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A multi-project environment in modern organizations

Doctoral thesis - **summary**
specialization Management

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Summary

The literature review demonstrates that project management and especially multi-project management are still not fully understood phenomena. However, modern organization's strategy and operations are executed in multiple project environments. Thus, interdependencies among projects are defining organizational networks as project management, multi-project management, project program(s), and project portfolio(s).

The leading objective of this research is identification of multi-project management set up framework elements. Therefore, this research is focused on the conceptualization of multi-project management set up framework through elements such as project team, decision-making, knowledge management, planning and plans, business analysis, and information systems management. In addition, the accompanying components of the elements such as people, processes, and technology are introduced and explained.

The research applies an inductive, exploratory, and post-positivism approach, melding the advantages of research methods such as interviews, case study analysis, and literature review, as platforms for research preparation, discussions, and results analyses.

The research has confirmed that multi-project management is a crucial organizational factor determining functioning of modern organizations. Therefore, the multi-project management set up elements and the accompanying components, indicated as research results, are truly recommended for application in the business practice.

This study provides new ideas and inspirations for both project management researchers and practitioners. The research relies on broad project management literature, which although is rich, it does not satisfy all requirements of practitioners in relation to multi-project management. Nevertheless, on those grounds, the author's concept of multi-project management was developed to constitute a kind of framework for best practice in project management. This will contribute to better understanding of methods of multi-project management and their development, both in research and business practice.

Key words

Project management, multi-project, modern organization, knowledge management, business analyses, project management information systems

Thesis domain (codes according to Socrates-Erasmus Program)

Środowisko multiprojektowe we współczesnych organizacjach

Streszczenie

Z przeglądu literaturowego wynika, że zarządzanie projektami, a w szczególności zarządzanie multiprojektami nie są jeszcze zjawiskami w pełni rozpoznanymi. Jednakże strategia działania i jej realizacja w nowoczesnych organizacjach odbywają się zazwyczaj w środowisku wielu projektów projektowym. Zatem współzależności pomiędzy projektami definiują organizacyjne powiązania jako: zarządzanie projektami, zarządzanie multiprojektami, programy projektu (ów) oraz portfolio projektu (ów).

Wiodącym celem niniejszej rozprawy doktorskiej jest więc przede wszystkim identyfikacja elementów ramowego modelu zarządzania multiprojektami. Dlatego więc, badanie to koncentruje się na konceptualizacji modelu zarządzania multiprojektami poprzez zdefiniowanie podstawowych komponentów modelu ramowego takich jak: zespół projektowy, proces podejmowania decyzji, zasoby wiedzy w organizacji, tworzenie planów i planowanie, analizy ekonomiczne oraz systemy informacyjne je wspomagające. Dodatkowo – w komponentach wyspecyfikowana i wyjaśniona jest rola składników de facto je tworzących, takich jak: ludzie, procesy i technologia.

Badania prowadzone są przy pomocy indukcyjnego, rozpoznawczego, post-pozytywicznego podejścia, łącząc w sobie zalety takich metod badawczych jak wywiady, analiza przypadków, czy przegląd literaturowy, jako platformy dla przygotowania badania, dyskusji oraz analiz uzyskanych wyników.

Przeprowadzone badania potwierdziły, że zarządzanie multiprojektami jest istotnym czynnikiem warunkującym działania nowoczesnej organizacji. Z tego powodu, wskazane jako wyniki badań, zalecenia dotyczące modelu ramowego i jego elementów mogą być w pełni rekomendowane do zastosowania w praktyce gospodarczej.

Badanie to dostarcza nowych idei i inspiracji zarówno dla pracowników naukowych, jak i praktyków trudniących się zarządzaniem projektami. Opiera się na bogatej literaturze, która jednak pomimo swej obszerności nie identyfikuje wszystkich wymagań praktyków dotyczących zarządzania multiprojektami. Tym niemniej na tej podstawie stworzono w pracy autorską koncepcję zarządzania multiprojektami, stanowiącą swoiste ramy dla dobrych praktyk zarządzania projektami. Przyczyni się to do lepszego zrozumienia metod zarządzania multiprojektami oraz ich rozwoju, zarówno w badaniach naukowych, jak i w praktyce gospodarczej.

Introduction

Projects are ideas with a potential for changing and moving the world. Project Management (PM) is a discipline that develops a platform to bring these ideas to fruition. Today we live in an environment characterized by multiple projects, where the interdependencies between projects provide the guidelines for defining a PM framework. These are known as project management, multi-project management, program management, and portfolio management.

This thesis focuses mainly on the multi-project environments in modern organizations. Development of multi-project PM areas is, however, at an early stage, so this thesis relies heavily on PM fundamentals for its insight on the theoretical and practical overview of PM literature today, and open opportunities for PM rethinking and future development. This thesis is thus an attempt to enrich the early state of multi-project development by proposing a different path, which would emphasize the wisdom of conceptualization and establish an approach for modern organizations, as well as recommending a new framework, born of new, diverse, and innovative PM perspectives.

The research questions and objectives focus on exploring and proposing multi-project settings, establishing elements, accompanying components, and attributes that combine to recommend a new and innovative approach to the development and delivery of projects.

The research was developed through investigation, observation, discussion, collaboration, and communication with the research stakeholders as the only research source, which has experienced the subject research opportunities, potentials, and challenges in the daily multiple projects environment.

Chapter 1 - Project and multi-project definitions, and an overview of the research

General intention of the study, an introduction of fundamental PM definitions and multi-project environments in modern organizations, the thesis objectives, the research questions, scope, and the intellectual background against which the key themes indicated in the title of the thesis and the research process have been developed.

