NPM, to adjust them to their own national politico-administrative contexts. As a consequence, reforms of the public sector may have the same labels in different countries, but need not be the same in practice or meaning; there is both convergence and divergence”. No matter the name of the reforms, most EU countries implemented a series of reforms in order to be competitive in the Eurozone era.

Actually, in 2000, the EU Commission itself, which is the EU's political executive arm that takes decisions on the Union's political and strategic direction underwent significant administrative reforms in order to strengthen the Commission’s governance system and set
clear lines of accountability and responsibility. EU Commission is one of the largest funding organizations and most of the EU member States are the beneficiaries of the EU development, solidarity and social cohesion funding programs, such as the Partnership Agreement 2014-2020 (ΕΣΠΑ 2014-2020). These EU administrative reforms called for more structural reforms for member States.

Unfortunately for Greece that was not the case since these structural reforms depend crucially on a well-functioning public administration to carry them through. Although some limited progress was made during the 2000s in a few areas, this was nowhere near enough to stimulate real change in public administration (Rosta, 2011). According to a report about the managerial capability of public sector organizations to implement projects, that were funded by the CSF2 (ΚΠΣ2) programs in 2005, approximately 22% of the organizations that were beneficiaries of the funds, weren’t capable of managing projects. An even larger percentage, ranging from 30% to 65%, depending on the criteria applied, were not using modern or efficient PM practices (Fitsilis et al., 2008).

Nevertheless, in January 2008, the Greek Government, having to implement the new 2007-2013 National Strategic Reference Framework, it needed to address the problem and boost the performance of organizations undertaking projects of public interest. The solution was the development of a new standard, named “ELOT-1429”. The purpose of the new standard was to determine the prerequisites and capabilities needed by organizations implementing public projects. Furthermore, with the introduction of Law 3614/2007, it was clear that “organizations wishing to implement projects funded by CSF should comply with the ELOT-1429 standard” (Fitsilis et al., 2008). For the first time, the Greek State introduced a standard that could assist public organizations to enhance their managerial capability and simultaneously offered a point of reference for assessing an organization’s project management maturity level and performance.

Soon, it was evident that the implementation of the new standard required a lot of changes of public sector mentality, structures and norms. Moreover, human resources needed to be trained and decision making information systems needed to be implemented. These were in-depth structural reforms that needed time, money, solid decision making and political back-up. In 2010, soon after the national elections, Greece faced the deepest economic crisis in recent history and turned to IMF and EU for back-up. At that time, as the country needed to have as much possible funding as possible, even through the NSRF
programs, the Greek government thought it would be better to “lift” some of the requirements for public funding. ELOT-1429 standard compliance was one of them. On May 2010, with the Law 3840/2010, the ELOT-1429 compliance became “optional” and that was the “end” of this crucial reform.

According to OECD’s report in 2011, strong measures were required to improve the effectiveness, accountability and integrity of public administration so that it’s “fit for purpose”. Greece had to implement a major and integrated public governance reform to ensure the success of key reforms such as enhance competiveness, debt reduction, privatization and fiscal consolidation, in order for the country to get back on the path of sustainable growth.

From 2010 until today, no actions have been taken to update and revive the ELOT-1429 standard. For most of the public organizations, PM maturity level is near to zero. PM tools and techniques are used sporadically, by a few organizations or organization departments, mainly those that had to co-operate with the Troika, in the implementation of the bailout MoU programs.

This reality was the driving cause for the rationale of this dissertation. Greece seems to be the only member State of the Euro-area of the EU countries, a developed country amongst the OECD countries that has no functional national standard for PM for the organizations that implement public projects. The purpose is to investigate past and new developments in PM and PM maturity models, to analyze through systematic literature review, how these modern managerial methods and tools can be implemented in public organizations, make references to other countries and analyze the situation of the Greek Public sector. The comparison will show if the adoption of this kind of reforms is possible and how crucial that is for our State.

1.2. Dissertation Structure

The dissertation is divided into six chapters. It starts with the introduction followed by the literature review and the methodology used. Subsequently, it analyzes how PM is practiced in public organizations. Furthermore, it investigates how the Greek public sector has addressed PM and ends with a conclusion chapter. A brief summary of these chapters is given below.
The first chapter gives an introduction to the dissertation. It starts by asserting the framework and then goes on to describe the rationale and the objectives of the study. A brief analysis of the structure is given.

The purpose of the second chapter is to review the literature regarding different areas of PM. This includes different definitions of project and project management, project types and project life cycles, the history and evolution of PM, various frameworks of PM bodies of knowledge, different methodology approaches to PM and current practices.

The dissertation’s method and design are analyzed in the third chapter. We address the research objectives and strategy approach and tackle the literature review process steps. Furthermore, we study the data collection process and extraction method and the synthesis and validation process.

The fourth chapter attempts to approach PM practices in public organizations. It addresses issues of public sector environment and context areas, the main differences with the private sector, it discusses significant topics such as organizational PM maturity and maturity models, project management office and project governance. Case studies of other countries of the EU area are briefly discussed. Finally, the chapter addresses synchronous challenges in public project management, such as complexity and megaprojects.

The fifth chapter attempts to portray the Greek situation regarding PM. It starts with the history of PM adoption process and the difficulties faced by the Greek public sector. Special focus is given on the ELOT 1429 framework and what the current situation is. We also make reference to the PMI Greece Chapter and other organizations that are actively try to promote PM in the private and the public sectors of the economy.

The last chapter starts with a short reference about the findings of the dissertation and how they address its main objectives having in mind its limitations. Subsequently, recommendations are made about possible strategies and policies that could be followed by the Greek State to further promote and adopt PM practices in the public sector and the benefits that will emerge for the public economy and welfare. The dissertation closes with a brief statement of conclusions.
2. Literature Review

The goal of this chapter is to shed light on the concepts of Project, Project Management (PM), project types, development stages and lifecycle as well as what programs and portfolios are. We also examine the evolution of PM, the formation of international institutes and organizations and their role in developing PM management frameworks and methodologies. Finally, it ends with an overview of the concept of Organizational Project Management Maturity (OPM3) and the maturity models as well as an approach to Project Management Office (PMO).

2.1. What is Project

The word “project” comes from the Latin word “projectum”, which originates from the Latin verb “proicere”, which means “before an action”, which denotes “precedence”, “something that comes or happens before something else in time”. So, it is obvious that when the word was initially adopted by the English language, “project” referred to “a plan of something that will be executed” and not the act of actually carrying this plan out. (Oxford University Press, 2019)

In modern PM literature, the term “project” is described in different ways, as it is demonstrated below:

- Project is defined as a temporary endeavor undertaken to create a unique product, service or result. The temporary nature of projects indicates a definite beginning and end. Unique means that the product or service or result differs in some distinguishing way from all similar products or services or results (PMI, 2017)
- Project has been described as a human endeavor and may reasonably be regarded by its stakeholders as a project when it encompasses a unique scope of work that is constrained by cost and time, the purpose of which is to create or modify a product or service so as to achieve beneficial change defined by quantitative and qualitative objectives (Cooke-Davies, 2001).
- Project is described as a “value creation undertaking based on specifics, which is completed in a given or agreed timeframe and under constraints, including resources and external circumstances” (Prof. Shigenobu Ohara, 2005)
• A project is regarded as a business case that indicates the benefits and risks of the undertaking, representing a unique set of deliverables, with a limited life-span, by using acknowledged resources with recognized responsibilities (Bradley, 2002).

According to PMI projects realize change in organizations (2017). From a business point of view, a project is expected to move an organization from current to future status, in order to accomplish a specific objective.

Therefore, a project is an organized effort inspired by an alleged opportunity when facing a problem, a need or a desire, with the purpose to create a unique and innovative deliverable, such as a product, a service, a process or even a scientific research. A project has a beginning and an end and as such it’s considered as a closed dynamic system developed along the four basic principles of PM, Plan, Processes, People and Power. It’s bound by the triple constraints that are time, cost and scope, each of which can be determined and measured objectively along the project lifecycle. Each project produces some level of formal documentation, the deliverable(s) and some impacts, which can be positive and/or negative (Mesly, 2017). Projects are executed in order to realize the organization’s strategic objectives and therefore, they are vital for modern organizations.
2.2. Types of Projects

Projects are the essence of organizational activity. Also, projects vary on many aspects including purpose, size, schedule, urgency, scope and complexity, that sometimes can be overlapping. For example, scope and complexity should be considered as two autonomous characteristics of projects; they might interact, contribute or one lead to the other. The first step to understanding and managing projects is a coherent classification of them. (Khazanchi and Zigurs, 2006).

Therefore, we may argue that there are different types of projects based on aspects such as cultural differences (Carmel and Agarwal, 2001), the type of coordination structure (Gassmann and Zedtwitz, 2003), the organizational characteristics (Evaristo and Munkvold, 2002) and uncertainty versus scope (Shenhar, 1998). Further analysis on literature reveals three consistent factors that are widely used to characterize project dimensions: scope, risk and complexity.

Project scope is the work that is required by the project team, in order to complete and deliver a product, service or result with the specified features and functions (Project Management Institute, 2017a). Part of the project scope is the product scope, which includes the characteristics and functions that illustrate a product, service or result.

All projects are risky since they are unique undertakings that aim to deliver benefits. Risk exists at two levels within every project. Each project contains individual risks that can affect the achievement of objectives. It is also important to consider the riskiness of the overall project, which arises from the combination of individual risks and other sources of uncertainty (Project Management Institute, 2017a). Project risk is by definition an uncertain event or condition that, if it occurs, it has a positive or a negative effect on a project’s objectives. This definition includes two key dimensions of risk: uncertainty and effect on a project’s objectives (PThompson, 2009). When assessing the importance of a project risk, these two dimensions must both be considered. The uncertainty dimension may be described using the term “probability” and the effect may be called “impact” (though other descriptors are possible, such as “likelihood” and “consequence”).

Most projects contain elements of complexity. By using fundamental PM approaches people have managed to effectively deal with the influence of complexities and deliver successful outcomes. As supply chains, markets, and technology become global, more
complexity exists in projects. Fundamental, rapid changes in societies and economies, innovations in manufacturing and delivery of products, have increased complexity dramatically. Many views of complexity have been identified as: key aspects, types, dimensions, characteristics, or complexity factors. Analysis of the literature shows that the main causes of complexity can be grouped into three broad categories: human behavior, system behavior and ambiguity (PMI, 2014).

Figure 2 provides an overview associated with each category.

Thus, scope, risk and complexity are fundamental project dimensions. If we characterize each dimension as low, medium and high we can create three main types of projects, which are Lean, Hybrid and Extreme (Khazanchi and Zigurs, 2006). The following Table 1 depicts the main characteristics of each project type:
Table 1: Project Typology (Khazanchi and Zigurs, 2006)

<table>
<thead>
<tr>
<th>Project Type / Dimension</th>
<th>Complexity</th>
<th>Scope</th>
<th>Risk</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lean</strong></td>
<td>Low</td>
<td>Narrow</td>
<td>Low</td>
<td>In-house computer program improvement venture with different portions, inside one organization in spite of the fact that over different areas, clarity of objectives and asset allotment, moderately built up groups.</td>
</tr>
<tr>
<td><strong>Hybrid</strong></td>
<td>Mixed levels of complexity, scope, and risk</td>
<td></td>
<td></td>
<td>Critical upgrade of client relationship administration application, utilizing orderly improvement approach, but with worldwide heterogeneity in exterior organizations.</td>
</tr>
<tr>
<td><strong>Extreme</strong></td>
<td>High</td>
<td>Wide</td>
<td>High</td>
<td>Multinational execution of a worldwide supply chain application, including different units, changed social introductions, clashing objectives, distinctive identities, changed asset foundations.</td>
</tr>
</tbody>
</table>

According to the table above, we can say that “Lean” projects are expected to have a narrow scope with fairly low risks and complexity. “Hybrid” projects have a varying level of complexity, scope and risks and therefore require a management approach with much emphasis on people and activities, as well as to technologies and co-ordination. “Extreme” projects are characterized by high complexity, wide scope and extended risk. Usually they are “mission-critical” for the performing organization. They require intense activity and cooperation by a number of groups and partners and so accentuation ought to be given to communication.

A second well-known approach to project classification is the Goal-and-Method Matrix, introduced by Turner and Cochrane (1993). In this matrix, four types of projects are defined. Figure 3, illustrates this matrix:
Finally, a third and much appreciated method in project classification is based on the NCTP Framework, developed after series of research studies by Shenhar and Dvir (2004). The NCTP model or “Diamond Approach” is composed of four dimensions, Novelty, Technology, Complexity and Pace, as it is illustrated in Figure 4:
2.3. Project Life Cycle and Environment

As mentioned, projects vary in size and complexity. Despite how large or small or complex projects may be, all have four main stages, which are depicted on the following figure:

![Figure 5: Cost & Staffing Levels Across the Project Life Cycle (PMBOK 4th Ed.)](image)

The four stages of a project’s life cycle are:

- Starting the project
- Organizing and preparing
- Carrying out the project work and
- Closing

A project lifecycle is an arrangement of stages that a project passes through, from start to completion. It gives the fundamental framework for overseeing the project. This essential framework applies regardless of the particular extend of work included. The stages may be consecutive, iterative or overlapping. Project lifecycles are autonomous of product life cycles, which may be delivered by a project. (Project Management Institute, 2017a).

Project lifecycles can be predictive or adaptive. The predictive lifecycle model approach or “Waterfall” is the classical project lifecycle approach of the last millennium. It
is a fully plan-driven approach where the three main project constraints (time, scope, cost) are determined at a detailed level at the start of the project. Once the requirements are given, then the scope is fixed and each project phase can then be laid out sequentially and managed carefully. Figure 6 shows this model.

![Predictive Life Cycle Model or "Waterfall"

Waterfall model is appropriate when we manage projects in a controlled and predictive environment. Project scope is well defined and changes are not welcomed, because they lead to significant cost increases when rework is needed. It is an inflexible approach and that is why people started to investigate more adaptive approaches. Still, it is a good lifecycle approach, because of its benefits, if time is available and scope requirements are well known.

In the adaptive lifecycle model, the project lifecycle is subdivided into multiple phases that are called development lifecycles. There are four approaches to this model, the Iterative, the Incremental, the Adaptive and the Hybrid. In order to decide which is appropriate, we should focus on how project requirements, constraints, stakeholder feedback and resources are handled.

When timeframes for delivery become condensed and requirements get less clear, we need an approach that handles changes faster and less expensively. We can do this by cutting a complex project into smaller phases called “iterations”, that give us the ability to better define requirements at the start of each cycle in order to get more control and decrease risk and cost of rework. The project scope is determined early within the project, however time and value estimates are routinely changed as the project team’s understanding of the product increases. The product is then developed through a series of repeated cycles, while new features are successively added to the functionality of the product. This is the iterative lifecycle, as shown in Figure 7:
Similarly, in the incremental lifecycle model, the deliverable is produced by a series of iterations which add functionality in a predetermined time frame. The deliverable contains the capability that is necessary and sufficient to be considered complete after the final iteration (Project Management Institute, 2017a). Many times, we may see the incremental approach grouped with the iterative. They are similar, but also different. Figure 8 depicts this:
Adaptive lifecycle is known as the “Agile” approach. This project lifecycle and PM methodology originates from software development industry. Adaptive projects are quick and time bound, with two critical success factors:

- The customer must be intimately involved in the process
- The performing organization must be able to define incremental requirements at the start of each iteration.

Each iteration should be a complete cycle of Plan, Develop, Evaluate, and Learn. Iterations usually last 2 to 4 weeks at maximum. Figure 9 illustrates the Agile method:

![Figure 9: Adaptive Life Cycle Approach](image)

Finally, as its name implies, a Hybrid lifecycle combines the best of all approaches, as it is a mixture of predictive and adaptive lifecycles. The fundamentals of the project that are well known or have fixed requirements can follow a predictive development lifecycle and the elements that will become apparent over time may follow an adaptive development life cycle. Hybrid methodologies take into account project fluidity and enable a more agile and adaptive working approach. Hybrid approaches to PM are not new, but they definitely gain acceptance as a way of solving lifecycle issues in the 21st century.
2.4. Project Environment

Projects operate in environments that may have an influence on them. These influences can have a favorable or unfavorable impact on the project. (PMI, 2017). Two major categories of influences are enterprise environmental factors (EEFs) and organizational process assets (OPAs). EEFs originate mostly from the environment outside the project and often outside the performing organization. On the contrary, OPAs are internal to the enterprise. Both may have serious impacts at the organizational, portfolio, program or project level. Figure 10 illustrates the influences of the project environment:

![Figure 10: Project Environment Influences (PMBOK 6th Ed.)](image)

Except of the EEFs and the OPAs, organizational systems may also play an important role in the project’s lifecycle. Organizational systems are those factors that may have impact on the power, the influence, the interests, the competencies and the political capabilities of the people to act within the organization.