Multi-projects may be described in several ways. Firstly, multi-project projects are relatively smaller projects than a project. Secondly, multi-project projects are managed by one multi-project manager. Thirdly, multi-project projects have different goals. Fourthly, multi-project projects almost always come from different organization units (e.g. information technology, finance, marketing, human resources, division x,

continental departments, and regional offices). Fifthly, multi-project projects may have common or different project team members.

Multi-project management (MPM) is the application of processes, methods, knowledge, experience, skills, tools, and techniques in order to achieve multi-project objectives. One of the most critical multi-project management processes is the prioritization of projects. Multi-project management thus emphasizes the advantages of multi-projects rather than projects.

Set-up: multi-project set-up is the way in which something, especially an organization or equipment, is organized, planned, structured, or arranged. A multi-project set-up framework recommends elements, components, and attributes that should be organized before an organization begins with projects preparation, prioritization, and implementation.

Framework: multi-project set-up framework is the structure of ideas supporting a system. A multi-project set-up framework is a recommended structure of elements, components, and attributes that should be put in place before an organization begins preparation, prioritization, and implementation of projects.

Purpose of study is to examine MPM elements and the creation of a key platform for multi-project environment set-up in modern organizations. It will also contribute to the enrichment of the scientific literature regarding high quality practices in multi-project management (MPM).

Statement of dissertation research challenge

Understanding multi-project set-up in the modern multi-project environment is crucial to success for modern organizations, particularly given the wide range of uncertainty and complexity in today's business environment. The majority of modern organizations, however, display a relative lack of maturity in practicing multi-project frameworks, which encroaches on the achievement of a project, program, or portfolio strategic objectives. Therefore, I define the following research objectives, questions and thesis.

1.3 Research objectives

The main objective of this research is

- to propose a new set-up framework for the multi-project environment in modern organizations.

The cognitive objective of this research is

- to strengthen multi-project managers understanding of the multi-project environment.

The methodological objective of this research is

- to develop a new set up framework for the multi-project environment through following the best advice from leading PM research literature and practice.

The functional objectives of this research are

- to explore the multi-project environment in modern organizations;
- and to propose several elements and their components that through synergy creates set-up framework for the multi-project environment in modern organizations.

Additional objectives of this research are

- to propose key components for multi-project set-up framework elements.

1.4 Research questions

The main research question is:

- what are the key elements in creating a successful multi-project set-up framework in modern organizations?

This dissertation will also address the additional question:

- what are the key components of each multi-project set-up element?

Research project thesis

The management of the project team, decision-making, knowledge, plans, business analyses, and information systems is important element of a multi-project environments.

Chapter 2 - Project and multi-project management in the literature

Chapter 2 accommodates literature review from both project and multi-project perspectives. PM literature is also outlined through a couple of aspects which introduce the complexity, interdisciplinarity, globality, and diversity of PM. The topics presented include analyses of PM research journals, the most cited and downloaded research articles from the “International Journal of Project Management”, a project and multi-project management literature overview by ProQuest database (ProQuest provides solutions, applications, and products for libraries), challenges of PM research and literature development, evolving influences and risks of PM, multi-project literature overviews, general comments (types, resources, uncertainty, overload, balance, contingency, scheduling, etc.), specific points (the assigning of projects, assignment, decisions, competences, effectiveness, project managers, culture, knowledge, team, information systems, analysis, etc.), metaphor, complexity, and expansion.

The main comments from the literature review are:

- PM as we know it today began in early 1960s;

- Engineering and Construction were some of the first industry applications;
- engineers have influenced PM literature because the first PM researchers were practitioners working in Construction and Engineering projects;
- **the main PM associations are International Project Management Association (IPMA) and Project Management Institute (PMI). PM frameworks and the development of best practices are positively affected and advanced by these associations;**
- although PM application traditionally began in a few industries, modern PM has expanded within most industries;
- over the last couple of decades PM research literature has grown vastly. The spectrum of research subjects, however, failed to follow these trends, but over recent decades a number of different perspective topics are active. These topics are rethinking, complexity, knowledge, globalization, project management information systems, etc.;
- **in the research from early 1990s the concept of “projects oriented companies” is mentioned for the first time. Since then “Management by Projects” has become a new approach to business development, growth, and innovation;**
- modern organizations operate in multiple projects environment;
- **modern multiple project environments are often structured as program and portfolio management;**
- **as a result of modern strategic business priorities and lack of research alternatives, project managers today are continuing to apply PM frameworks developed primarily for engineering and construction industries;**
- the PM literature review shows a great mismatch/discrepancy between practical application of PM and theory development; hence, multi-project management continues to emerge, and the benefits of application are investigated and implemented as they arise;
- **current multi-project management research topics include resource allocation, scheduling, complexity, projects prioritization, etc.;**

This research seeks to add to modern research trends and shape research practice in order to look at the PM challenges and opportunities in a different way. The perspective of the research shows that multi-project managers need to think firstly about elements of multi-project set-up and accompanying components, before measuring success, rather than the other way around.

Chapter 2 contains a detailed overview of project and multi-project management literature.

Chapter 3 - Methodology and the research design

The main research method is semi-structured interviews. The research is also reinforced by a number of case studies developed by other researchers and organizations. Pilot discussions and focus group comments were also used to prepare the research. The preparation of the research and interview questions was a process as follows. First, examples of questions were collected from a couple of literature sources. Secondly, the questions collected were discussed with PM experts during pilot research discussions and the research preparation phase. Thirdly, after pilot discussions a shorter list of questions was prepared, which was applied in the research and is presented below and with details in Chapter 3.