2.5. Organizational Structures

Projects are not executed in space. They are heavily influenced by and have influence on the culture, management policies and procedures of the performing organizations. We
may argue that the most efficient project managers search for these impacts and manage them for the benefit of the project and the organization. One of the main forms of impact is how the organization is managed. The organizational structure reveals the lines of authority within the organization. This will answer questions as “who the project manager will ask for help with human resources” or “how the communications should be handled in a particular situation" and many others. Most of the times, the real question is “who has the authority in the organization”, the project manager or the functional manager.

Management may consider several factors in order to shape their structure, such as the degree of alignment with organizational objectives, span of control, efficiency and effectiveness, path for escalation of decisions, line and scope of authority, communication lines, delegation capabilities, accountability, responsibility, organizational adaptability, simplicity and finally, the associated operational costs and physical organizational locations (PMI, 2017). Organizational structures can be defined in terms of the project manager’s level of authority. Thus, from the PM’s point of view, three main types of organizational structure exist, the functional type, the projectized and the matrix (Mulcahy, 2018).

Functional organizations are the most common form of organizational structure. The organization is assembled by areas of knowledge within different functional areas (e.g. IT, advertising, accounting, research and development etc.) like “silos”. Projects are usually executed within a single department or business unit. If information or resources are required from other departments, the request is conveyed up to the head of the performing department, who transfers the request to the head of the other department etc. Team members do their project work in addition to their normal departmental work.

A projectized organization is organized by projects. In this form, the project manager has total control of the project. Human resources are assigned and report to the project manager. Team members complete only project related work and when the project is over, they are assigned to another project or another job. Communication normally occurs only within the project’s frame. A typical example of a projectized organization is the one that is formed to create a large construction project, e.g. an airport or a metro subway or a bridge.

Finally, the matrix type should be considered as an attempt to create a structure that can exploit the strengths of both functional and projectized forms. Team members usually report to a functional and a project manager and usually do project work in addition to normal
departmental work, while communication goes up from team members to both managers. Strong and weak matrix forms exist. In the first case, the project manager has the power, while in the later, the functional manager. Balanced matrix structures also exist and the power is shared between the functional and the project manager. Each type of organizational structure has advantages and disadvantages from the PM point of view, which may impact projects accordingly. The following Table 2 includes short references of the advantages and disadvantages of each type of organizational structure:

Table 2: Organizational Structures for Projects (Mulcahy, 2018)

<table>
<thead>
<tr>
<th></th>
<th><strong>ADVANTAGES</strong></th>
<th><strong>DISADVANTAGES</strong></th>
</tr>
</thead>
</table>
| Functional | • Easier management of professionals  
• Group of participants report to only one manager  
• Similar resources are centralized, because the company is grouped by specialties  
• Well defined career paths in areas of labor specialization | • Humans emphasize more on their functional field of knowledge which causes disadvantages to the project  
• No career in project management  
• The project manager has limited or no authority |
| Projectized | • Efficient project organization  
• Loyalty to the project  
• Better communication between members than in functional | • No “home” when the project is over for members of the project team  
• Limited professionalism in functional specialties  
• Duplication of facilities and job functions  
• Limited use of resources |
| Matrix | • Noticeably visible project goals  
• Better project manager control over the available resources  
• Functional departments provide additional support  
• Better utilization of scarce resources  
• Improved coordination  
• Adequate horizontal and vertical distribution of information  
• Members of the project team maintain a “home” | • Tighter management is required  
• Multiple lines of authority for project teams  
• Difficult to monitor and control  
• Harder problems with resource allocation  
• Need well-defined policies and procedures  
• Functional managers sometimes have other priorities than project managers  
• More chances for conflicts |
2.6. Definition and Evolution of Project Management

2.6.1. What is Project Management

Literature reveals several definitions of project management. Some of them are as follows:

- Project management is a professional’s capability to deliver, with due diligence, a product that fulfils a given mission, by organizing a dedicated team, effectively combining the most appropriate technical, managerial methods and techniques and devising the most efficient and effective breakdown and implementation routes (Prof. Shigenobu Ohara, 2005).

- Project management is the process by which projects are defined, planned, monitored, controlled and delivered such that the agreed benefits are realized. Projects are unique, transient endeavors undertaken to achieve a desired outcome. They bring about change and PM is recognized as the most efficient way of managing such change (Association for Project Management, 2014).

- Project management is concerned with the application of methods, tools, techniques and competences to a project to achieve goals. It’s performed through processes and includes the integration of the various phases of the project lifecycle. Effective PM has a number of benefits for the organization and stakeholders. It provides a greater likelihood of achieving goals and ensures efficient use of resources, satisfying the differing needs of the project’s stakeholders (IPMA, 2015).

- Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements. PM is accomplished through the appropriate application and integration of the PM processes identified for the project (PMI, 2017).

Initially, PM practices were solely associated with the execution of a single project. Later, as systematic approaches in managing projects emerged, more organizations adopted the concept of PM as a business practice to generate consistent outcomes when undertaking new initiatives as a powerful tool that can improve an organization’s capability to perform well (Artto et al., 2008).
2.6.2. Evolution of Project Management

Creative architects, engineers and master builders were generally managing civil engineering projects until 1900. Project-management tools and techniques were systematically applied to complex engineering projects by organizations during the 1950s (Carayannis et al., 2005). PM developed from several fields of application including civil construction, engineering and heavy defense activity (Cleland and Gareis, 2006). The American mechanical engineer Frederick Winslow Taylor was the first to introduce modern PM tools including work breakdown structure (WBS) and resource allocation. Henry Gantt, who recommended the use of Gantt Chart as a PM tool was the first to introduce planning and control techniques, while Henri Fayol introduced the famous five management functions that form the foundation of the body of knowledge associated with project and program management (Witzel, 2003).

The modern PM era begun in the 1950s, in which the economic activity was flourishing in most western countries and especially in the U.S., with engineering and building projects creating a major impact on the environment. Prior to this period, projects were managed ad-hoc, using Gantt charts, informal techniques and tools. At that time, two project-scheduling models were introduced, the "critical-path method" (CPM) for plant maintenance projects and the "program evaluation and review technique" (PERT), which was developed by the U.S. Navy Special Projects Office in conjunction with the Lockheed Corporation and Booz Allen Hamilton, as part of the Polaris missile submarine program (Malcolm et al., 1959).

In 1956, the American Association of Cost Engineers was formed by early practitioners of PM. The development of the field of PM continued and in the 1960s we had the formation of two major professional associations. In 1965, the International Project Management Association (IPMA) was founded, the world's first PM association, a means for project managers to network. The non-profit Project Management Institute (PMI) was founded by five volunteers in 1969, in Pennsylvania, USA.

Setting up a British arm of IPMA, was the inspiration of seven pioneers, who came together at an INTERNET expert seminar held in Zurich, in 1971. They decided to form the Association for Project Management (APM), which became the chartered body for the PM profession in UK, one of the fastest growing professional organizations in the country, that would have a major influence on the development of PM, both in UK and internationally.
2.7. Development of Standards and Guides

PM has advanced over the years to an advanced and complicated process, turning into the key element of handling change in modern industries. As projects advanced and knowledge was gained in this area, standards and guides were developed. Organizations and PM associations all over the world started to develop and comply with these standards with the intention to optimize them for the PM activities.

Bibliography states that best practice is a method, tool or technique or process that is alleged to be more efficient and effectual in accomplishing results than any other methods, tools, techniques and processes, when applied to certain condition or situation. Best practice relies on experience and is used to define the process of developing and following standard way of doing things.

The role of standards for the PM profession has been an important issue for many years (Cooke-Davies, 2001). A lot of benefits that derive from standardization have been recognized and are applied to both technological and professional standardization including inspiration of technological innovation, ensuring marketplace, competition and handiness.

In PM, best practices include guidelines and international standards. Both are useful in order to improve PM and can be used for goal achievement when dealing with projects. In this context, whereas standards are expected to be unbiased, conclusive and robust, guidelines issued by professional bodies are open to clarifications. Standards are issued by specialized organizations. They are based on best practices and guidelines given by professional bodies. Sometimes guidelines can become standards, such as PMI’s Project Management Body of Knowledge (PMBOK), which also became an ANSI norm in 2004.

The advantages of using international standards and guidelines in PM are illustrated in Figure 11:
Best practices in PM contribute to project success, but project managers need to determine which methods can be applied and which are appropriate for the specific project or situation they manage. Furthermore, they should be able to adapt a standard to the specific culture of the organization or the country they work in.

2.8. Program and Portfolio Management

2.8.1. Program Management

A program is defined as related projects, subsidiary projects and project activities managed in a coordinated manner to obtain benefits not available from managing them individually (Project Management Institute, 2017b). Program management is the application of knowledge, skills, tools and techniques to meet program requirements (ibid). As such, program management is the process of managing several related projects, often with the intention of improving an organization's performance. In practice, program management
refers to systems and industrial engineering, change management and corporate transformation.

According to National Academy of Public Administration (NAPA), project and program management should be conceived as a range of similar activities of growing scale and complexity. Program formulation usually begins with small projects that evolve into projects with considerable size and complexity. As the project scope, budget and complexity increases, the work that needs to be done must be divided into multiple interrelated projects that should be managed in a coordinated way, as a program.

Project and program management are different disciplines, but they’re inseparably connected. Effective program management rests on effective PM, which itself depends on a team of professionals with large diversity of technical specialists from various disciplines. However, programs differ from projects, as projects deliver products or services as discrete outputs, while programs create outcomes. For example, a project may produce a hospital, while a health-care program, which may include the creation of several hospitals and changes in legislation may lead to better public health-care services by reducing waiting lists for surgeries at hospitals.

Successful programs bring continuing improvements to an organization, which are usually identified through benefits. An organization must select the group of projects and programs that is most likely to assist in achieving its strategic goals while remaining within its capacity to realize the changes required. The reason for executing programs is to use economies of scale and minimize coordination costs and risks. Doing the right projects is what program management is all about (Prieto, 2008).

2.8.2. Project Portfolio Management (PPM)

Several definitions of project portfolio management (PPM) exist that provide a balanced view to the subject. The first definition is that PPM is the strategy-based, prioritized set of all projects and programs in an organization reconciled to the resources available to accomplish them (Stanford Center for Professional Development, 2013).

A portfolio is a collection of projects, programs and operations managed as a group to achieve strategic organizational objectives. The portfolio components, such as programs and projects within the portfolio, are quantifiable (e.g., identified, categorized, evaluated,
prioritized, authorized). Also, the portfolio components may be related or unrelated, may be independent or interdependent and may have related or unrelated objectives. Portfolio components compete for a share of some or all of a set of limited resources. The share or proportions of individual components within a portfolio structure can be driven by organizational strategies and capabilities. Organizations need to examine their unique circumstances and determine how to optimize and balance the portfolio components (Wu and Chatzipanos, 2018).

PPM provides executives and senior managers the path to execute an organization’s strategy. According to Mark Morgan (2007), “there is simply no path to executing strategy other than the one that runs through project portfolio management”. In fact, projects are “the true traction point for strategic execution”. Therefore, “project portfolio management is a senior management discipline that drives strategic execution and maximizes business value delivery through the selection, optimization and oversight of project investments which align to business goals and strategies” (ibid).

Adopting PPM by an organization can lead to significant benefits, as greater visibility of projects and accomplishment of more business goals and objectives, enhanced decision-making processes, successful management of organizational change, higher success rate of projects within a complex environment and reduced organizational risks.

PPM can be divided into four basic parts: selecting the right projects, optimizing the portfolio, protecting the portfolio’s value, and improving portfolio processes, as shown in Figure 12 below:
2.9. Project Management Associations, Frameworks and Methodologies

Projects can be executed successfully in many ways. PM is concerned with the application of methods, tools, techniques and competences to a project to achieve goals (Witzel, 2003). Throughout the years, PM has evolved considerably. Guides, methods, tools and techniques have been developed, but even the best and most popular PM methodologies and frameworks are always changing. New concepts are developed continually. In fact, PM practitioners should be aware of the fact that they probably should get acquainted to use more than just one of these.

However, PM methodologies and frameworks are not just for project managers. Most of the team members must understand how they’re used, their purpose and terms. The difference between methodologies and frameworks has always been a controversial subject. In order for us to better understand them, we first must look at the following:

- Method, the word derives from the ancient Greek word “methodos”, which literally means “a pursuit of knowledge, investigation, mode of prosecuting such an inquiry, or system”. In recent centuries, it often means “a prescribed process for completing a task”. A method refers to a single action, tool, technique, process or way of doing something.
Methodology, according to the Oxford Dictionary, is “a system of methods used in a particular area of study or activity”. A methodology is a collection of methods, practices, processes, techniques, procedures and rules. In PM, methodologies are specific, strict and usually contain a series of steps and activities for each phase of the project’s lifecycle.

Framework is “a basic structure underlying a system, concept, or text”, or “a body of methods, rules and postulates employed by a discipline”. In PM, a framework is an outline of how its guiding principles should be applied. While methodologies propose strict principles and practices for managing a project, frameworks are more elastic because they can adjust to changing conditions or to an organization’s needs, leaving space for the project manager to find the best way of completing a project.

In the following paragraphs, some of the most important methodologies and frameworks are examined, in order to understand what how they can be used and the benefits that may arise from their application.

2.9.1. PMI’s Project Management Body of Knowledge

PMI was founded in 1969. PMI’s standards for project, program and portfolio management are the most widely recognized ones in the profession. PMI delivers value for more than 2,9 million professionals working worldwide, through global advocacy, collaboration, education and research. PMI’s standards have been developed by thousands experienced PMI volunteers in every type of project and provide a common language for project management all around the world (https://www.pmi.org/about/learn-about-pmi).

A “Guide to the Project Management Body of Knowledge” or PMBOK® Guide is PMI’s leading publication and is a fundamental resource for effective project management in any industry. It is now in the sixth edition and it includes for the first time the “Agile Practice Guide”. Together they formulate a comprehensive tool that can enable the right approach for the right project, from waterfall to agile methodologies.
Table 3: Project Management Process Group and Knowledge Area Mapping

<table>
<thead>
<tr>
<th>Knowledge Areas</th>
<th>Project Management Process Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Project Integration Management</td>
<td>4.1 Develop Project Charter</td>
</tr>
<tr>
<td></td>
<td>5.1 Plan Scope Management</td>
</tr>
<tr>
<td></td>
<td>6.1 Plan Schedule Management</td>
</tr>
<tr>
<td></td>
<td>7.1 Plan Cost Management</td>
</tr>
<tr>
<td>5. Project Scope Management</td>
<td>9.1 Plan Human Resource Management</td>
</tr>
<tr>
<td>6. Project Time Management</td>
<td>11.1 Plan Risk Management</td>
</tr>
<tr>
<td>7. Project Cost Management</td>
<td>12.1 Plan Procurement Management</td>
</tr>
<tr>
<td>8. Project Quality Management</td>
<td>13.1 Identify Stakeholders</td>
</tr>
<tr>
<td>10. Project Communications Management</td>
<td></td>
</tr>
<tr>
<td>11. Project Risk Management</td>
<td></td>
</tr>
<tr>
<td>12. Project Procurement Management</td>
<td></td>
</tr>
<tr>
<td>13. Project Stakeholder Management</td>
<td></td>
</tr>
</tbody>
</table>
The PMBOK Guide is developed by active practitioners and subject matter experts, then reviewed by the project management community before it’s released to assure it always reflects the current state of the profession (Project Management Institute, 2017a).

The evolution of the PMBOK Guide is evident by its editions. It was first published in 1996. The latest version was released in September 2017. The PMBOK Guide is intended to be a “subset of the project management body of knowledge that is generally recognized as a good practice”. It describes work as being accomplished by processes (process-based approach), which is consistent with other standards such as ISO 9000 and the Software Engineering Institute's CMMI. Processes overlap and interact throughout a project or its various phases. Processes have inputs and outputs:

- Inputs (documents, plans, designs, etc.)
- Tools and Techniques (mechanisms applied to inputs)
- Outputs (documents, plans, designs, etc.)

The PMBOK Guide recognizes forty-nine (49) processes that fall into five (5) basic process groups and ten (10) knowledge areas that are typical of most projects, most of the time. All these are shown in the above Table 3 that summarizes all processes of all process groups in all knowledge areas and give us an overview of the Guide. According to this, the five process groups are the following:

- Initiating: processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.
- Planning: processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.
- Executing: processes performed to complete the work defined in the project management plan to satisfy the project specifications
- Monitoring and Controlling: processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.
- Closing: processes performed to finalize all activities across all Process Groups to formally close the project or phase.
The PM processes are linked by specific inputs and outputs where the result or outcome of one process may become the input to another process that is not necessarily in the same process group. The process groups are not the same as project phases (ibid).

In addition to the five process groups, processes are also categorized by knowledge areas, which are identified as areas of PM defined by the knowledge requirements and described in terms of their component processes, practices, inputs, outputs, tools and techniques.