On the other side, the profile of the research participants was defined by recommendations from the above-mentioned pilot discussions and PM literature comments. The main characteristics of participant are that they had over ten years' related PM experience, PM certification, membership of PM associations, and a PM role in an organization. During the preparation phases it was decided that two or three profile requirements must be confirmed.

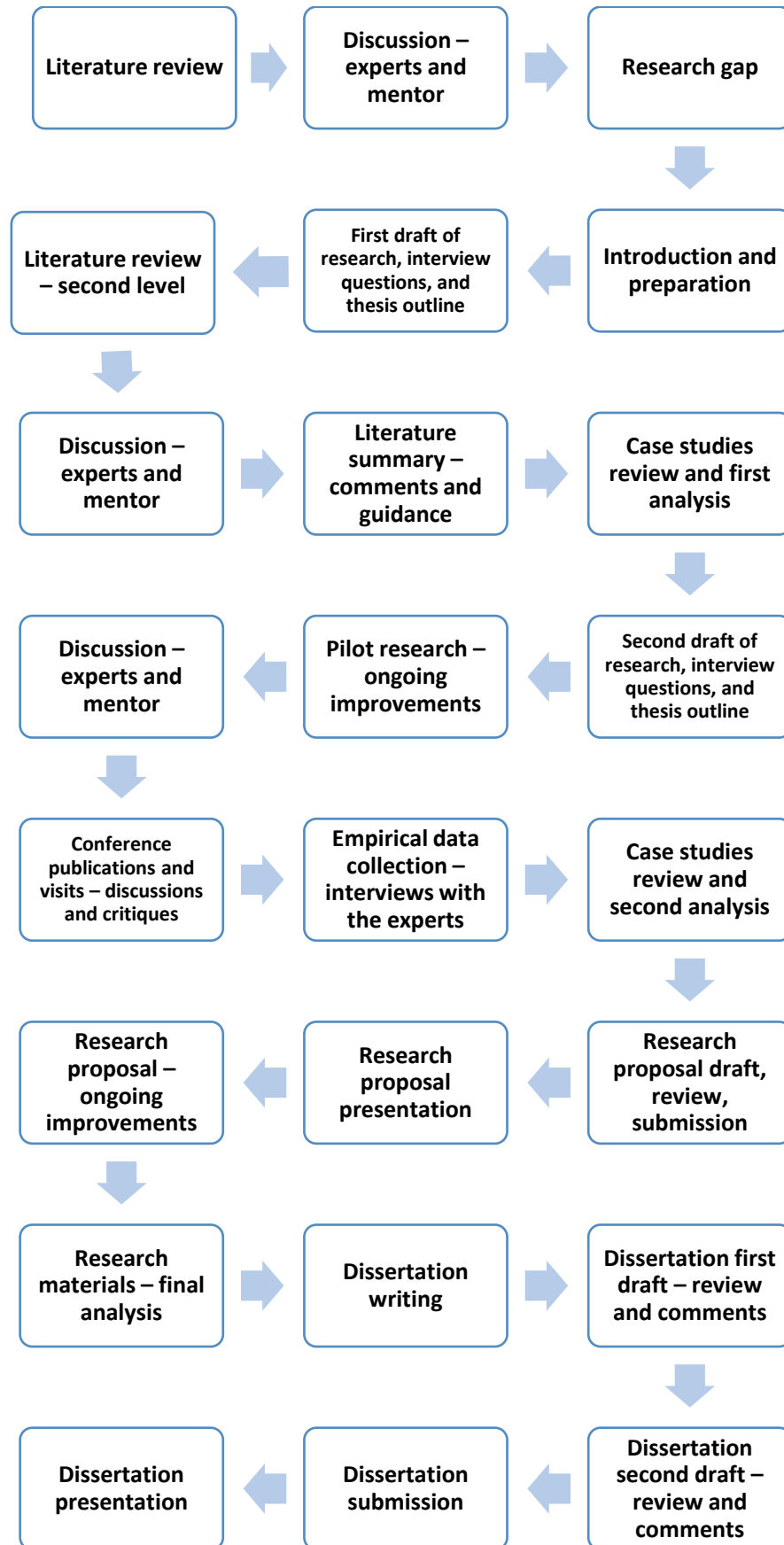
The first group of questions marked with A, B, and C are participant-profile questions prepared to probe participants' experiences with a focus on PM context.

The second group of questions investigates the MPM environment in modern organizations with special emphasis on the fundamental areas that drive multi-project manager effectiveness at a higher level. As a result of this dissertation research project an MPM set-up framework that will increase the performance of a multi-project managers in modern organizations that do business in a multi-project environments will be defined. In particular, research results and an MPM set-up framework are discussed and analyzed in Chapters 4, 5, and 6.

The last question is an open type of interview question that gives participants an opportunity to share additional comments, experiences and proposals which will productively shape and hone this dissertation's results and possible plans for future research projects.

- A. In what industry is the organization in which you work?
 - B. How many years of experience in the field of project management do you have?
 - C. How many project teams are led by one project manager in the company in which you work?
-
1. Could you please briefly describe the project-assignment process according to your experience?
 2. What is highlighted more; project manager competencies or project manager experience in the organization in which you work? Why is this so?
 3. What is taken into consideration for the assignment of project team members?

Figure 1. Research Agenda - step by step research procedure overview



Source: Own work / Own elaboration

4. Does your company develop mentorship programs for multi-project managers? Could you please briefly describe the way it is organized?
5. What types of training are provided for project managers in the company in which you work?
6. What are the main elements of the decision-making process in the multi-project management environment? For example, a) organizational factors, b) project requirements, c) the competencies of project managers, d) the competencies of team members, e) organizational constraints, etc.
7. How is the concept of project knowledge management organized in the company in which you work?
8. How many plans do you have in one project? Could you please name and briefly describe them? (i.e. costs plan, team assignments plan, team holidays plan, marketing plan, etc.).
9. How many project management analyses do you use? Could you please name and briefly describe them? (i.e. stakeholders' analysis, cost-benefit analysis, project sustainability analysis, return on investment analysis, etc.).
10. How many project management software tools do you use? Could you please name them? (i.e. Microsoft Project, Basecamp, Atlassian, Smartsheet, etc.).
11. Please, feel free to comment, ask or propose additional questions or topics related to multi-project management.

Chapter 3 contains a detailed overview of the research project methodology and design.

Chapter 4 - Research results

Chapter 4 includes the interpretation of the research results and literature review points related to the topics commented on by the research participants. The literature points also give additional information, which enriches the interpretations of the research interviews and underlines the research platform for higher research contribution and value.

The first few questions are related to participants' profile and an overview of the industry. It should be mentioned that most of the research participants have over ten years' PM related experiences and over 15 years' business experiences. Over 90% of the participants were certified PM professionals. It is also interesting that over 70% of participants had experience in the management of multiple teams. This is especially important from a perspective of multi-projects and program management.

A couple of interview questions were also related to project teams and project managers. Project assignment, selection of project team members, project manager competencies, the experience of and training for project managers, and mentorship programs for multi-project managers were examined.

Question six was related to the main elements of the decision-making process in a multi-project management environment. The topics proposed include organizational factors, project requirements, the competencies of project managers, the competencies of team members, organizational constraints, etc.

Question seven related to project knowledge management (PKM) within an organization. A couple of the main comments were that PKM should be examined from the perspectives of people, processes, and technology perspective. PKM is also defined as one of the fundamental building blocks. PKM takes different forms within the structure of an organization. Organizational strategy and culture influence PKM. It is understood and developed differently. In some cases, it is based in human resource division, organized through monthly meetings, case study discussions, materials available online, subject specific seminars for particular project(s), etc.

Question eight related to project plans and the planning process. Project plans include costs, team assignments, communication, risk management, team holidays, marketing, etc. Although project planning is of greater importance than project plans, participants' comments were diverse, ambiguous, and complex. Participants agreed, however, that plans and planning were important for a project's success. Comments given in the interviews are far from alignment and structured approach.

Question nine concerned project analysis and addressed different aspects of project analysis application/the application of project analysis, structure, definition, frequency, complexity, etc. In brief, business analysis is crucial for defining the character, phase, size, scope, priority, etc. of the project and the choice of analysis is influenced by a project's character, phase, size, scope, and priority. Chapter 5 also presents a project analysis case study.

Question ten concerns project management information systems through perspectives such as software, structure, diversity, integration, etc. The most highly recommended PM software was MS Project, MS Excel, Project Place, Primavera, and Power Point. Case studies of project management information systems are also presented in Chapter 5.

Question Eleven was an open question, in which the research participants were encouraged to comment, share, ask and propose anything they felt should be on the agenda for research related to multi-project management. Most of the comments concerned opportunities connected to different PM subjects and their influence on the development of multi-project management.

Chapter 4 contains a detailed overview of the research project results interpretation.

Chapter 5 - PM best practices main points and insights

Chapter 5 concerns case studies developed by different organizations and related to PM with the intention of enriching the research potentials by adding valuable information for higher level discussions and conclusions.

One of the case studies concerns PM tools in practice and was developed and published by “ProjectManager.com”. ProjectManager.com develops tools and resources to help teams deliver better projects. The case study gives an overview of online PM tools and emphasizes the most commonly applied PM tools, the reasons for application, etc. A couple of interesting comments, especially important for this research, are 1) over 20% of project managers use more than three tools; 2) over 70% of projects managers use more than one tool. From the perspective of purpose, it is interesting that most of the tools are related to task management, Gantt chart, reporting, risk issues and changes, dashboards, timesheets, and expense management.

The other case study confirms the significance of PM and comments that although PM is evaluated as important, only a few modern organizations do it well and have established consistent processes. As well as analyses of case studies in chapter 5 describes the main concepts that, on one hand, illustrate the diversity of PM opportunities and, on the other hand, consolidate the research conclusions and results.

Chapter 6 - Multi-project management set up framework

Chapter 6 provides the conclusion, specifically regarding the elements of the set-up framework for multi-project environments and accompanying components. These elements include multi-project teams, decision-making, knowledge, plans, business project analysis, and information-systems management. The most important accompanying components include people, processes, and technology. At this point, it should be made clear that mentioned elements and accompanying components include building blocks of newly-proposed multi-project environments. Due to specific organization settings, I encourage project managers to apply the research recommendations, but also to be open-minded when it comes to adding new elements and accompanying components, all with a strategic overview and business development benefits.

The intelligent integration of project management frameworks

Today the world is organized according to multiple projects. Projects are managed as Agile and Waterfall, etc. and projects are organized as projects, multi-projects, programs, and portfolios. Specifically, PM frameworks are platforms that help project managers manage and organize projects on a logical and structured approach.