Although the knowledge areas are interconnected, they are defined separately from the PM perspective. The knowledge areas identified in the PMBOK Guide (2017a) are used in most projects, most of the time. They are as follows:

- **Integration Management**: processes and activities needed to identify, define, combine, unify and coordinate the various processes and PM activities within the PM process groups.
- **Scope Management**: processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.
- **Schedule Management**: processes to manage the timely completion of the project. Previously this knowledge was called "Project Time Management".
- **Cost Management**: processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.
- **Quality Management**: processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken.
- **Resource Management**: processes to organize, manage, and lead the project team. Previously this knowledge was called "Project Human Resource Management".
- **Communications Management**: processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information.
- **Risk Management**: processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project.
• Procurement Management: processes necessary to purchase or acquire products, services, or results needed from outside the project team. Processes in this area include Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract Administration, and Contract Closeout.

• Stakeholder Management: processes required to identify all people or organizations impacted by the project, analyzing stakeholder expectations and impact on the project, and developing appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

Although the PMBOK Guide is meant to offer a general guide to manage most projects, there are currently three official extensions that offer specific guidelines, tools and techniques for successful PM in specific industries. These extensions are the following:

• Software Extension to the PMBOK Guide
• Construction Extension to the PMBOK Guide
• Government Extension to the PMBOK Guide

2.9.2. PRojects IN Controlled Environment 2

PRINCE2 is a globally recognized approach to successfully managing projects. It has world-widely been adopted by many countries, including the UK, Western European countries and Australia, but also in various industries and sectors. PRINCE stands as an acronym for “PRojects IN Controlled Environments” and it is a structured PM methodology. Basically, PRINCE2 emphasizes dividing projects into manageable and controllable stages. PRINCE2 was developed as a UK government standard for managing information systems projects. In July 2013, ownership of the rights to PRINCE2 were transferred from HM Cabinet Office to AXELOS Ltd, a joint venture by the Cabinet Office and Capita, with 49% and 51% stakes respectively (AXELOS, 2013).

There have been two major revisions of PRINCE2 since its launch in 1996, the "PRINCE2:2009 Refresh", in 2009 and the "PRINCE2 2017 Update", in 2017. The 2017 update was based on the evolutions in practical business practices and feedbacks from PRINCE2 practitioners in the actual project environment (Introducing the PRINCE2 2017 Update, 2017). The following Figure 13 graphically depicts PRINCE2 structure:
Managing Successful Projects with PRINCE2®, 2017 Edition (AXELOS Limited, 2017) is the last updated guide of PRINCE2 methodology. For a complete map of PRINCE2 processes, please see the Appendix A: PRINCE2 Process Model Map.

According to PRINCE2, there are “Six Aspects” in executing a project, which are also called “tolerances” or “performance goals”. These are: scope, timescale, risk, quality, benefits and cost, and they are used to quantify the project tolerances as they must be considered during decision-making processes. In some organizations these can be project Key Performance Indexes (KPIs) (AXELOS Limited, 2017).

PRINCE2 structure is based on Seven Principles, Seven Themes and Seven Processes. PRINCE2 principles can be described as a “mindset” that keeps the project aligned with the methodology and cannot be tailored. If a project does not adhere to these principles, it is not being managed by PRINCE2. The seven principles (AXELOS, 2013) are:

1. *Continued Business Justification:* The business case is the most important document and is always updated at every stage.
2. *Learn from Experience:* Each project maintains a lessons log.
3. *Defined Roles and Responsibilities:* Roles are separated from individuals, who may take on multiple roles or share a role. Roles are structured in four levels.
4. *Manage by Stages:* the project is planned and controlled on a stage by stage basis.
5. **Manage by Exception**: A project has 6 defined tolerances for each project objective to establish limits of delegated authority.

6. **Focus on Products**: A project focuses on the definition and delivery of the products, in particular their quality requirements.

7. **Tailor to Suit Project Environment**: PRINCE2 is tailored to suit the project environment, size, complexity, importance, time capability and risk.

PRINCE2 contains the following seven processes (AXELOS Limited, 2017):

1. **Starting Up A Project**, in which the project team is appointed along with an executive and a project manager and a project brief is produced.

2. **Initiating A Project**, in which the business case is refined and the Project Initiation Documentation is assembled

3. **Directing A Project**, that dictates how the Project Board manages the project

4. **Controlling A Stage**, which dictates how each individual stage should be controlled

5. **Managing Product Delivery**, that describes how the project is executed by the Project Manager and the Project Team by placing formal requirements on accepting, executing and delivering project work.

6. **Managing Stage Boundaries**, which dictates how to transition from one stage to the next

7. **Closing A Project**, which covers the formal decommissioning of the project.

The following Table 4 outlines the seven themes, how they are related to the aforementioned seven principles and the PM documents affected:

<table>
<thead>
<tr>
<th>Theme</th>
<th>Related to the Principle</th>
<th>Explanation</th>
<th>Management Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Case</strong></td>
<td>Continued Business Justification</td>
<td>Establishes mechanisms to judge whether the project is desirable, viable and achievable.</td>
<td>a) PID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b) Benefits Management Approach</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>Defined Roles and Responsibilities</td>
<td>Define and establish the project's structure of accountability and responsibilities.</td>
<td>a) PID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b) Communication Management Approach</td>
</tr>
<tr>
<td>Theme</td>
<td>Related to the Principle</td>
<td>Explanation</td>
<td>Management Products</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Quality   | 1. Defined Roles and Responsibilities  
2. Focus on Products  
3. Learn from Experience | Define and implement the means by which the project will verify that products are fit for purpose. | c) Quality Register  
d) Quality Management Approach  |
| Plans     | 1. Continued Business Justification  
2. Manage by Stages  
3. Manage by Exception  
4. Defined Roles and Responsibilities  
5. Learn from Experience | Facilitate communication and control by defining the means of delivering the products. | Product-Based Planning contains following steps:  
a) Project Product Description (part of Project Brief and refined in the PID)  
b) Product Breakdown Structure (minimum requirement)  
c) Product Description  
d) Product Flow Diagram  |
| Risk      | 1. Continued Business Justification  
2. Defined Roles and Responsibilities  
3. Learn from Experience | Identify, assess and control uncertainty and improve the ability of the project to succeed. | a) Risk Register  
b) Risk Management Approach  |
| Change    | 1. Continued Business Justification  
2. Defined Roles and Responsibilities  
3. Learn from Experience | Identify, assess and control any potential and approved changes to the project baselines. | a) Issue Register  
b) Change Control Approach  |
| Progress  | 1. Manage by Exception  
2. Manage by Stages  
3. Continued Business Justification  
4. Learn from Experience | To monitor and compare actual achievements against those planned. | a) Baselines for progress control: Project, Stage and Team Plans  
b) Review: Issue Register, Product Status Account, Quality Register, Risk Register  
The PRINCE2 methodology contains 26 suggested “templates” for documentation associated with the project, which it describes as “management products” and which are divided into baselines, records and reports. Some of these are shown in Table 4 above.

PRINCE2 Agile is the extension to the original PRINCE2. It’s a guide that shows how to adapt PRINCE2 so that it can be deployed when using with agile behaviors, frameworks and techniques. An agile framework (e.g. SCRUM) is a project environment. This way an agile framework is made manageable by a PM method. Agile frameworks define neither decision-making governance, nor risk management. PRINCE2 on top of an agile framework fills this gap (AXELOS Limited, 2015).

PRINCE2 provides a defined methodology for managing projects within a clearly defined framework, but this is not a guarantee for a successful project. Its benefits are increased quality of the finished products, efficient control of resources, avoidance of either "heroic" (under-regulated) or "mechanistic" (over-regulated) working and increased confidence among the project team. But, PRINCE2 might not be appropriate for small projects or where requirements are expected to change, due to the work required in creating and maintaining documents, logs and lists. This may mislead the project team to concentrate more on producing deliverables for their own sake and to "tick the boxes", rather than do more useful work and produce the “right” product (AXELOS, 2013).

2.9.3. IPMA Competence & Excellence Baselines

IPMA was the first international PM association in the world, founded in 1965. Today, IPMA is a federation of 70 national member associations and its scope is to serve individuals, projects, organizations and societies all around the world. “Through IPMA, individuals and organizations from various parts of the world share ideas, develop relevant competences and improve the PM profession through mutually beneficial cooperation” (IPMA, 2015). The member associations of IPMA develop PM competencies in their geographic areas of influence, interacting with stakeholders and developing relationships with government agencies, corporations and universities, as well as training organizations and consulting companies.

IPMA members have developed three “competence and excellence baselines” that serve as “guides” to PM profession. These baselines are the following:
• The Individual Competence Baseline (IPMA, 2015), which outlines the competences of an individual that acts as a project manager, by describing 29 competence elements, organized in three competence areas “Eye of Competence”, which are Perspective, People and Practice. All competence elements are detailed with the required knowledge and skills. Key Competence Indicators (KCI{s}) provide the definitive indicators for successful project, program and portfolio management. The IPMA ICB addresses a complete set of competences for all kind of individuals working in the field of project, program and portfolio management, independent of their job title.

• The Project Excellence Baseline (IPMA, 2016b) outlines the concept of excellence in managing projects and programs. It also serves as a guide to organizations and practitioners in assessing the ability of their projects and programs to achieve project excellence. The way of working differs from performing routine tasks. The complexity as well as the dynamics of projects and programs require all individuals to learn ways to cope with these challenges. The guide is designed to be of use in any context and regardless of the specific industry, sector or PM approach.

• The IPMA Organizational Competence Baseline (IPMA, 2016a) outlines eighteen competences for organizations in order to deliver the organization’s vision, mission and strategic objectives in a sustainable manner. The increasing importance and number of projects require a change in the way organizations are organized. Structures, processes and cultures need to be more project-oriented and better synchronized with the line activities. Projects are executed to achieve the strategic goals in order to gain the expected benefits. Top management and senior executives are required to be actively engaged in the governance, decision making and support of project, program and portfolio management. The guide describes how the governance and management of projects, programs and portfolios should be continuously analyzed, assessed and improved in order for organizations to achieve their goals.

2.9.4. APM Body of Knowledge

The Association for Project Management (APM) was founded in 1972 as the UK branch of IPMA. APM is the UK chartered body for the PM profession, as it received its Royal Charter, on the 6th of January, 2017. APM has over 27,000 individual members and 500 organizations are participating in the Corporate Partnership Programme, making APM the
largest professional body of its kind in Europe. APM members are committed to developing and promoting project and program management through the “Five Dimensions of Professionalism”, which are Breadth, Depth, Achievement, Commitment and Accountability.

The APM Body of Knowledge (APM-BOK) is a foundational resource, providing the concepts, functions and activities that make up professional project management. It seeks to reflect the developing profession, recognizing project-based working at all levels and across all sectors for influencers, decision makers, project professionals and their teams. APM-BOK covers four major areas of reference, which are illustrated in Figure 14:

![Figure 14: Elements of APM Body of Knowledge (APM-BOK)](image_url)
• Context: The context of a project, program or portfolio is made up of two areas, “Governance” and “Setting”.

• Delivery: This area is about the delivery of the portfolio, program or project itself (P3). Seven sections deal with the fundamental components of every P3 undertaking.

• People: The people involved in the delivery of projects, programs and portfolios will have a major impact on the success of the undertaking. This area is split into two sections “Skills” and “Professionalism”.

• Interfaces: There are many areas where P3 management overlaps with general management. Project, program and portfolio managers need to have an understanding of how disciplines such as law, accounting and HR management impact upon their work.

2.9.5. Project and Program Management for Enterprise Innovation (P2M)

On October the 5th, 2005, the Project Management Professionals Certification Center (PMCC) and the Japan Project Management Forum (JPMF) combined to legally form the Project Management Association of Japan (PMAJ). PMAJ activities commenced in 2005. “The goal of PMAJ is to educate and train PM practitioners and foster public recognition of PM applicable to various private and public sector enterprise activities and contribute to the general public, by strengthening international competitiveness in the industry and developing vital economic and social support, by offering PM practitioners a certification system, training courses and a means for spreading PM knowledge” (PMAJ Mission, 2018). According to PMAJ, “P2M is the body of knowledge combining Program Management and Project Management to solve the complicated issues” (PMAJ Mission, 2018), as depicted in Figure 15:

![Figure 15: P2M Framework (PMAJ Mission, 2018)](image-url)
Keywords throughout P2M are “value creation to enterprises”, either commercial or public, with “a consistent chain from a mission, through strategies that embody the mission, to program(s) of projects that implement strategies”. P2M is intended not only to benefit Japanese organizations, but to profitably apply to any organizations globally, that seek a comprehensive guide to program and project management (Prof. Shigenobu Ohara, 2005). Figure 16 illustrates graphically the four sections of P2M:

Figure 16: P2M - Project Management Tower (Prof. Shigenobu Ohara, 2005)
P2M includes four main sections. The first section is titled, "Project Management Entry" and it describes the relations between society and PM professionals, the requirements for PM professionals, the history of PM and its application in the modern world. In the second section, "Project Management", we find the definitions and basic frameworks of projects and PM integrated, based on the common view and relations between integration and domain management, where domain management is the management of specific functions or knowledge area of PM. The third section refers to "Program Management" and it explains the definitions and frameworks for program management, which consists of project integration and the program integration management, aiming for optimization of programs. Finally, the fourth section is "Domain Management", which interprets the management for individual fields or functions frequently required in PM and program management (Prof. Shigenobu Ohara, 2005).

2.9.6. EU Commission Open Project Management Methodology PM2

PM² is an open, light and easy-to-implement PM methodology developed by the European Commission, that project teams can tailor to their specific needs. It is fully supported by a comprehensive training program, online documentation and an active Community of Practice. Its purpose is to enable project managers to deliver solutions and benefits to their organizations by effectively managing the entire lifecycle of their projects. PM² has been created with the needs of European Union Institutions and projects in mind, but is transferrable to projects in any organization (Kourounakis and Maraslis, 2018).

PM² incorporates elements from a wide range of globally accepted PM best practices, captured in standards and methodologies. Its development has also been influenced by operational experience on various projects, both within European Union Institutions and external bodies (ibid). It provides a project governance structure, process guidelines, artefact templates and guidelines to use them and finally a set of effective mindsets, which provide the glue that holds together the PM² practices and provide a common set of beliefs and values for PM² project teams. PM² Methodology is built on PM best practices and is supported by four pillars as shown graphically in the following Figure 17 and in Figure 18 which is a swim-lane diagram, that shows the methodology mindsets, meaning the 4+1 basic processes, the project phases and main actors and the phase gates approvals (RfP, RfE & RfC):
Figure 17: The House of PM² (Kourounakis and Maraslis, 2018)

Figure 18: PM² Swim-lane Diagram
2.9.7. Other Project Management Approaches

2.9.7.1. Critical Chain Project Management (CCPM)

The Critical Chain Project Management (CCPM) is a method of planning and managing projects that is based on methods and algorithms derived from the Theory of Constraints. The purpose of the theory is to provide organizations with methods and techniques in order to help them continually achieve their goals. The idea of CCPM was introduced in 1997, when Goldratt introduced a book titled “Critical Chain”. The application of CCPM has been credited with achieving projects 10% to 50% faster and/or cheaper than the traditional methods (i.e., CPM, PERT, Gantt, etc.) developed from 1910 to 1950s (Leach and P, 1999).

According to studies of traditional project management methods by the Standish Group, only 44% of projects typically finish on time. Projects typically complete at 222% of the duration originally planned, 189% of the original budgeted cost, 70% of projects fall short of their planned scope (technical content delivered), and 30% are cancelled before completion (Hans Mulder, 1995). The use of CCPM improves significantly performance relative to these traditional statistics.

The CCPM method focuses on a project’s schedule and therefore the target is to reduce duration estimates, calculate buffers, notify activity completion, measure progress made and set project priorities. Any project team that uses CCPM starts by creating an initial project schedule. Then, based on resource availability, task dependencies and activities that must be completed are established, so that the rest of the project can be finished successfully without any delays. This is called the “Critical Chain”. It’s the longest path until the project’s end, after having performed resource leveling. All of the tasks that’re included in the critical chain require special resource reserves and backup plans to ensure that nothing will delay them. The schedule made using this method allows for project buffers to be placed between these important tasks, so that deadlines are met effectively.

2.9.7.2. Earned Value Management (EVM)

Earned Value Management (EVM) is another PM technique that allows project managers to combine measurements of the PM triangle, scope, time and cost to measure performance and progress in an objective way. EVM can helps us to achieve objective
project assessments and quantify the opportunities to maintain control over the cost and schedule of the project. Evidence-based decisions can be made about project scope, schedule, cost, resources and risks with greater confidence by allowing more effective control and project oversight (Young Hoon Kwak, Frank T. Anbari, 2010). EVM emerged as a financial analysis specialty in US Government programs in the 1960s, but it has since become a significant branch of PM and cost engineering (Marshall, 2006). In the late 1980s and early 1990s, EVM emerged as a PM methodology to be understood and used by managers and executives (ANSI EIA-748 Standard - Earned Value Management Systems, 1998).