In Chapter 5 are to be found couple of case studies that present a number of PM frameworks recommended by international PM organisations, and other centres of PM expertise.

On the one hand, the case studies in sections 5.4 and 5.5 present the PM framework proposed by IPMA, which is focused on organizational and individual competencies for managing projects. These PM frameworks recommend competencies (in the case of organizational competencies main elements are such as governance, management, alignment, resources, and people's competencies, of which more details are given in section 5.4 and, in the case of individual competencies main elements are such as perspective, people, and practice, of which more details are given in section 5.5) an organization should seek to develop to successfully manage projects. On the other hand, the case study in section 5.9 present the PM framework proposed by PMI, which focuses on the PM process groups and knowledge areas.

It is also important to mention that in PM terminology the term *PM methodology* is sometimes used interchangeably with *PM framework* or *PM approach*.

I therefore recommend and below in the table 1 briefly present the PM framework for a multi-project environments in modern organisations. For more details, please see Chapter 6.

Innovation through research is the core of this thesis. In earlier chapters I presented the literature review, the complexity, the opportunities, and the challenges that face PM. Methodology, research results, and case studies that help in the development and the verification of recommended PM framework are also given. In this chapter are conclusions and ideas that specifically showcase the recommended PM framework elements (multi-project team, decision-making, knowledge, planning, analyses, and information system management), accompanying components (people, processes, and technology), and attributes.

The multi-project environment within modern organizations is in the early phase, making this thesis innovative, due the proposal of a specific PM framework for a particular PM environment.

Research participant profile and analysis

Most of the research participants have over ten years' experience, high industry diversity, and they work in modern organizations were most of the project managers lead two or more project teams. To summarize, the participants interviewed are high quality practitioners and an ideally fit the requirements and expectations of the research project. In the Appendix, full profile presentations of interviewed participants are given.

Table 1. Industry overview of the participating organizations

IT and Telecommunications	8	24.2%	Financial Services	3	9.1%
Construction	5	15.2%	Education	4	12.1%
Energy	4	12.1%	Other	9	27.3%
Management and Consultancy	6	18.2%	Government	4	12.1%

Source: Own work / Own elaboration

Table 2. Participants' experience in PM in years

About 1 year.	0	0%
Between 2 and 4 years.	1	3%
5 or more years.	5	15.2%
10 or more years.	27	81.8%

Source: Own work / Own elaboration

The research thesis confirmation and highlighted elements

Multi-project team, decision-making, knowledge, plans and planning, analyses, and information systems management as a research thesis are confirmed from the perspectives such as the research results (see chapters 4 and 6), literature review (see chapters 2, 3, and 6), and case studies (see chapter 5), as well as highlighted multi-project set up framework elements and accompanying components as presented in the table 1 and figures 22, 23, 24, 25, 26, and 27, below.

Table 1 - PM set up framework for a multi-project environments

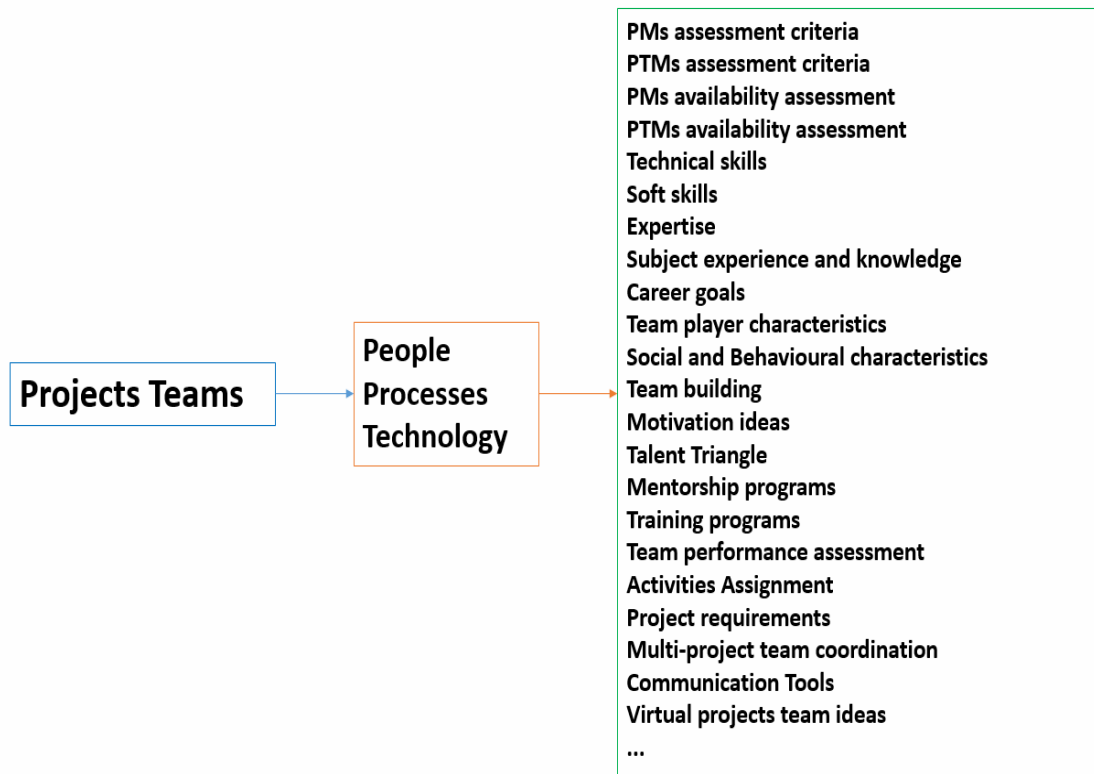
	People	Processes	Technology
Multi-project team management	culture, values, communities, mentorship, career planning, motivation, satisfaction, knowledge, competences, responsibilities, roles, and capacity, etc.	the assignment of the multi-project leader and team members, multi-project communication, multi-project definition, multi-project initiation, and multi-project development, etc.	How to performance guide, satisfaction, motivation, engagement and communication guide and best practices