![EVM Basic Concepts: Chart Form (PMI, 2011)](image)

Figure 19: EVM Basic Concepts: Chart Form (PMI, 2011)

EVM is a difficult method to implement and its implementations can vary significantly depending on the circumstances, as it usually depends on the use of complex reporting information technology systems. Essential features of any EVM implementation include:

- A project schedule that identifies the time that the work must be accomplished in
- A valuation of planned work, called planned value (PV) or budgeted cost of work scheduled (BCWS).
- Pre-defined metrics or "earning rules", that are used to quantify the accomplishment of work, called earned value (EV) or budgeted cost of work performed (BCWP).
Table 5 includes a summary of all terms and equations used in EVM method:

**Table 5: Earned Value Management Calculations Summary Table (PMI, 2011)**

<table>
<thead>
<tr>
<th>Terms</th>
<th>Name</th>
<th>Definition</th>
<th>Equation</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV</td>
<td>Planned Value</td>
<td>The authorized budget assigned to scheduled work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EV</td>
<td>Earned Value</td>
<td>The measure of work performed expressed in terms of the budget authorized for that work</td>
<td>EV = sum of the planned value of completed work</td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>Actual Cost</td>
<td>The realized cost incurred for the work performed on an activity during a specific time period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAC</td>
<td>Budget at Completion</td>
<td>The sum of all budgets established for the work to be performed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CV</td>
<td>Cost Variance</td>
<td>The amount of budget deficit or surplus at a given point in time, expressed as the difference between the earned value and the actual cost.</td>
<td>CV = EV − AC</td>
<td>Positive: Under planned cost Neutral: On planned cost Negative: Over planned cost</td>
</tr>
<tr>
<td>SV</td>
<td>Schedule Variance</td>
<td>The amount by which the project is ahead or behind the planned delivery date, at a given point in time, expressed as the difference between the earned value and the planned value.</td>
<td>SV = EV − PV</td>
<td>Positive: Ahead of Schedule Neutral: On schedule Negative: Behind Schedule</td>
</tr>
<tr>
<td>VAC</td>
<td>Variance at Completion</td>
<td>A projection of the amount of budget deficit or surplus, expressed as the difference between the budget at completion and the estimate at completion.</td>
<td>VAC = BAC − EAC</td>
<td>Positive: Under planned cost Neutral: On planned cost Negative: Over planned cost</td>
</tr>
<tr>
<td>CPI</td>
<td>Cost Performance Index</td>
<td>A measure of the cost efficiency of budgeted resources expressed as the ratio of earned value to actual cost.</td>
<td>CPI = ( \frac{EV}{AC} )</td>
<td>CPI &gt; 1.0 = Under planned cost CPI = 1.0 = On planned cost CPI &lt; 1.0 = Over planned cost</td>
</tr>
<tr>
<td>SPI</td>
<td>Schedule Performance Index</td>
<td>A measure of schedule efficiency expressed as the ratio of earned value to planned value.</td>
<td>SPI = ( \frac{EV}{PV} )</td>
<td>SPI &gt; 1.0 = Ahead of schedule SPI = 1.0 = On schedule SPI &lt; 1.0 = Behind schedule</td>
</tr>
</tbody>
</table>
When we use EVM for large or complex projects, the system may include many more features, such as pointers and estimates of cost performance (over budget or under budget) and schedule performance (behind schedule or ahead of schedule). However, the most basic requirement of an EVM system is what quantifies progress using Planned Value and Earned Value (Marshall, 2006).

### 2.9.7.3. Agile Management

The term “Agile Management” is applied to an iterative, incremental method of managing the design and build activities of engineering, information technology and other...
business areas that aim to provide new product or service development in a highly flexible and interactive manner, based on the principles expressed in the Manifesto for Agile Software Development (Moran, 2015). Extreme project management (XPM) is a form of agile methodology used to manage complex and uncertain projects. It is a form of iterative project life cycle as we have discussed it on paragraph 2.3, where deliverables are submitted in stages. Agile was developed as a reaction to overcome various PM problems that could not be handled efficiently through the classic waterfall methods (Agile Project Management, 2015).

Agile offers team members a simple framework to promote communication and reflection on past work amongst them (What is Agile Management?, 2015). Teams who were using waterfall methodologies and adopted the agile practices typically go through a transformation phase and often take help from agile mentors who guide the teams through a smooth transformation. Agile approaches have also been employed and adapted to the business and government sectors. For example, “within the federal government of the United States, the United States Agency for International Development (USAID) is employing a collaborative project management approach that focuses on incorporating collaborating, learning and adapting (CLA) strategies to iterate and adapt programming” (PPL, 2018).

Agile management is an approach based on agile software development approaches that historically can be tracked back to 1957. Agile methods evolved and during the 1990s, a number of lightweight software development methods emerged in reaction to the prevailing heavyweight methods, like Rapid Application Development (RAD) in 1991, Dynamic Systems Development Method (DSDM) in 1994, Scrum in 1995 and Crystal Clear and eXtreme Programming (XP) in 1996 (Aydin et al., 2004). All these and many others are collectively referred to as “agile software development methods” (Larman, 2004). In 2001, the Manifesto for Agile Software Development was published and in 2005 the “Declaration of Interdependence”, to guide software project management according to agile software development methods (Declaration of Interdependence, 2005).

According to the Manifesto for Agile Software Development and the seventeen signatories of the manifesto, the following statements proclaim what is valued more:

- Individuals and interactions over processes and tools
• Working software over comprehensive documentation
• Customer collaboration over contract negotiation
• Responding to change over following a plan

The Manifesto for Agile Software Development is based on twelve principles (*Principles behind the Agile Manifesto*, 2019):

• Customer satisfaction by early and continuous delivery of valuable software.
• Welcome changing requirements, even in late development.
• Deliver working software frequently (weeks rather than months)
• Close, daily cooperation between business people and developers
• Projects are built around motivated individuals, who should be trusted
• Face-to-face conversation is the best form of communication (co-location)
• Working software is the primary measure of progress
• Sustainable development, able to maintain a constant pace
• Continuous attention to technical excellence and good design
• Simplicity—the art of maximizing the amount of work not done—is essential
• Best architectures, requirements, and designs emerge from self-organizing teams
• Regularly, the team reflects on how to become more effective, and adjusts accordingly

If we compare agile with traditional software development methods, we will see that agile philosophy mainly targets complex systems and product development that has dynamic, non-deterministic and non-linear characteristics. In these cases, accurate estimates, stable plans and predictions are often hard to get in early stages and confidence in them is likely to be low. Agile practitioners will seek to reduce the leap-of-faith that is needed before any evidence of value can be obtained (Mitchel, 2016). System design and requirements are held to be emergent. Early specifications would probably cause a lot of waste in such cases, since it’s most likely that they’re not economically sound. These basic arguments and prior industry experiences, learned from numerous successes and failures, have helped shape agile concept, as favor of adaptive, iterative and evolutionary development (Larman, 2004).

Agile software development methods have been extensively used for development of software products and some of them use certain characteristics of software, such as object technologies (Smith, 2007). However, these techniques can be applied to the development
of non-software products, such as computers, motor vehicles, medical devices, food, clothing and even music (Lee, 2014). According to Jean-Loup Richet, “this approach can be leveraged effectively for non-software products and for project management in general, especially in areas of innovation and uncertainty”. “The end result is a product or project that best meets current customer needs and is delivered with minimal costs, waste, and time, enabling companies to achieve bottom line gains earlier than via traditional approaches” (Institut Stratégie et innovation dans les services (Cergy-Pontoise, 2013).

Agile methods have been used in non-development IT infrastructure deployments and migrations. Some of the wider principles of agile software development have also found application in general management (e.g., strategy, governance, risk, finance) under the terms business agility or agile business management (Moran, 2015).

2.10. Project Management Maturity Models

While the origins of the concept of project management maturity (PMM) may be lost in history, nowadays, PM maturity concept has evolved considerably. As soon as software development evolved, the need to understand and quantify many variables, manage complexity, obtain consistent results and achieve strict delivery goals within time and budget repeatedly became apparent. According to Kerzner (2009), “the foundation for achieving excellence in PM can best be described as the PM maturity model (PMMM)”. 

PM capability and maturity exist at an individual and an organizational level. Generally speaking, a PM maturity model allows an organization to continually improve the processes and procedures related to PM practices. Such models typically define as the lowest level of maturity, an organization that uses PM in an ad-hoc manner, while in the highest level is an organization that continually improves its capabilities related to PM processes and procedures (IPMA, 2016a; Association for Project Management, 2014).

Another scientific term for “maturity” is “competence”. According to IPMA-ICB (2015), competence is defined as the “ability to apply knowledge, skills and abilities to achieve the desired results”. This definition of competence applies to individuals. In case of companies or organizations, competence is not only the joint competence of the participating individuals, but also the coherence and dynamic interactions between them and
the relevant stakeholders. More specifically, organizational competence in managing projects is the ability to integrate people, resources, processes, structures and cultures in projects, programs and portfolios within a supporting governance and management system (IPMA, 2015). It should be aligned with the mission, vision and strategy of the organization to achieve results and ensure continuous organizational development.

In 2018, PMI published the “Organizational Project Management (OPM) as a new standard. This standard is a replacement for the previously published “Implementing Organizational Project Management: A Practice Guide” (2014). PMI defines OPM as “the framework used to align project, program, and portfolio management practices with organizational strategy and objectives, and customizing or fitting these practices within the organization’s context, situation, or structure”. OPM provides guidelines to assist organizations to identify, assess and apply standard principles, concepts, methods and best practices, in order to promote and sustain OPM capability. This can be accomplished by better structuring the management of their portfolios, programs, and projects in order to achieve strategic objectives. Figure 20 depicts the OPM landscape:

![Organizational Project Management Diagram](image)

Figure 20: Organizational Project Management (Project Management Institute, 2018)

All organizations wish to achieve excellence in PM. Unfortunately, not all of them recognize that this requires strategic planning for PM. Simple use of PM methods and tools,
even for an extended period of time, does not lead to success. Instead, it can result in tedious mistakes (Kerzner, 2009). Successful implementation of an organizational PM approach must support the appropriate balance of knowledge, processes, people, and tools across all functional areas of the organization, in order to provide guidance for its portfolio, program, and PM efforts. (Project Management Institute, 2018).

The first application of a PM maturity model was made in 1986, by the Software Engineering Institute (SEI) at Carnegie Mellon University, when they published a framework, based on an assessment of the standard practices that a company maintained, while working on software projects, that consisted the Capability Maturity Model (CMM). Since then, the model has evolved considerably, as it was modified to fit to a broad range of companies and organizations (Cooke-Davies and Arzymanow, 2003). According to CMM, OPM evolves through five stages, which are “Ad-hoc”, “Repeatable”, “Defined”, “Managed” and “Optimized’. Later on, Mark C. Paulk et al. in 1993 presented a five stage model to measure the process maturity. These five stages and the requirement of these stages are illustrated graphically in Figure 21 and Table 6 as follows:

![Figure 21: The 5 Levels of PMMM (Mark C. Paulk et al., 1993)](image-url)
Table 6: Project Management Maturity Levels (Mark C. Paulk et al., 1993)

<table>
<thead>
<tr>
<th>Competence Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 = Optimized</td>
<td>Continual improvement of process</td>
</tr>
<tr>
<td></td>
<td>Continual collection of data to identify</td>
</tr>
<tr>
<td></td>
<td>Analysis of defects for prevention</td>
</tr>
<tr>
<td>4 = Managed</td>
<td>Process is quantitatively measured</td>
</tr>
<tr>
<td></td>
<td>Minimum of metrics for quality and productivity exist</td>
</tr>
<tr>
<td></td>
<td>Collection of process experiences</td>
</tr>
<tr>
<td>3 = Defined</td>
<td>Process defined and institutionalized</td>
</tr>
<tr>
<td></td>
<td>Process groups defined</td>
</tr>
<tr>
<td>2 = Repeatable</td>
<td>Process depends on individuals</td>
</tr>
<tr>
<td></td>
<td>Minimum of process controlling/guidance exists</td>
</tr>
<tr>
<td></td>
<td>Highly risky in case of new changes</td>
</tr>
<tr>
<td>1 = Initial</td>
<td>Ad hoc process, not formalized</td>
</tr>
<tr>
<td></td>
<td>No adequate guidance</td>
</tr>
<tr>
<td></td>
<td>No consistency in product delivery</td>
</tr>
</tbody>
</table>

The aforementioned 5-levels CMM model was the basis for the model presented by Rwelamila (2007) in an article published in Construction Management and Economics Journal. According to his analysis, an organization at the first level (initial) has no formal PM processes in place. Therefore, any success of any project, at this level depends on individual efforts, since systems and procedures are poorly defined. At the second level (repeatable), PM systems and most processes are in place and perceived as important within an organization, but they are not used in an integrated form. In the third level (defined), the organization has developed a standard approach to PM. At the fourth level (managed) the process management is measured and controlled and project performance tends to conform to plans, thus the project success rate is high. Finally, at the top-fifth level (optimized), the organization has a standardized approach to PM and there is focus on continuous process improvement.

A few years later, Kerzner (2009) described that the foundation for achieving excellence in PM can best be described as the PM maturity model (PM3), which is
comprised of five levels. Each of the five levels represents a different degree of maturity in project management. The following Figure 20 illustrates graphically the five levels of maturity:

![Five Levels of Maturity](image)

*Figure 22: The five levels of maturity (Kerzner, 2009)*

PM maturity models differ from one another in the concept that they embody and suggest how the maturity path looks like. The most important models use two different types of advancement; the hierarchical and the process-oriented. In the hierarchical model, such as CMM and PMMM, the maturity level is characterized by a number of capacities and the progression is sequential. In this type of model, maturity is defined as “the ability of the organization as a whole to adopt practices such as project or portfolio management, at what level of complexity and with what level of effort” (Gartner, 2012). On the other hand, in process-oriented models, such as OPM3 and P3M3, the maturity level of each process is shown in a profile, which measures capacity and improvement, through the implementation of improvement programs which are used as indicators. In this case, progression is not necessarily sequential. Modern PM maturity models are dominated by process-oriented factors.
P3M3, which stands for Portfolio, Programme and Project Management Maturity Model, was first released in 2005. P3M3 is unique in that it analyzes the balance between the process, the competencies of the people who operate it, the tools that are deployed to support it and the management information used to manage delivery and improvements. The following Figure 23 shows the three models that make up P3M3:

![Figure 23: The Structure of P3M3](image)

The Organizational Project Management Maturity Model (OPM3) is published by the PMI and today it is the globally recognized best-practice standard for assessing and developing capabilities in executing strategy through projects, via Portfolio Management, Program Management, and Project Management. OPM3 is a standard methodology that can be used to realize the domains of OPM, as it is illustrated in Figure 24.
With the use of OPM3 organizations can develop a roadmap that the company will follow to improve performance. OPM3 uniquely integrates into one maturity model these three domains and over one hundred organizational enablers that are assigned to 17 categories. It enhances effective use of human capital by developing portfolio, program, and project competencies (stakeholder engagement, estimating, scheduling, management, etc.). Organizational strategies and priorities are linked and have relationships between portfolios and programs and between programs and projects. OPM3 transforms the portfolio, program, and project processes into high-quality processes that’re well understood, repeatable and predictable. OPM3 highlights opportunities for more flexible, adaptable and improved management systems (Project Management Institute, 2013). Table 7 shows the comparison of portfolio, program, and project views across several dimensions within the organization, while Figure 25 shows the interactions between them:
Table 7: Overview of Portfolio, Program, and Project Management (OPM3 3rd Ed., 2013)

<table>
<thead>
<tr>
<th>Organizational Project Management</th>
<th>Projects</th>
<th>Programs</th>
<th>Portfolios</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td>Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.</td>
<td>Programs have a larger scope and provide more significant benefits.</td>
<td>Portfolios have an organizational scope that changes with the strategic objectives of the organization.</td>
</tr>
<tr>
<td><strong>Change</strong></td>
<td>Project managers expect change and implement processes to keep change managed and controlled.</td>
<td>Program managers expect change from both inside and outside the program and are prepared to manage it.</td>
<td>Portfolio managers continuously monitor changes in the broader internal and external environment.</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.</td>
<td>Program managers develop the overall program plan and create high-level plans to guide detailed planning at the component level.</td>
<td>Portfolio managers create and maintain necessary processes and communication relative to the aggregate portfolio.</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Project managers manage the project team to meet the project objectives.</td>
<td>Program managers manage the program staff and the project managers; they provide vision and overall leadership.</td>
<td>Portfolio managers may manage or coordinate portfolio management staff, or program and project staff that may have reporting responsibilities into the aggregate portfolio.</td>
</tr>
<tr>
<td><strong>Success</strong></td>
<td>Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.</td>
<td>Success is measured by the degree to which the program satisfies the needs and benefits for which it was undertaken.</td>
<td>Success is measured in terms of the aggregate investment performance and benefit realization of the portfolio.</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td>Project managers monitor and control the work of producing the products, services, or results that the project was undertaken to produce.</td>
<td>Program managers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.</td>
<td>Portfolio managers monitor strategic changes and aggregate resource allocation, performance results, and risk of the portfolio.</td>
</tr>
</tbody>
</table>

Figure 25: Portfolio, Program and Project Management Interactions (OPM3 3rd Ed., 2013)
2.11. Project Management Office – PMO

In order to function effectively in a rapidly changing environment, organizations need solutions that will ensure optimum management of their projects. Projects serve as an effective tool for organizations to achieve strategic goals. That’s why organizations create specialized units in order to create and deliver the aforementioned solutions, called the Project Management Office (PMO) (Giraudo and Monaldi, 2015).

A PMO is a group or a team or a department within an organization, a government agency or enterprise that defines and maintains the standards for PM within the business or the organization. Projects are considered temporary organizations operating within the boundary of the parent organization. The main functions of the PMO are to standardize the processes of PM and use economies of scale due to repetition, in the execution of projects. The PMO should serve as the single source of documentation, guidance and metrics in the organization, on the practice of PM execution (Eric John Darling, Stephen Jonathan Whitty, 2016).

Extensive academic research and surveys on PMOs have been published, including their role characteristics and functions, the position level and organizational structure, the performance and success evaluation and finally the efficiency and maturity of operation. An organization can gain maximum benefit when it plans and builds a PMO model matching the existing structure of the organization. “Since every organization is different, the optimal structure for the PMO must be designed based on many considerations and variables. A well-established starting model incorporates the most important elements and reflects to the theoretical and practical qualifications and gives guidance” (Szalay et al., 2017).

Different studies and surveys have been contacted investigating why a project may be successful or a failure across different industries and for projects of varying size. A survey contacted in 1.524 organizations, by PricewaterhouseCoopers in 2013, that investigated the main reasons why projects fail, had also indicated that operating an established PMO is one of the top three reasons that drives successful project delivery (PWC, 2013).

PMO was the answer to the need for a coordinated and standardized approach to manage projects within the organization has been a key factor for the diffusion of modern PMOs (Giraudo and Monaldi, 2015).
According to the most recent PMBOK edition (2017a) by PMI, a PMO is an organizational structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

The realization of a PMO within an organization is a serious investment in specialized human resources, IT infrastructure and time. Darling & Whitty (2016) found there is complexity of interconnections in PMO intellectual capital and though often the rationale for PMO establishment is to enhance stakeholder satisfaction with projects, often the establishment of the PMO leads to significant dissatisfaction by senior management. Soon, it’s obvious that there’re many “flavors of PMO” and that “one suit does not fit for all”.

There’re several types of PMOs in organizations. PMOs can be categorized based on their (a) influence and (b) position within the organization. PMOs that’re based on the influence and degree of control they have on projects within the organization, can either be seen as “Supportive” or “Controlling” or “Directive” (Project Management Institute, 2017a). On the other hand, PMOs that are based on the position they have within the organization can either be seen as “Individual” or “Departmental” or Corporate” (Giraudo and Monaldi, 2015), as illustrated graphically in Figure 26:
3. Dissertation Method and Design

3.1. Introduction and Research Objectives

As we have seen in Chapter 2, during the last 50 years, PM has evolved into a systematic and scientific discipline, with multiple frameworks, methodologies, tools and techniques. Information technology advancements have contributed a lot to this. Multiple studies, books, articles and papers exist that describe and analyze these methods and tools and how they have been used, primarily by the private sector enterprises to execute projects more efficiently. Public organizations, especially in the western world, soon realized that PM could be applied in their world as well. But, the environment of the public sector is quite different and the application of project management becomes more challenging.

The aim of this study is to investigate how the public organizations differ from their counterparts in the private sector and how this can influence the adoption of PM methods and tools. Furthermore, we needed to see if this is applicable by other countries and certainly what is the status regarding Greece. Stemming from this description, the main questions that this research aims at answering are the following:

1. What PM methodologies, tools and techniques are available today?
2. How the public sector organizations and projects differ? What are the main differences regarding their capability to adopt PM?
3. What are the most valuable ingredients for public administrations to adopt PM? Are there any examples of public administrations that are in the process or have already adopted PM?
4. What is the status of PM in the Greek public sector? What is needed and what might be the benefits?

The purpose of this chapter, is to analyze the dissertation method and design applied and present the outcome of this study.

3.2. Dissertation Design and Resources Searched

The research method chosen is a theoretical critical literature review. In this method, our focus was on existing theories and methodologies regarding PM, in order to execute an
extensive research of the literature and a critical evaluation of the findings against our topics. Our goal was to review, present, analyze and synthesize material from diverse sources in order to manifest our initial hypothesis, that PM can be adopted by Greek public sector organizations.

Critical review of the literature provides an opportunity to assess what has been researched by scholars and academics in the past and evaluate what is of importance from the previous body of work in our research of the topic. Certainly, this approach does not typically exhibit the systematicity of other more structured approaches to the literature. In our research, the emphasis was on the conceptual contribution of each item searched in the literature and not on formal quality assessment (Grant and Booth, 2009). Actually this formulates and the main limitation of our study. Even though we tried to aggregate the knowledge provided on a topic, the explanatory elements are inevitably subjective and the subsequent result is the starting point for further evaluation and not an endpoint in itself.

Though a literature search can be a daunting process, designing carefully the steps of the process can be helpful in managing it successfully. The main process steps that were followed were the following:

1. Formulating the research questions, meaning defining the subject of the research
2. Planning the research, which included:
   a. Plan what the approach to the sources of information should be, although in practice, a mixture of approaches was used:
      i. Systematic, try to find all relevant material
      ii. Retrospective, find the most recent material and work backwards
      iii. Citation, follow up references from articles, books and reading lists
      iv. Targeted, focus on a narrow area of the literature
   b. Choices between different sources of information, such as books, articles, journals, government reports, statistical information, web pages, etc.
   c. Choice of the electronic databases of information to be searched with an appropriate set of keywords.
3. Evaluating and recording the research results and making references
4. Reviewing search plan and revising if it’s necessary
5. Synthesizing and presenting research results
The following Figure 1 illustrates graphically the aforementioned process:

![Diagram of literature review process]

**Figure 27: Literature review process**

Our research strategy approach was a deductive one. According to Wilson (2010), a deductive approach is concerned with “developing a hypothesis (or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis”. Through deductive approach we can possibly explain causal relationships between concepts and variables and generalize research findings to a certain extent.
In our case, our hypothesis was based on the theory that “since it has been proven that the use of modern project management methods and tools can significantly increase the success rate of projects in the private sector, this can also be applied to public sector organizations and this might be a reform that public administration in Greece should pursue”. The next step was to formulate the research questions based on this hypothesis. The answers to the research questions were examined against our hypothesis and lead us to useful conclusions and recommendations.

The purpose of data collection was to find books, research studies and review articles, which were published in journals in order to identify the topics of the study. The search was conducted from December 2018 until May 2019. In order to collect and identify relevant studies, a search strategy was defined. The search strategy was as follows:

a) Use of standards, guides and books published and approved by international project management associations and institutions, such as the PMI, IPMA, AXELOS, APM, EU Commission and OECD.
b) Use only of well-known scholarly and academic review articles
c) Use of material that were published in English and Greek language
d) Material that was published from 1990 and onwards
e) For articles in journals their full text should be available

Through the use of personal acquaintances in PMI Greece Chapter, it was made possible to have full access to PMI’s official Standards, Frameworks and Guides as well as other project management related material such IPMA’s Baselines, PRINCE2 Methodology, etc. Furthermore, PMI’s electronic database was also accessible.

In order to complete our research three additional electronic databases were used, Google Scholar, JSTOR and Academia. Additionally, scientific terms and definitions were searched in the Cambridge Dictionary through its web page and Wikipedia on-line encyclopedia. The keywords used were “project management” AND “public sector” AND “new public management” OR “NPM” AND "Project Management Maturity Model" OR "PM3" OR "OPM3" AND "Project Management Office" OR "PMO".
3.3. Document Selection and Data Extraction

Based on the search strategy, these keywords could be mentioned in the document title and or the text of the article. The review was done on databases based on inclusion and exclusion criteria; 127 articles were found, out of which 41 were found in Google Scholar, 77 on JSTOR and 9 on Academia. In total 75 sources were selected based on their relevance to the subject. Another 3 sources that were in Greek language were found through further specific search on web pages using the Greek language and the same research terms. Furthermore, 3 additional sources were selected regarding the method of the research. The remaining articles were excluded from this review because they could not be used to address the questions of the study.

Data evaluation and analysis process were based on reading abstracts and results of the study. After reading abstracts and results, the appropriateness of studies was determined based on the articles’ relevancy. Only articles that were directly related to the subject of the research and helped answer the questions were included (Banihashem et al., 2018).

Furthermore, another 22 sources were used that were from specific material such as the PMI’s standards and guides, the IPMA’s baselines and material from sources from AXELOS, APM, EU Commission and OECD. A total of 103 references were used in this dissertation.

3.4. Synthesis, Validation and Results

The outcome of this research was to present an empirically based critical evaluation of the knowledge that was accumulated through the critical review literature. The results of our findings can be summarized as follows:

- In a fast-changing world, it has become apparent that value generation will be mainly accomplished through projects implementation. Therefore, being successful in project implementation is the only way to survive competition.
- PM discipline has evolved considerably and new methodologies, tools and techniques are in place. Numerous PM maturity models have been developed that can be tailored to suit the needs and requirements of all organizations. In parallel, informational technology evolution provides the means to build the required IT infrastructure for the
functioning of a PMO that will furnish the efficient use of modern PM tools and methods.

- Public organizations management, though it differs from the private sector it also resembles a lot. Adopting methods, tools and techniques used by their private-sector counterparts can be beneficial in numerous ways. PM methodologies can be an excellent example.

- Governance is an emerging theme that has been associated in the public sector with a real political need to satisfy stakeholders by demonstrating accountability and transparency while effectively implementing policy. Many initiatives relating to governance are generated by a need for improvement of organizational performance and ability to implement and adapt to change.

- New public management (NPM) values correspond well with PM principles and some of the NPM reforms are closely associated with PM adoption. That is why, it is evident that wherever NPM reforms, in any form, where implemented, PM maturity is higher compared to other countries.

- Choosing an appropriate PM Maturity Model (PM3) is the first step towards PM adoption in a large public organization. This should be backed-up by legislation and strong governance initiatives and synchronous Human Resources Management Policies. The second most valuable ingredient is the operation of an enterprise-wide PMO. This should come along with organizational restructuring to a Matrix organizational model rather than a Functional one.

- Finally, Greece needs to restart the reforms required for restructuring its Public Sector. PM adoption should be part of this process. The first step is to revive ELOT-1429 Standard along with the required changes in legislation and modernize it to current practices.
4. Project Management in Public Sector

4.1. Analysis of Public Sector Structure and Environment

In the second chapter, we have examined the evolution of PM as a scientific method and profession in the business administration field. Globally recognized standards, frameworks and methodologies have been developed, accompanied by advanced information technology systems, with practice guides and applications for all business sectors and industries and amongst them, the public sector organizations.

Ever since human societies started building major infrastructure artifacts through projects of public interest, the search to manage them effectively has been continuous (Spittler, J. R., McCracken, C. J., 1996). Similarities and differences between the public and private sectors have frequently been debated in the literature for public administration, politics and economics. But what exactly is the “public sector”?

According to the IMF and the United Nations System of National Accounts (1993), for most of the western countries, the Public Sector consists of the following types of entities and organizations:

1. The General Government which consists of three levels of state entities, as well a fourth type that includes the social security funds:
   a. The central or federal government, with all ministries and all institutional units of federal public administration, that are mainly financed and controlled by the government,
   b. The regional government that includes state or provincial organizations that are financed by the central government or by their own sources of funds,
   c. The local government organizations, like prefectures or municipalities as well as public corporations that are financed and controlled by the local authorities and
   d. The social security funds.

2. Public Financial and Non-Financial Institutions or Organizations, that include:
   a. Public Financial Institutions, like the Federal Bank or other financial institutions, like public banks, stock-exchange markets etc., in which the State mainly controls the Board of Directors, but not their funding.
b. Public Non-Financial Institutions, like public hospitals, independent authorities, large public corporations that provide energy, transportation services, water supplies and many other public goods.

The following Figure 28 illustrates graphically the public sector environment:

![Figure 28: Public Sector Environment](image)

The main conventional distinction between public and private organizations is their ownership and funding (Boyne, 2002). These two dimensions along with the mode of social control can be described as the “publicness” of an organization. This is the “dimensional model” of the differences between public and private organizations (Perry and Rainey, 1988). For each dimension, a continuum of values exists between fully private and fully public. On the other hand, according to the Generic model, of PMI and the Government Extension to PMBOK, all organizations are similar, without fundamental differences between public and private organizations, as far as it concerns PM.

Despite the “publicness” of a public organizations, they are all structured as pyramids (Gasik, 2016). This means that the strategies, the policies and the decisions are formulated at the top, while the responsibilities and the tasks are also decided at the upper level of the pyramid and assigned to the lower levels through a hierarchical chain of command. Therefore, the power rests at the top of the hierarchy (Sotirakou and Zeppou, 2005). According to Boyne (2002), public organizations differ from their private sector counterparts because of the complex organizational environment, the goals, the structure and the managerial values. These characteristics shape the differences in how the basic
functions of management are carried out in the public and private sector organizations. The table below highlights the key differences in the public and private sector organizations (Boyne, 2002).

Table 8: Differences in public and private organizations

<table>
<thead>
<tr>
<th>Key Comparison Area</th>
<th>Public Sector Organizations</th>
<th>Private Sector Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership</td>
<td>Owned collectively by members of political communities</td>
<td>Owned by entrepreneurs or stakeholders</td>
</tr>
<tr>
<td>Funding</td>
<td>Funded by the State Budget and the taxes paid or other public funds as those from EU</td>
<td>Private funding mainly by the customers and the owners</td>
</tr>
<tr>
<td>Control</td>
<td>Controlled by political power</td>
<td>Controlled by the market forces</td>
</tr>
<tr>
<td>Complexity</td>
<td>A lot of stakeholders, highly complex environment</td>
<td>Limited number of stakeholders, usually moderate complexity</td>
</tr>
<tr>
<td>Openness</td>
<td>Open systems that can easily be influenced from external events</td>
<td>May ignore the demand from external parties towards policy formulation and implementation</td>
</tr>
<tr>
<td>Instability</td>
<td>More influenced by political instability</td>
<td>Less affected by political decisions</td>
</tr>
<tr>
<td>Competition</td>
<td>Less competitive – no pressure</td>
<td>More competitive</td>
</tr>
<tr>
<td>Goals</td>
<td>Distinctive and multiple goals imposed by the numerous stakeholders that they must attempt to satisfy, usually without clear metrics of success</td>
<td>Focused goals and key performance indices as metrics</td>
</tr>
<tr>
<td>Structure</td>
<td>Managers follow more formal procedures for decision making and are less flexible and more risk averse</td>
<td>Managers are more flexible in their decision making and they are also less risk averse</td>
</tr>
<tr>
<td>Autonomy</td>
<td>Managers have less freedom to react to the circumstances</td>
<td>More freedom than their colleagues in the public sector</td>
</tr>
<tr>
<td>Managerial Values</td>
<td>Less materialistic</td>
<td>More materialistic</td>
</tr>
<tr>
<td>Commitment</td>
<td>Stronger desire to serve the public</td>
<td>More concerned with the needs of the individual customer</td>
</tr>
<tr>
<td>Follow-the-rules</td>
<td>Unnecessary and anti-productive obsession with rigid rules</td>
<td>More concerned with the results and outcomes</td>
</tr>
</tbody>
</table>

Most public organizations are functionally divided and bureaucratic (Spittler, J. R., McCracken, C. J., 1996). The functional structure helps them to maintain specialization, accountability and clear lines of command, especially in complex functions like...
procurement. Simultaneously, this structure must be used in order to conceptualize, fund, design, construct and operate projects, a reality that brings a lot of challenges, mainly due to the behavior of the employees that tend to focus on their own area of expertise with little understanding of how their actions will impact the others or the projects. Insufficient flow of information, incorrect decision making and short-term outlook are some only of the problems that arise due to these conditions.

Nowadays, worldwide competition and market liberalization, the IT technology revolution and therefore the emergence of information society have created an unplanned and sophisticated operating setting for public organizations (Sotirakou and Zeppou, 2005). Since 2000, a lot of effort has been given to analyze what governments should pursue and what’re the best practices to realize their goals. Public administration in many countries has been accused for being inflexible in performing its roles (Glyn, 2006). Moreover, according to public opinion surveys, confidence in public organizations has been in decline throughout the western world. Public institutions are experiencing continuing pressure from their stakeholders to modernize, to offer better services and to make government more efficient (Durst and Newell, 1999).