Multi-project decision-making management	network of decision makers connected by one or more projects.	network of project management processes interdependent in terms of project activities, resources, timely reviewed, adapted, evaluated, and easily accessible, project prioritization, project definition, and project assignment	network of technology in relation to multi-project definition, selection, and implementation. different software, hardware, or guidelines, that supports decision makers
Multi-project knowledge management	knowledge is created, developed and documented by people or in co-ordination among people and artificial intelligence systems.	knowledge research, definition, transfer, communication, and presentation, review, and re-engineering	guidelines, tools, and structure, etc., which documents, accesses, transfers, reviews, and improves knowledge, etc.
Multi-project plans management	Plans and planning are created, developed and documented by people or in co-ordination among people and artificial intelligence systems.	project case study, selection, detailed definition, initiation, implementation, and review, etc.	skills, knowledge, abilities, techniques, and tools, etc. applied in order to prepare, define, communicate, and execute
Multi-project analyses management	people's competencies, experience, and organizational attitude to projects influence the organizational approach to analysis and its definition.	processes are related to the definition, review, and improvement	technology includes skills, knowledge, abilities, techniques, and tools, etc. applied for multi-project analysis management preparation, definition, and communication, etc.
Multi-project information systems management	people's competencies, experience, and organizational attitudes to projects influence the approach to multi-project information systems and their application	perspective of processes involves the definition, review, and improvement of multi-project information systems	perspective of technology comprises skills, knowledge, techniques, and tools applied for the preparation, definition, and communication in multi-project environments

Source: Own work / Own elaboration

Table 1 gives a brief overview and all highlighted multi-project set up framework elements and accompanying components are presented in the figures 22, 23, 24, 25, 26, and 27, below.