To avoid this pressure, public administration tries to enhance its performance through the adoption of various modernization reforms (Haque, 2001), which are often referred as re-organization and organizational change. Usually these reforms are undertaken to reduce public spending or to improve effectiveness and to respond to new social needs. The theoretical model behind these reforms is often referred to as New Public Management (NPM). The main factors that led to the emergence of the NPM model are the following:

- The economic crisis of government
- Ineffectiveness of the public sector in numerous industries
- Bureaucracy, corruption and lack of accountability
- New technologies in IT and telecommunications
- Better alternative forms of service delivery
4.2. New Public Management (NPM)

NPM can be defined as “a change in the way government does business, from the old bureaucratic one to a new, more entrepreneurial, dynamic way, with a built-in process of re-inventing and re-engineering itself. (Pollitt et al., 2007). The associated rhetoric about it argues that NPM means “a more effective and efficient state”, that can be achieved through “capitalism and free markets”, privatizations and profit maximization. The reality is that NPM doctrines are based on the theory that private sector management styles and practices can be applied to public sector, even with moderate changes, but the target is to downsize the public sector by privatizing those parts in which the public cannot be as effective as the private sector and by imposing performance measurement and parsimony. The NPM comes to describe all the cumulative efforts for reforms in the public administration. Some of the key characteristics of NPM are as follows:

- Focus of management systems and efforts from inputs and processes to output and outcomes
- A step towards performance measurement
- Preference in specialized lean and self-sufficient organizational forms rather than the old bureaucratic structures
- Substitution of contract relationships for hierarchical relationships
- Use of market mechanisms for the delivery of public services. This action should include privatization, outsourcing and the development of internal markets.
- Growth of private – public sector relationships and the implementation of common projects though partnerships.
- Priority in efficiency and individualism (Pollitt et al., 2007).

NPM values correspond well with PM principles and some of the NPM reforms are closely associated with PM adoption. For example, NPM states that tax-payers should receive value in return for the money they pay and this requires efficiency and effectiveness from public organizations that need to be flexible and adapt to change rapidly. This is where PM can be employed as a prescriptive model of planning and control and the vehicle to drive change, with a decentralized approach to the implementation. Furthermore, post-NPM goals called Public Value Management (PVM) of citizen consulting and involvement in public affairs along with communities and other stakeholders could also be seen as calls for PM.
skills. The aptitude of consulting stakeholders, coordinating and implementing complex, cross-sectoral policy solutions and to craft a more learning, reciprocal and collaborative policy environment gives primacy to PM (Crawford & Helm, 2009).

4.3. Main Types of Projects in Public Sector

The term 'public' refers to a project that is financed by a government and is typically owned and may be operated by the government. Therefore, public projects are funded by tax revenue or by public funding through EU cohesion-funding programs or even from public debt. They are subject to greater level of scrutiny and transparency in all procedures.

We distinguish three main types of public projects. The first one is the infrastructure type of projects such as building roads, bridges, dams, railways, tunnels or public facilities such as hospitals, schools, prisons, libraries, leisure centers and so on. Their value can range from a few hundreds of thousands of Euros to hundreds of millions of Euros and in that case, we refer to megaprojects. The second type of projects are those that involve acquiring a system or a product or a service through a public tender and a contract with a private or even a public enterprise that will execute the project will be signed. For example, the setup of a new ERP system for a public hospital, or the acquirement of a new vehicle for the fire service. Finally, the third type of projects are the internal public sector projects that their sole purpose is to change, reform, reconstruct and develop the public organizations. Usually, these’re not single projects but, programs of multiple projects, that can even involve the execution of second type of projects (Schuster, 2017).

Public projects often publish their requirements and request bids openly, with received bids considered in an open and transparent way. The government can also stipulate certain criteria that a supplier must fulfil in order to be awarded a public contract, such as minimum wage levels, reporting procedures, and so on. The EU Procurement Directives establish public procurement rules throughout the EU states, which apply to any public purchases above the defined thresholds. Public projects must comply with the regulations if the value of contracts is above those thresholds. In Greece, this was accomplished with the introduction of the Law 4412/2016, in 2016.
Beyond the differences associated with the legislation and the formalities between the public and private sector environment, there are also differences in all PM areas, because public sector projects inherit the differences between public and private organizations. These differences are quite significant in HR management area, integration management, procurement management and stakeholder management. The differences regarding the communications management area arise due to consequences of differences in the stakeholder management. In the areas of cost, risk, quality, scope and schedule management the differences are of less significance. The model in which differences exist is the dimensional model (Gasik, 2016).

4.4. PM3 & PMO - The Key Ingredients for Public Projects’ Success

Organizations can benefit from competent PM, which can be a significant organizational success factor. (Shenhar, 1998). PM maturity models for the public organizations provide capability assessment and development frameworks that help them compare their project delivery and performance with the best practices and provide a structured path to improvement (Seelhofer and Olivier Graf, 2018). A model selected to measure PM maturity must point out a logical path for progressive development and not just make comparisons (Crawford, 2014).

Therefore, it is imperative that public organizations must look at their own processes and analyze the results of their administration in order to find out where there is a great deal to gain in increased project maturity (Backlund et al., 2014). It is also important that the assessments they make to be part of a repeatable, business analysis and continuous improvement process would provide consistent measurements and results and even some degree of benchmarking with other organizations. This would provide the basis for the assessments to be utilized as a check-up tool to measure progress and to identify the next logical steps forward (Crawford, 2014) and therefore support organizations to view PM as a strategic enabler (Mullaly, 2006). Finally, it’s evident that a certain level of maturity is required in order to execute projects with a higher complexity level, particularly those facets of project complexity that affect the interaction of the project participants, as the project team and stakeholders (Albrecht and Spang, 2014).
Many PMOs are not successful in addressing the organizational strategic priorities because they are departmentally based and not enterprise-wide. This reduces their span of influence and limits corporate support.

The research shows that PMOs are more effective and can better impact the bottom line, when they are operating at corporate enterprise-wide strategic level, rather than at departmental level (Stanleigh, 2016). Especially in the public organizations that execute projects with increasing complexity, PM practices and tools that can assure an efficient use of resources is a key ingredient for success and in this context, an enterprise-wide PMO can be of great value (Santos and Varajão, 2015).

An enterprise-wide PMO can significantly impact the efficiency of a public organization since it is the best tool to function efficiently in a multi-project environment (Mariusz, 2014). In order to do so, the following are required:

- Close alignment to organizational goals.
- Efficient project plans with all variables factored, that can help accurately estimate budget spends and spot attention areas and estimate the resources needed.
- Centralized PM software in order to deal with multiple stakeholders and maintain the required level of transparency.
- Measures and metrics in order to have a way to track projects and make friendly reports.
- Regular communication because listening to the “customer” or the “citizen” is essential.
- A strong leader, because the success of public sector PMOs hinges on having the right people. And none is more important than the person who steers the boat on the PMO front (Santos and Varajão, 2015).

4.5. Key Competences of Public Sector Project Managers

Project managers play a critical role in all kinds of projects and influence projects' success. Their role in public projects is exceptional because of multiple stakeholders, whose attitudes can influence the project. As public organizations embrace PM practices, the need for developing competences as knowledge, skills and attitudes becomes increasing for public project managers.
However, little attention has so far been paid to the distinctive competences of public sector project managers, especially for those that are necessary for the team and the stakeholders management (Jalocha et al., 2014).

The inability to select team members and link performance with rewards are some of the challenges in team management in public projects. Furthermore, dealing constantly with political interference in projects and an environment not familiar with results-oriented management, makes stakeholders management unique in public sector projects.

Competence is a term that has become popular in recent years. The interest in employees’ competences is based on the theory that they are the most valuable asset of the company. According to Boyatzis, cited by (Jalocha et al., 2014), competence is “an underlying characteristic that could be a motive, trait, skill, an aspect of individuals’ self-image or social role, or body of knowledge which individuals use”.

According to IPMA’s competency model (IPMA, 2015), project manager’s competences are described in three different ranges:

- The technical competence range, that is used to define the fundamental PM competence elements.
- The behavioral competence range that involves the personal PM competence elements and finally
- The contextual competence range for the PM competence elements related to the context of the project.

The following Table 9 shows the Competences of public sector project managers:
Table 9: Competences of Public sector project managers (Jalocha et al., 2014)

<table>
<thead>
<tr>
<th>Contextual Competences</th>
<th>Behavioral Competences</th>
<th>Technical Competences</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Project, Program and Portfolio orientation and implementation</td>
<td>• High standards of honesty and integrity, virtue</td>
<td>• Project management success</td>
</tr>
<tr>
<td>• Stakeholders analysis and management</td>
<td>• Promoting ethical practices in all organizational activities.</td>
<td>• Interested parties</td>
</tr>
<tr>
<td>• Ability to analyze political support and opposition</td>
<td>• Accountability</td>
<td>• Project requirements and objectives</td>
</tr>
<tr>
<td>• Collaboration with a variety of individuals and groups from both within and outside of office</td>
<td>• Motivation to serve public, including encouraging employees to believe in the spirit of public service and demonstrating a personal commitment to quality public service</td>
<td>• Risk and opportunity</td>
</tr>
<tr>
<td>• Execution of the policy given by politicians</td>
<td>• Leadership: Ability to take decisions and move the project forward towards its objective even under pressure from different stakeholders</td>
<td>• Quality</td>
</tr>
<tr>
<td>• Adequate understanding on legal and cultural issues</td>
<td>• Engagement and motivation:</td>
<td>• Project organization</td>
</tr>
<tr>
<td>• Understanding of organizational mission, ethics and public good and being concerned with public trust</td>
<td>• Self-control</td>
<td>• Teamwork</td>
</tr>
<tr>
<td>• Exercise power, authority and influence appropriately to achieve office goals</td>
<td>• Assertiveness: Ability to make decisions and execute them firmly</td>
<td>• Problem resolution</td>
</tr>
<tr>
<td>• Keep current with laws, regulations, policies, trends</td>
<td>• Relaxation</td>
<td>• Project structures</td>
</tr>
<tr>
<td>• Focus on partnering with multiple stakeholders: work to overcome barriers to partnering</td>
<td>• Creativity: Ability to think various, possible future scenarios (challenges, opportunities, etc.) and to find creative solutions</td>
<td>• Scope and deliverables</td>
</tr>
<tr>
<td>• Diversity awareness</td>
<td>• Result orientation</td>
<td>• Time and project phases</td>
</tr>
<tr>
<td>• Permanent organization</td>
<td>• Efficiency: Among other things, ability to deal with bureaucracy and red-tapes</td>
<td>• Resources</td>
</tr>
<tr>
<td>• Business: competence on the branch / sector to which the organization belongs</td>
<td>• Consultations</td>
<td>• Cost &amp; finance</td>
</tr>
<tr>
<td>• Systems, production &amp; technology</td>
<td>• Negotiations</td>
<td>• Procurement &amp; contract</td>
</tr>
<tr>
<td>• Personned management</td>
<td>• Conflicts &amp; crises</td>
<td>• Changes</td>
</tr>
<tr>
<td>• Health, security, safety and environment</td>
<td>• Reliability integrity</td>
<td>• Control &amp; reports</td>
</tr>
<tr>
<td>• General finance</td>
<td>• Values appreciation</td>
<td>• Information &amp; documentation</td>
</tr>
<tr>
<td>• General legal knowledge</td>
<td>• Ethics</td>
<td>• Communication</td>
</tr>
<tr>
<td>• Coalition building with understanding of community building and ability to establish collaborative relationships</td>
<td></td>
<td>• Start up and close out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to work under time pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to make right prioritization at right times</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to establish and implement reward systems that correspond effectively to performance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to select project team members based on their expertise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Professional competence in public administration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to apply office policies in a consistent manner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inter-organizational learning competence: analyze and apply lessons learned from other organizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Financial management including ability to demonstrate an understanding of the roles of the office, Division of Administration, and the legislature in the budget process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to make sound decisions on procurement of equipment, supplies or services and understanding of state and office procurement regulations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Long range thinking: ability to recommend effective strategies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ability to consider all factors when making decisions (e.g. legal aspects, political and organizational reality, media, special interests).</td>
</tr>
</tbody>
</table>
4.6. Megaprojects and Complexity

Megaprojects are complex, large-scale endeavors that according to international literature typically cost at least 0.5 billion Euros from incubation to go-live. They span in many different sectors; from construction, to energy and transportation, to defense, infrastructure and ICT. They can be found around the globe both in the largest economies and emerging markets and are financed either by private or public sector investors or as public-private partnerships. The Olympic Games of Athens and the construction of Athens Metro are examples of megaprojects. Certainly, high cost is not the only characteristic of megaprojects. They also involve a large number of stakeholders, take years to design, plan and implement and are significantly more complex. Actually, complexity is their main characteristic, and because of that they need a dedicated approach of PM to be delivered successfully (Flyvbjerg, 2014).

Another feature of megaprojects is that 90% of them are significantly delayed or they’re overbudget or they fall short of their promised benefits. This is true for projects for all sectors and countries. The main reason for budget and schedule overruns is too much optimism and underestimation of their complexity. The reason is simple; these projects happen "once-in-a-lifetime" and that means that probably all project contributors, including project managers have never administered a project of such complexity before. This means a lack of experience on all sides. Project members often underestimate the true complexity, the risks and the challenges of megaprojects (Turner and Xue, 2018).

Complexity can be addressed through a strong organizational structure, control and monitoring. Furthermore, it is more efficient to focus on communication among partners. Project governance, top-management support, experience and people skills are essential. The PMO is a toolbox that helps organizations to get organized. This is quite useful in order to deal with complexity. The PMO plays a key role by offering support at each project phase (Widforss and Rosqvist, 2015).

Research has shown that megaprojects should be executed by Special Purpose Entities (SPEs) which are fenced organizations having limited predefined purposes, (i.e. to deliver the megaproject) and a legal personality (Brookes et al., 2015).
4.7. Case Studies Review - What other Countries Do

In this dissertation we also investigate what other countries do in regard to PM adoption in their public sector. From many cases worldwide, we chose to refer only to countries that belong to EU, are small and developing or have similar structure and size like Greece or have recently been involved in the economic crisis and signed an MoU with Troika for a financial bailout program. Based on these characteristics, we chose a few characteristic examples from the literature, that we briefly discuss in the following paragraphs.

4.7.1. The Case of Latvia

Public sector PM in Latvia became popular in just only after 2010, mainly after Latvia joined the EU and different types of public funding sources became available (Pūlmanis Emīls, 2013). The study contacted showed that public sector project maturity level is relatively low although the public sector managers believed the opposite and therefore it should improve. More analytically, the author evaluated the public sector practices in project development and initialization processes. The result was that public sector PM is deficient in deep problem and situation analysis. To improve PM efficiency, the author recommended training in professional skills, the implementation of matrix organization structures and the gradual adoption of PM tools and techniques.

4.7.2. The Slovenian Public Sector

Professor Gordana Žurga (2018) contacted a study about the importance of PM for the functioning of public administration and its contribution to the realization of the developmental goals of the government in Slovenia. The main contribution in this study was the development of a PM maturity model for public administration to access PM maturity in Slovene public administration. Out of the five maturity levels, the results for project management in Slovene public administration were:

- management of projects – level 2 (initiated),
- management of programs of projects – level 2 (initiated),
- management of portfolios of projects – level 3 (implemented),
- organizational support for project management – level 3 (implemented),
• HRM for project management – level 2 (initiated), and
• Integration of project and strategic management – level 3 (implemented).

4.7.3. The Case of the Portuguese Public Sector

Based on the results of a study (Yasin et al., 2009) through which a sample of 102 Portuguese public sector officials at the middle-level managerial rank, answered a number of questions the following conclusions were derived regarding PM:

• Most of the participants were familiar of the methods, tools and techniques of PM. They appeared to be fully aware of the leadership, people and technical facets of effective PM practices and thus Portuguese public organizations should be ready to deploy PM practices, in the context of changes and reforms required to improve organizational performance.

• The organizational culture of the public sector in Portugal stands to benefit from a well-designed top-down approach to effective leadership. Also, educational and training efforts were addressed in order to make decision-makers aware of the importance of the international aspects of their current and future projects.

• Portuguese public organizations appear to be in need of investing toward re-inventing and modernizing their information systems, which is critical for PM. They also need to adopt a PM maturity model and PM methods.

• Public organizations need to be transformed from closed to more open systems. Perhaps this may explain the relatively high rate of projects failure. Public sector needs to embrace the effective utilization of PM know-how. Benchmarking the success of the private sector in this context is critical.

4.7.4. The Cyprus Case

Cypriot public sector has a long tradition in effective administration. Most public projects are executed through the public procurement system, which is characterized by the almost exclusive use of open procedures and the relative length of the administrative processes.

The public procurement system has a decentralized approach since the almost 700 contracting authorities are responsible for their own tenders, even though the legislative
and review body are centralized at the State level. The Public Procurement Directorate (PPD) within the Cyprus Treasury is the single centralized body responsible for all matters regarding public procurement in Cyprus. It is responsible for drafting public procurement legislation and ensuring its proper implementation.

Procurements originated by the central administration accounted for 35% of the total value of contracts awarded in Cyprus in 2010. Two other bodies oversee public procurement in Cyprus. First, the Audit Office of the Republic of Cyprus, which is an independent body that performs external controls regarding the execution of the national budget and the independent Tenders Review Authority (TRA) of Cyprus, which is charged with maintaining equal treatment, transparency and non-discrimination in the procurement process.

The PPD provides a Public Procurement Best Practice Guide, which contains practical guidelines and information on every phase of the tendering process and advises contracting authorities on various issues related to public procurement, including PM methodology and a procurement strategy. Cyprus is among the more advanced EU countries in terms of e-procurement and has almost reached e-submission by 2017.

The administrative capacity of Cypriot contracting authorities remains a serious issue, especially at the municipal level. Public buyers often do not have the qualified public procurement staff needed to handle tendering processes and lack access to the comprehensive trainings necessary to build their skills. Moreover, corruption of public sector officials has been identified as a significant issue affecting the procurement process.

The present methodology that is recommended as the “best practice” in PM was elaborated taking into account many widely used methodologies and guidebooks in PM, such as PRINCE2, PMI’s PMBOK Guide, APM Methodology and EU Project Cycle Management Guidelines. The methodology can be addressed at the following site: http://www.publicprocurementguides.treasury.gov.cy/. Contractors of public projects are required to use PM tools and techniques in order to execute their projects.
4.7.5. The Irish Public Sector

Ireland is a state member of the EU, with almost 4.8 million inhabitants and a GDP of 391 billion Euros, according to 2018 EU statistics.

The Irish Public Service is the name of the entirety of Irish public administration within the state government apparatus. It comprises of two parts; the Civil Service of the Government, which has fifteen Departments that are politically governed by the government’s ministers, but they are managed by the Departments’ Secretaries General, that are senior civil public servants and the Civil Service of the State that includes some specialized agencies, such as the Revenue Commissioners, the Central Statistics Office, the Courts Service of Ireland and the Director of Public Prosecutions. Other offices are also prescribed under the Civil Service of the State. According to the Irish Central Statistics Office, in 2016 there were 304,472 employees in the Irish Public Service.

Ireland is a open, liberal market economy, that embraced the NPM reforms some years after New Zealand, Canada and the UK. The launch of the Strategic Management Initiative (SMI) in 1994 promised much by way of improving the efficiency, speed and coherence of government. Further public service modernization initiatives took place until 2008, when the OECD published a report on the Irish Public Service (OECD, 2008). The report included a complete public sector benchmark that showed the Irish Public Service had been able to deliver services relatively well in comparison with other countries, although there was room for considerable improvement, in the areas of better co-ordination, focus on performance and value for money across government.

The economic crisis that followed was a challenge for the Irish government and a strong motivation to move on with the necessary reforms. In 2011, the Public Service Reform set out a plan for changes with five priorities: customer service, maximizing new and innovative service-delivery channels, radically reducing costs to drive better value for money, leading, organizing and working in new ways and a strong focus on implementation and delivery. Issues such as the development of shared services, procurement and outsourcing were emphasized. (Boyle, 2014). Most of the actions identified were implemented to an extended degree, but still significant challenges remained. In January 2014, the Public Service Reform Plan 2014-2016 (PSRP) identified four main reforms: delivery of improved outcomes, reform dividends, digitalization / open data, and openness and accountability. Delivering these complex cross-cutting public sector reforms was a
major challenge, which required high program and PM skills. Action 17 of PSRP aimed to “improve PM capacity”.

According to the Civil Service Management Board (CSMB), well-managed projects are critical to how we work, to the successful achievement of government priorities, to the management of public finances and to the delivery of high-quality services to the public. Project management supports the identification and establishment of milestones to be achieved across projects, it helps with the prioritization of activities and the effective allocation of scarce resources, it enables the monitoring and the reporting of progress, and it provides a solid basis for sound financial management and control (Boyle, 2014).

The Institute of Public Administration is Ireland’s only public service development agency focused exclusively on public sector development. It delivers its services through education and training, direct consultancy, research and publishing and the co-operation in international projects. PM and Governance Certificates are offered in undergraduate and graduate program studies specifically developed for the public sector. The Irish Public Service has developed a whole framework for project, program and portfolio management for the public sector and this is delivered as “The PM Handbook for the Civil Service”. There’re more than 1,550 certified PMPs and twice as many PRINCE2 practitioners. Public sector is one of the best employers of certified project managers. In June 2019, the Irish Public Service was seeking to employ more than 440 project managers.

“One way to support government agencies to build more PM capacity is to develop shared standards and tools. Building PM capacity in Civil Service Departments to deliver reforms through the establishment of program management offices was well regarded by many and the support given in terms of building human capacity and expertise appears to be providing benefits to departments and whole sectors. Connecting these PMOs through networks, developing program and PM guidelines through the Civil Service PM Handbook and providing opportunities to learn and develop through the sharing of experience are all positive actions which stand to improve the public service’s capacity to deliver. Setting up PMOs is a good start to improve PM capacity and to contribute to the implementation of the PSRP” (OECD / OCDE, 2016).
5. Project Management in Greece

In chapters 2 and 4, we examined the evolution of PM, mostly in Western Countries, the Unites States and Europe. During the past 50 years, PM has evolved into a highly developed scientific and systematic approach in business administration, both in the private and the public sectors of the economy. In this chapter, we focus our study in Greece and we investigate how PM is perceived in our country and how much has it been adopted, mainly by the public sector.

5.1. Project Management in Public Sector in Greece

5.1.1. The Public Sector in Greece

In Greece, the government and the system of public services of the State form the core and the most important part of the executive power within the framework of the country’s political system. Since 1830s, the French model of State inspired Greece and the new country started to create its institutions and public structure modelling them on the French example (Manojlovic Toman, 2010). Public sector organizations are the least homogeneous layer of public administration of the country which comprises of the numerous and various agencies and organizations of the wider public sector. These organizations are mainly enterprises of public interest, in which the state owns most of the shares, state banks, although the recent crisis has diminished their value and their shares are now owned by the Hellenic Financial Stability Fund, as well as offsprings of ministries and the local government agencies, such as public hospitals, educational and cultural institutions and many others. The public sector in Greece, as a whole, includes the following:

- The Ministries of the Government,
- The Local Government Agencies of the 1st and 2nd tier, meaning the Municipalities and Regions.
- The Public Legal Entities, which are organizations that their purpose is the provision of specific public goods or services. These organizations have some administrative and budgetary autonomy, but they are supervised by the ministries to which they politically belong. In this category we have public hospitals, social security funds, chambers of commerce, public benefit organizations and finally mixed economy enterprises such as
the Public Power Corporation, the Hellenic Petroleum Corporation and the Bank of Greece and finally,

- The Independent Administrative Authorities which are out of the hierarchical tree of the public administration and the supervision of the central government. They are special-purpose organizations that provide regulatory, licensing, review or arbitration services such as the Supreme Council for the Selection of Personnel, the Authority for the Protection of Personal Data, the National Radio and Television Council and the Energy Regulatory Authority.

### 5.1.2. Public Administration Status

The large list and variety of the public organizations, their legal status and institutional shape reflect the way the State penetrates into most of the industries, the economy and society today. This has been the dominant model of public administration in Greece and the model of state development as well, since World War II. As a result, the Greek economy has been a mixed one, in the sense that the market economy has been heavily mediated and overregulated, by the State. For many decades, the State has assumed a predominant role in development and that is why the public organizations are so extensively involved in the creation of the country’s Gross National Product. Public finance data reveal that the public sector share in the GNP is over 40%, while the average in most E.U. countries is near 30%. Actually, this has been one of the crucial factors that has delayed the required reforms in economy and society; the poor condition of the public administration and its dominant role in the economy. “The administrative system of the country exhibits certain curious aspects and features which are conducive to remarkable weaknesses of performance and rather limited capacity of achieving results” (Mergos et al., 2012).

After the political changeover from the end of Dictatorship in 1974, the trajectory of public administration and state development in Greece has been an imbalanced one. The size and activities of public administration and its intervention in the economy has grown in a manner that is disproportional and this has led to limited capacity to deliver and implement effectively and efficiently. In the 1980s, the public expenditure was raised to almost 50% of GNP.

This capacity deficit has been the main root of the public administration crisis in Greece. The factors that can explain this quality deficit can be summarized as follows:
• The overwhelming extent of public intervention in economy and society;
• The long tradition of legalism, rigidity and formalism of administrative behavior;
• The infiltration of political parties and politicians into the operation of public organizations;
• The weak staffing processes and uneven distribution of personnel in the various governmental services and institutions;
• The limited professionalism, ethos, legalistic culture and overall mentality of most of the public civil servants.

These factors linked among themselves, as well as with others in adjacent social systems (i.e. education, party politics, urbanization, weak industrialization, etc.) produce the particular symptoms of the pathology and ineffectiveness of the public bureaucratic model (Flogaïtis and Matei, 2011).

Various reforms and transformations, more at the political and institutional level have been achieved over the period of three decades, even though real reforms were initiated in the 1990s. The first attempts of reform that appeared in the first decade of 1980s were mostly due to the EU accession and they were limited without any serious changes. Some serious reforms actually started to be implemented, from the beginning of the 1990s until 2010. Initially, many reforms were initiated in order to reduce the budget deficit and to respond to the process of E.U. convergence requirements. But, most of them have proved to be of limited use and effectiveness because of the persistence of social, political and economic conservatism and lack of vision (SPANOU and SOTIROPOULOS, 2011). This kind of developmental lag resulted to limited value of any reforms that took place. Most of them had a symbolic function and usually they were imposed by politicians to sustain the mythology and ideology of reforms and modernization, but they were shallow, formalistic and irrelevant at the practical level.

However, a remarkable improvement in the standard of living conditions for a big part of the population was made possible, mainly through tourism, capital transfers, private construction projects and small market activities, largely by the margins of a shadowy economy. But even these changes failed to affect the political and administrative infrastructure of the country (Makrydemetres et al., 2016). On the contrary, this type of prosperity was made possible at the expense of State modernization.
By the end 1990s, the situation was so problematic, that a lot of reports were posted by expert teams, academics and institutions that pointed the weaknesses of the system. Understandably, a number of reform measures were announced or even enacted in accordance with the recommended interventions. But, they hardly affected the practical horizon of administrative performance.

Simultaneously, after the 1980s and for the next 25 years, in most E.U. countries there was serious convergence on reform efforts regarding administrative practices and prospects. Most of them followed either deregulation policies and projects or they tried in various ways to follow the doctrines and reforms suggested by MPM theory and methods, in the public organizations and especially the functioning of public services.

In Greece, most of the prominent reforms took place between 2001 and 2009, when the country was apparently economically stable and more intense and visible reforms were possible to be carried out. Especially, during the first years after the millennium, a number of serious reforms were established, mainly because of the participation in the Eurozone area and the Olympic Games of 2004. Most of these reforms, were in the spirit of NPM doctrines. Unfortunately, crucial reforms for the structure and operational processes of public administration were not followed or they were abandoned.

5.1.3. New Public Management Reforms

From mid 1990s until 2010, some vital reforms were introduced in the public administration. Most of them were mandated by the NPM doctrines. In 1994, the introduction of the Supreme Council for Civil Personnel Selection (ASEP) was established by the Law 2190/1994 and this was a significant reform towards transparency and meritocracy. This was followed by a second reform that mandated that General Managers of public corporations should be appointed with a system of open selection process.

In 1995, the introduction of new information technologies for the modernization of public administration gradually begun. Great emphasis was given on their use, not only in the public administration, but also in society in general.

In 1999, the government, in order to support the public sector organizations with skilled professionals that could manage the complex IT projects formed “The Information Society SA”, to execute a special IT EU-funded program as part of the third CSF. This specific
program became one of the largest developmental programs in the EU, with a budget over 2.84 billion Euro. The purpose of this initiative, which is still in progress, was the creation of crucial infrastructures of information systems necessary for the development of e-government.

Citizen Services Centers (KEP) were introduced in 2000 with the Law 3013/2002, which constitute the Greek version of “one-stop-shops” in public administration. KEPs operate like information centers, as well as points for a variety of transactions between the citizens and public authorities. In 2001, the Investors Services Centers (KYE) were established aiming to provide easy-access services directly to investors, (one-stop-shop), thus facilitating licensing and start-up process of an enterprise (Zampetakis, 2007).

During the period 2007-2010, the Quality Department of the Ministry of Interior applied the Common Assessment Framework in several Ministries and local government agencies, a model based on the premise that best results in organizational performance are achieved through leadership-driven strategy and planning, human resources, partnerships, resources and processes. In 2005, ISO certification, e-government and performance management systems were introduced by the 3230/2005 law and an operational program called “Politia”. In this framework, the adaptation of ISO 9001 Quality Management System was adopted by many public organizations, under the umbrella of NPM reforms.

Finally, in 2008 a crucial reform regarding PM in Public Sector was made. It was the development and introduction of the ELOT-1429 Standard followed by legislation concerning projects and contracts, such as the Greek Law 1418/84 for public works and the Directive 2004/18/EC for public contracts. We further analyze this reform in chapter 5.2.

The economic crisis in 2010, resulted in the signing of the first Memorandum of Understanding between the Greek State and the members of the Troika, which consisted of the International Monetary Fund (IMF), the European Central Bank (ECB) and the European Commission (EU) in order to receive the financial support required. This first Memorandum stipulated a time frame for specific economic policies that had to be accomplished. The MoU enforced public administration reforms which were the following:

- Introduction of a simple remuneration system for public sector employees
- New public procurement system for public projects
- Transparency of public spending decisions
New local government administration reform
Independent functional review of the central government
Austerity measures in the economy
Heavy privatization of public sector organizations
Downsize of the personnel of the public sector by 150,000 employees by 2016

Unfortunately, Greece had to sign two additional MoUs that required harsh economic reforms, which eliminated the welfare state and seriously affected the public health and educational services and caused a negative impact on the living standards. This has negatively impacted the term “reforms”, because people have associated them with heavy austerity measures and cuts of the welfare state.

5.1.4. Managing Projects of Public Interest in Greece

E.U. Commission through structural fund programs for national and regional levels tries to foster economic and social cohesion of member States. Greece has been one of the most profited States of these programs. Most of the thousands of beneficiaries were public organizations, such as ministries, universities and local government organizations. Unfortunately, according to a study on the managerial capability of the beneficiaries, it was made clear that a large number of organizations, approximately 22%, were not capable of managing projects and an even larger percentage ranging from 30% to 65%, was not using modern or efficient PM practices (Fitsilis and Chalatsis, 2014). Some of the reasons that contribute to the lack of PM maturity were identified as the absence of formally defined processes or of a quality management system, lack of internal auditing and review procedures and of project schedule control, absence of PM information systems and finally unavailability of legal support in complex legal and contract agreements (Fitsilis and Chalatsis, 2014).

In order to analyze the managerial capability of the Greek public organizations, it is also important to study the dimensions of the Greek cultural environment. In Greece, the collaboration and involvement of the basic stakeholders of a project is inevitably low, something that is a key factor for successful management of public projects. Furthermore, long-term planning skills are not considered strong within the Greek public sector, which is also a critical factor for the PM capability of an organization. Finally, there is low perception
regarding performance orientation and therefore procedures like internal audits, schedule and budget controls are not included in the working-routine of the Greek public organizations (Fitsilis and Chalatsis, 2014).

Naturally, culture is not the only factor affecting the efficiency of PM in Greece. There are a lot of inhibiting factors affecting the implementation of a PM capability model in Greek public organizations. Some of them are:

- Inadequate staff, that is also unevenly distributed amongst the various organizations.
- Unequal distribution of workload among various departments.
- Lack of specialized departments and personnel and deficient coordination of the involved departments.
- Insufficient academic/professional qualifications of the staff and thus inability to implement special requirements of a PM capability model.
- Lack of commitment by the management.
- Impedance of organizations for re-engineering and changing of their work practices.
- Insufficient support by the central government.
- Inappropriate PM standards or incomprehensible documentation of PM literature.

Despite the aforementioned problems, progress was made, especially through the introduction of the ELOT-1429 standard.

5.2. The ELOT 1429 Case - Current Situation

5.2.1. Background

PM methods, tools and practices have been evolved over half a century and infuse all industries, institutions and governments world-wide. The development of ELOT-1429 that was introduced in 2008 had to rely on existing international standards, frameworks and methodologies. The Hellenic Organization for Standardization (ELOT) was based on many broadly identifiable frameworks such as:

1. Project lifecycle or maturity models, such as the “Project Excellence Model” proposed by the APM, the Kerzner’s “Project Management Maturity Model” in 2001, the “Portfolio, Programme & Project Management Maturity Model” proposed by PRINCE2 and the OPM3, by PMI, in 2003.
2. Bodies of Knowledge and/or Competence Baselines which provided the basis that new project managers could be aspired and form the certification basis. Moreover, they also provided the required knowledge for understanding the elements of PM. Such standards were the IPMA ICB (2006) and the PMI’s PMBOK (2004).

3. International or national standards and guidelines, that provide guidance in project implementation within a specific context, either at a country level or for a specific type of projects. For example, ISO 10006:2003, the Project Cycle Management Guidelines developed by European Commission in 2004, the Best Practices Guide for Managing Public Contracts, developed by Cyprus General Accounting Office and the Extension for Government Projects to “A Guide to PMBOK” of PMI (2003), etc.

Furthermore, the following have been taken into account and need special reference:

- Greek legislation concerning projects and contracts, such Greek Law 1418/84 for public works and Directive 2004/18/EC for public contracts, etc.
- The basic national and EU legislative framework that is applicable for the planning, implementation and management of EU funded projects.
- Various tools, manuals, guides and other publications available in the managing authorities of operational programs.
- The interim ministerial decision published in Hellenic Official Journal part B 55/18.1.2008, which defined the rules for managerial capability for the interim period up to the adoption of the standard ELOT-1429 (Fitsilis et al., 2008).

5.2.2. Structure

The ELOT-1429 was part of a set of standards for organizations that needed to implement public projects. Several related complementary standards were also developed:

- ELOT 1431-1: Implementation guide for public works projects
- ELOT 1431-2: Implementation guide for public procurement projects
- ELOT 1431-3: Implementation guide for projects of special type and
- ELOT 1432: Requirements for managerial capability assessing processes and assessors

The purpose of ELOT-1429 was to define a System for Managerial Capability (SMC) of public organizations. Thus, it specified a set of requirements that had to be implemented in order to improve an organization’s managerial capability for the execution of projects of
public interest. By implementing the SMC, the organization would improve its efficiency and performance. An important feature of the SMC was that it could also be used for the assessment of the organization’s managerial capability (Fitsilis et al., 2008). SMC defined a number of process groups, which were:

- **General management and organizational structure.** It included strategic planning, development of SMC, managerial commitment, SMC evaluation and improvement and the development of the appropriate organizational structure.
- **Resource management** including processes related to the availability of suitable personnel and appropriate infrastructure.
- **Project implementation processes group** which forms the core of the standard, including processes for project initiation, planning and implementation, monitoring and closing.
- **Project measurement and evaluation.**

The standard took into consideration the project management lifecycle. Each organization that planned its projects, passed through a phase of initiation by doing feasibility studies, securing project financing, issuing all licenses needed and continued with project implementation (Fitsilis et al., 2008), which was performed either by the organization itself or by an appropriate contractor. The whole process had to be controlled bearing in mind a number of different perspectives, such as financial, contractual, etc.

Projects are usually executed by organizations that are large in structure and resources. Therefore, the organizational maturity in respect to its PM system, culture, style, structure and PMO can significantly influence project results. In Greece, the majority of public organizations follow a traditional hierarchical or functional management structure. This means that there is no direct responsibility for the project, coordination becomes complex and additional lead time is required for approval of decisions, responses to clients etc. For these reasons, the use of a matrix organization was suggested.

Matrix organizations usually combine functional and projectized characteristics and can assist to improve some of the drawbacks of functional organizations. The approach was based on the balanced matrix organization type according to PMBOK classification. In a balanced matrix organization, the role of project manager is clearly identified, but his authority is limited over the project and project funding.
Further, the standard stated that a mature organization should provide organizational units with responsibility for project planning, maturation, procurement, financial management and internal auditing. An important requirement set is that the organization should develop a yearly project plan with main objective, the optimal resources management (Fitsilis et al., 2008).

5.2.3. Evaluation

It was evident that the implementation of requirements defined in ELOT-1429 would significantly increase the managerial capability of public organizations. The new standard would bring the recognition that PM is a concrete knowledge area that requires the application of knowledge, skills, tools and techniques to project activities to meet the project requirements and that projects should be managed by responsible personnel having sufficient PM competences. The ELOT-1429, introduced in public administration the definition of a process model that covered all phases of the project lifecycle. It made also apparent that the implementing organization should have a valid, updated and well documented PM plan. But, it also revealed the need to have a PM information system in place and that organizations should collect data in order to measure and improve their performance.

ELOT-1429 had also some limitations and therefore it must be updated. The main argument of those that criticize the standard is that it mainly refers to infrastructure projects. Since it’s based on other universal standards, it should consider any “project” to be of any form, meaning an activity that has the characteristics of “a temporary endeavor” that its purpose is the delivery of a unique product or service and not to refer only to infrastructure projects. Therefore, the model should describe the implementation of a project as a repetition of the five processes, of initiating, planning, execution, controlling & monitoring and closing (Ginis Ioannis, 2016).

The structure of ELOT-1429 rests on the basis that the main “type” of projects are those described by the Application Guide ELOT 1431-1, regarding the implementation of public infrastructure projects. These projects are called “Class A” projects and belong in the category of construction works, where the lifecycle consists of three phases or sub-projects. The main characteristic of these sub-projects is that their implementation cannot begin,
unless the previous one is completed, which is a classical “waterfall” type. The crossing points from one sub-project to another is where critical decisions are made, either by the Municipal or Administrative or Regional Councils for the continuation or not of the project from one phase to the next, something that is critical for those that take the decisions to finance the project.

The Application Guide ELOT 1431-2 is about public procurement projects through the purchase of goods and services. These are called “Class B” projects, with only one phase in their lifecycle. The problem is that the product or service of a Class B project cannot be the sub-project of a Class A project. Furthermore, there are cases, where some Class B projects, like those of Information Technology projects, that are quite complicated, can have multiple phases and sub-projects and yet the standard does not provide adequate tools to manage them. Furthermore, these projects may not be served by a “waterfall” model, but through an Agile method.

Finally, although the ELOT-1429 stated that specific project processes, such as project programming actions, designing and maturing projects, conducting a procurement, project monitoring and controlling, contract management, product quality assurance and project financial management are required to be conducted by the project’s organizational structure, it didn’t clarify if these processes are part of the five process groups or should be considered as separate project phases or sub-projects (Ginis Ioannis, 2016).

In conclusion, though the ELOT-1429 could not be characterized as “perfect” and it certainly needs to be updated, it was an excellent paradigm of Greek public administration structural reform. Actually, this was the most important aspect of the standard. ELOT-1429 was a structural reform that required all public organizations applying for funding in the CSF context, should implement an SMC system and that would be a strong motive to improve their models, their systems and tools, to train their personnel and to measure their performance. Unfortunately, this reform was abandoned just 2 years after its announcement and until today there has been no substitute for this standard.
5.3. PMI Greece Chapter & Other Organizations

5.3.1. PMI Greece Chapter

PMI Greece Chapter was founded in 2006 as a non-governmental, non-profit, scientific association. In 2016, it had 473 members from over 270 organizations and gained ground every day for professionals in the field. In 2019, the chapter had 548 members, which is the largest number of members ever. Most of the members are certified PMP® professionals.

The Chapter is recognized for its vision to provide continuous contribution in promoting the best practices in PM in the Greek business community, both in the public and private sectors. Its ultimate goal is to make known and more widely understood the necessity of PM for better business results in all sectors of the economy. It is involved in all major PMI® action areas, most important of which, the development of standards.

The Chapter provides substantial value to its members and all professionals of the field that are actively involved with PM by:

- Promoting the goals and objectives of PMI in Greece
- Spreading and distributing information and knowledge about the developments and good practices in the field of PM.
- Providing a forum for exchange of ideas and concepts for PM.
- Encouraging education, certification and professionalism in PM.
- Linking professional practitioners with the academics in the field of PM.
- Improving PM practices through networking and exchange of experiences.

5.3.2. Hellenic Management Association (EEDE)

The Hellenic Management Association (EEDE) was established in 1962. It’s a not-for-profit organization with a mission to contribute to the promotion, dissemination and promulgation of modern management principles, methods and practices. EEDE has members, both corporate - enterprises and organizations of the private and public sector - and individuals - medium and top-level executives, entrepreneurs, professors and students.

EEDE incorporates five Institutes, specializing in a particular function of management and four Sectors that deal with general business issues: Hellenic Institutes of Marketing, Financial Management, Production and Operations Management, Information and

EEDE rates among the five largest Management Associations worldwide in terms of Membership and Activities. In 57 years of activity more than 500,000 executives have been trained and more than 800,000 teaching hours have been offered through 17,500 training programs, while EEDE’s Post-Graduate Program is effectuated in 30 cities around Greece and counts more than 4,500 alumni.

EEDE offers professional training programs for PM, as the Certificate in Project Management, a course for preparation for those that intend to get the PMP certification, etc.

5.3.3. PM - Greece

The Greek Network of Project Managers (E.D.D.E) is a recognized scientific association that aims to promote management and PM. Informally established in 2001, as a YAHOO Group and officially in 2005, with the No. 6461 Act of the Athens Court of Justice. It is the therefore, the oldest Association for project management in our country.

Since 2006, E.D.D.E. has become a member of the IPMA and in cooperation with the PMG-Cert offers exclusively in Greece the international certification of IPMA 4 Level. The IPMA certification is an internationally recognized certification for project management personal skills and it is compatible with the ISO 21500:2012 and other project managers certification systems for processes.
6. Proposals & Conclusion

Coming to the end chapter, we have seen that the public sector of the economy and organizations rely a lot on PM. All evidence show us that efficient PM is needed in public sector, more than in any other sector in our economy and society, since public projects are funded by the tax-payers’ money and that amount, even for our weak economy is estimated to be more than 81 billion Euros per year, almost 35% of our GDP, according to a report issued by the Ministry of National Economy, in 2018.

As we have seen, the public sector faces enormous challenges when it comes to manage projects. Project managers of public organizations must be skillful at managing multiple stakeholders, while adapting to a political scenery, especially whenever the government changes midway through a project. They also must understand local policies and work with local councils and other public bodies, as well as understanding the rules, regulations and procedures of broader government initiatives. They should also deal with public inquiries, since there is much interest in what the public sector is doing. Therefore, it is important to understand why PM is so vital for the public sector organizations. The main arguments are:

- Good PM offers effective oversight of projects. Public projects are often high-risk and complicated. Using PM methodologies will help project teams that will face new or existing projects to get clear initial specifications and project scope, which is essential when dealing with complexity. Clear scope means results that can be readily achieved and measured and this allows for oversight.

- “Collaboration” of project teams, which is vital for many reasons. Effective PM means that collaboration between the public and private sector can be facilitated and lessons learned can be shared across them. Private sector firms and enterprises offer in-depth knowledge, know-how, best practices and resources, all of which can easily be incorporated into public projects, if they are headed by open-minded managers. The new legislation tools that allow for public and private sector partnerships must be employed in the everyday activities.

- “Green economy”. As Mr. Ron Kasabian, General Manager at Intel Corporation said during an interview with PMI, “resources in projects are precious and we’ve got to be sure we’re spending them in the best and most efficient way possible”. Thus, project
management can help us all to prevent waste! We all know, that resources are valuable and scarce and most important, they’re paid by public taxation. Therefore, tighter scrutiny and higher justification is required for every euro invested. This approach can help public organizations “prevent waste” and at the same time be more effective, which is far more considered than simply trying to “tight-things-up”, as the public sector governance has been accused of in the past.

- Finally, it’s evident that good PM derives better results everywhere. In private sector, PM enables projects to be completed on time, within budget and without scope creeping and thus resulting in enhanced end-customer satisfaction. It may be simple, but effective PM in the public sector can help to strengthen the general public’s confidence in the government bodies and organizations, which is not easy to achieve.

### 6.1. Recommendations

The following courses of action are strongly recommended:

- First, we need to invest in our education system. This may sound as a long-term strategy, but it is the most important one. PM is not intuition. It is an art, based on scientific tools and methods and therefore, is can be learned. What we need is to include PM “concepts” in all levels of education. In PMI Greece Chapter, an electronic presentation of the main concepts of PM and PM profession has been developed and certified PMPs have already made several presentations in High-Schools and Lyceums of the country. The acceptance was overwhelming, with 93% positive opinions about PM.

- We need to have more courses regarding PM in all engineering and business-related studies of all universities. Master of Science graduate programs with concertation and specialization in PM must also become available, at least by one or two business schools.

- Except of the national education system, we also need to invest on professional education, for people that are currently working as professionals. Managers from the private sector can have access to professional organizations like the PMI Greece Chapter or EEDE. Similarly, the managers of the public sector should be able to do so. We need to enhance the education programs of the National Centre for Public Administration and Local Government (EKDDA) with PM courses and seminars.
• Re-establish the national standard for PM and PM3. If ELOT-1429 should be the basis, then we must update it to be the national standard that all public organizations that implement E.U. funded programs should adopt without any exceptions. Private organizations with focus on PM are more than willing to provide know-how and the necessary tools. Private and public sectors co-operation should be welcomed.

• Finally, PM international standards and professional certifications should become apparent in all public sector projects. Public tenders should require from project teams of the private sector to be managed by certified project managers, with demonstrated experience in PM and to use professional PM tools in order to manage their projects. On the other hand, public sector project teams should also use these standards and tools. Serious legislation changes are required on this direction.

6.2. Benefits

• Accountability and transparency. Well-planned processes and project systems support and enhance accountability and this is critical for good governance within the public sector organizations that operate under scrutiny from a diversity of stakeholders with complex and often conflicting interests.

• Control and compliance. Public organizations need to be able to exercise and demonstrate control over their projects in order to manage and meet expectations. Monitoring of performance encompasses delivery of services, value and client satisfaction.

• Risk management. Apparent from control and compliance, public organizations tend to be more risk averse because they are dealing with the public's money and thus, they must be more careful. Risk management is the only way to prevent waste.

• Consistency in delivery. PM is perceived as “the means” to consistently deliver results with high certainty. This means capability to implement government policies, commit to performance improvement and to bring change wherever is required.

• Ensuring value for money. Costs must be justified and controlled within budgets and this is fundamental to responsible public management.

• Stakeholder engagement. Sharing the organizational values for social justice helps in overcoming many obstacles in project delivery.
6.3. Conclusion

The last ten years of economic crisis have impacted the Greek society deeply. The Greek state failed and more than 25% of our GDP was lost, more than one million people lost their jobs and most of their personal income and more than 500,000 people left the country and became immigrants, most of them in the E.U. countries, the U.S., the UAE and the Australia, most of whom were young people, with graduate studies. Austerity will accompany most of the Greek households for many years to come and the future seems to be gloomy for most of the citizens of this country.

The only way out of this desolation is to decide to move forward, to change our mentality, to invest in modern education of our people and to adopt to the required economic, business and social reforms. Adopting modern public management methods, practices and tools are part of these reforms. Other countries have faced similar situations and they have managed to prevail. They worked hard, they implemented the necessary reforms and strategies and they relied on proven methods and tools to do so. We also need to do the same to surpass the limits and help revive our economy and bring growth and development to the public sector and to our country.
References

Agile Project Management (2015), VersionOne, available at:
   http://www.versionone.com/agile-project-management/


Association for Project Management (2014), Praxis framework: An integrated guide to the management of projects, programmes and portfolios, Association for Project Management, Buckinghamshire.


AXELOS Limited (2015), PRINCE2 Agile, TSO, Norwich.


Maria Gkeka, “Adopting Project Management in Public Sector Organizations in Greece”


Cooke-Davies, T.J. (2001), Towards improved project management practice: Uncovering the evidence for effective practices through empirical research, Universal Publ, Parkland, Fla.


assessing the managerial capability of organizations implementing projects of public interest - the Greek Standard ELOT-1429”.


Mitchel, I.A.N. (2016), *AGILE DEVELOPMENT IN PRACTICE*, TAMARE House, [Place of publication not identified].


Postgraduate Dissertation 100


PPL (2018), “ADS Chapter 201 - Program Cycle Operational Policy”.

Prieto, B. (2008), *Strategic program management*, Construction Management Association of America (CMAA), McLean VA.


Project Management Institute (2017a), *A guide to the project management body of knowledge Project Management Institute, PMBOK guide*, Sixth edition, Project Management Institute, Newtown Square PA.

Project Management Institute (2017b), *The standard for program management*, Project Management Institute, Newtown Square PA.

Project Management Institute (2018), *The standard for organizational project management (OPM)*, Project Management Institute, Newtown Square PA.

PThompson (2009), *Practice standard for project risk management*, Project Management Institute, Newtown Square Pa.

Maria Gkeka, “Adopting Project Management in Public Sector Organizations in Greece”


Appendix A: PRINCE2 Process Model Map
Author’s Statement:

I hereby expressly declare that, according to the article 8 of Law 1559/1986, this dissertation is solely the product of my personal work, does not infringe any intellectual property, personality and personal data rights of third parties, does not contain works/contributions from third parties for which the permission of the authors/beneficiaries is required, is not the product of partial or total plagiarism, and that the sources used are limited to the literature references alone and meet the rules of scientific citations.