Figure 2. Multi-project team management set-up framework overview



Source: Own work / Own elaboration

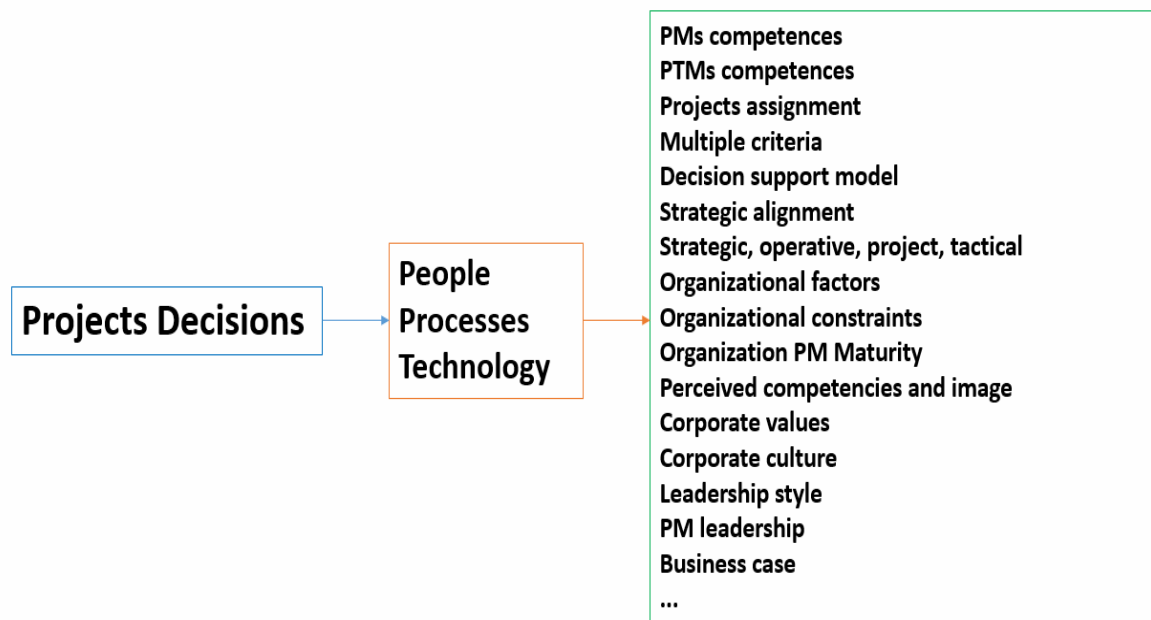


Figure 3. Multi-project decision-making management set-up framework overview

Source: Own work / Own elaboration

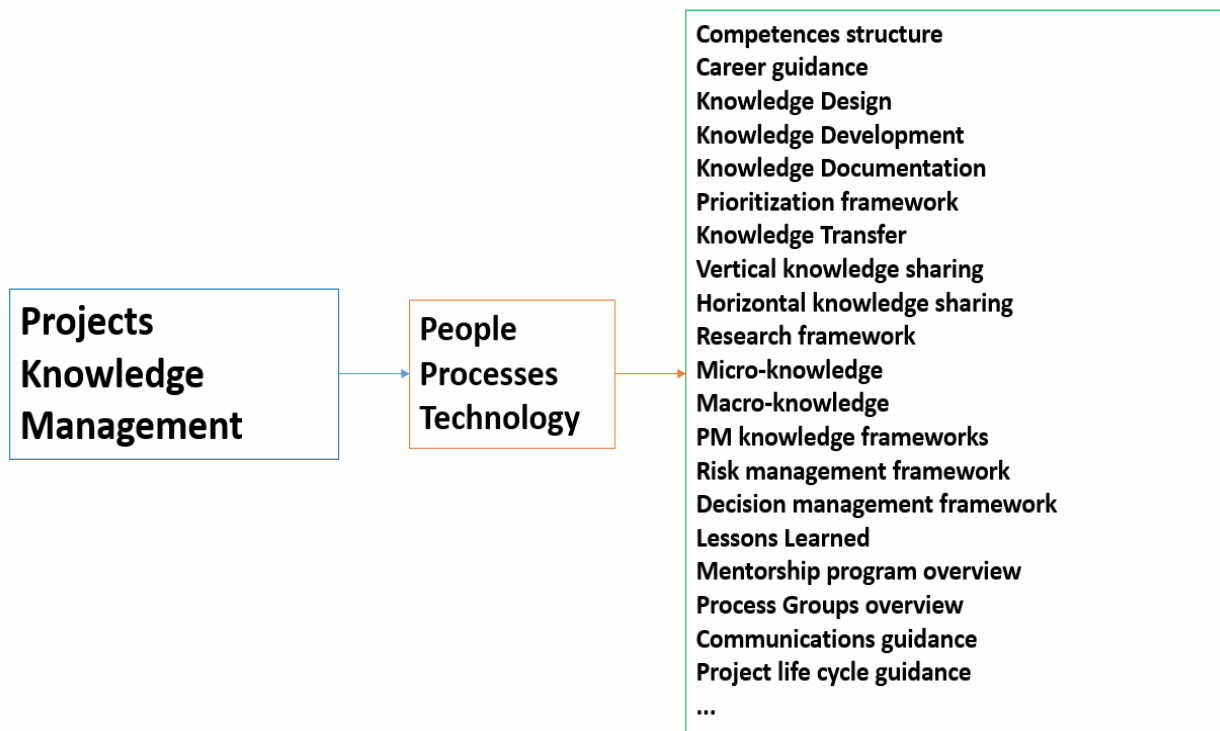


Figure 4. Multi-project knowledge management set-up framework overview

Source: Own work / Own elaboration

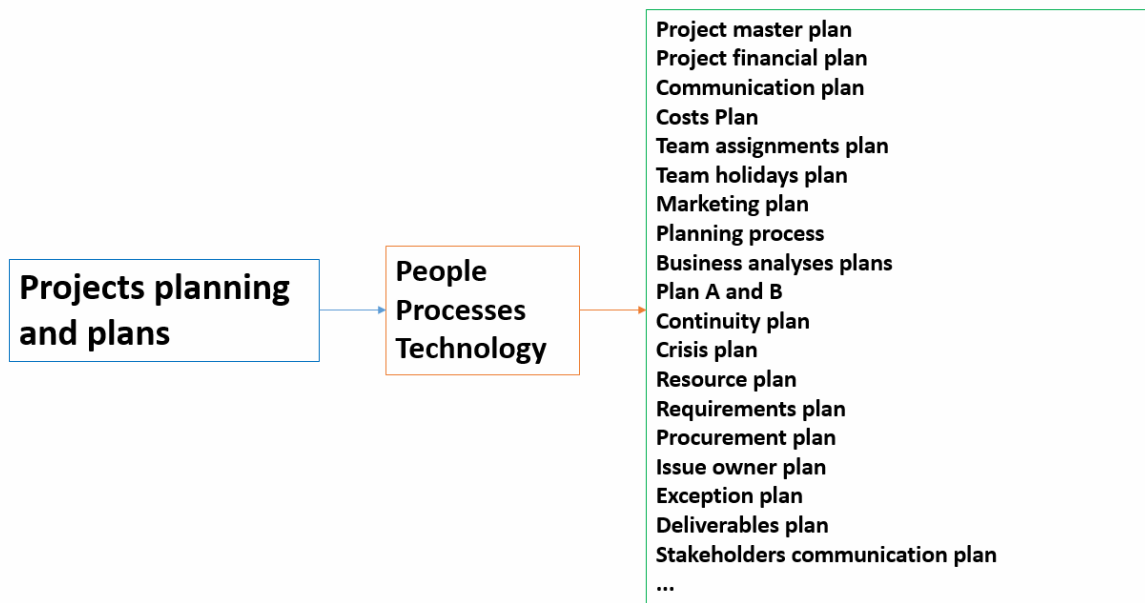


Figure 5. Multi-project plans, planning management set-up framework overview

Source: Own work / Own elaboration

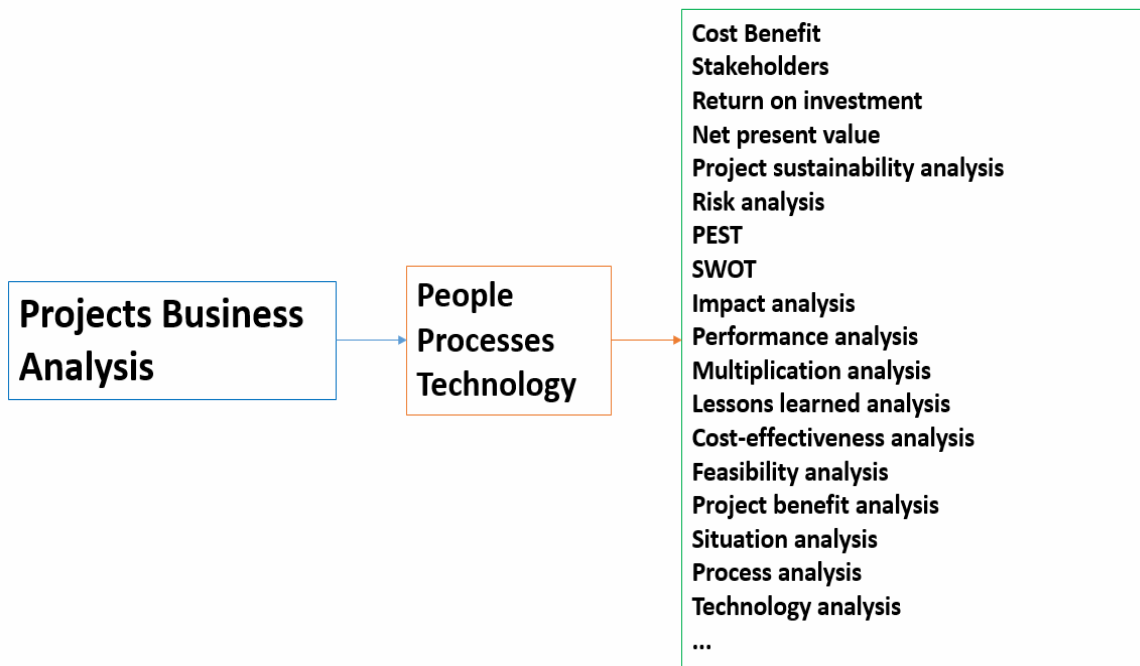


Figure 6. Multi-project analyses management set-up framework overview

Source: Own work / Own elaboration

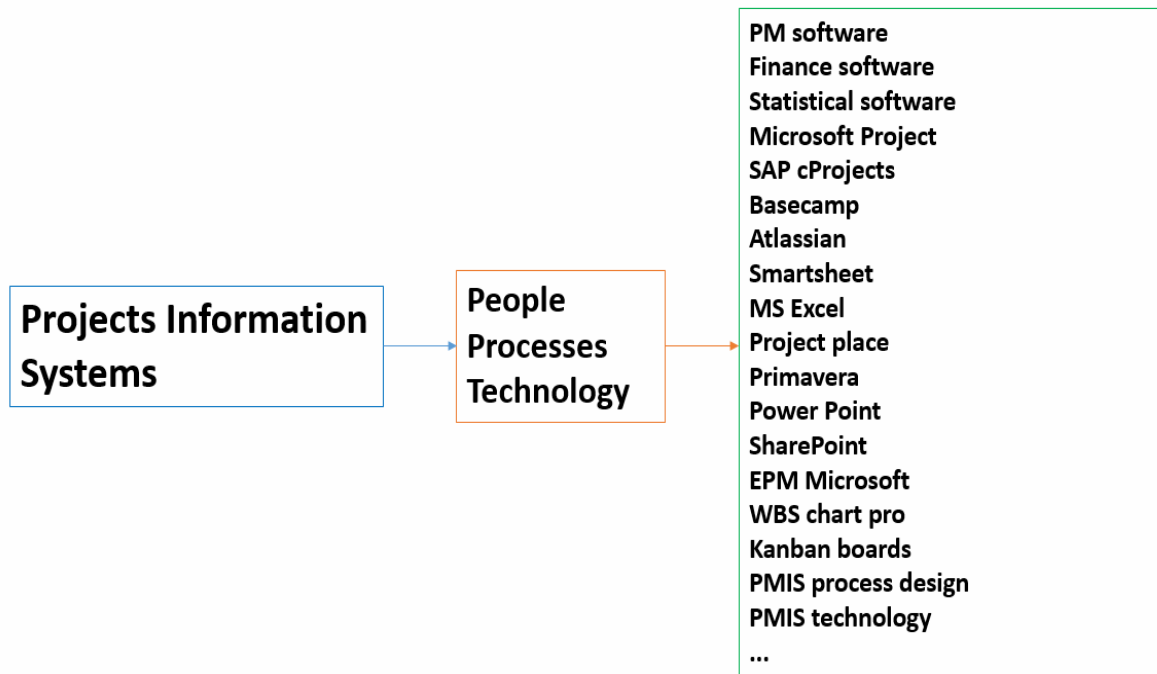


Figure 7. Multi-project information systems management set-up framework overview

Source: Own work / Own elaboration

The research comment and the future direction of my research

The only constant in a rapidly changing society is change. It is increasingly difficult to define an organization, by virtue of this perpetual demand for organizations to change, adapt and compete with other modern organizations. With the help of the modern Internet society, a project thus evolves into a temporary network of stakeholders, whose objectives are to deliver unique benefits.

Project complexity is a growing phenomenon, and it is set to gather pace in the future of PM practice and research. One of the conclusions from the research is that standard PM methods and techniques may be a useful source of guidance for certain aspects, but they provide no guidance on how to navigate the complexity of projects in the ever-changing stream of events. As a main challenge *“the Network indicates that practice based knowledge is bounded by its contextual nature, where the actions and dispositional behaviors of practitioners are influenced by their own identity and the processes of sense making (of the context and its circumstances) where actors apply their implicit rules in combination with the external ones explicated in manuals and procedures”* (Winter, et al., 2006).

One mainstream question asks who delivers successful projects, whoever we ask the discussion is about methods, technology, processes or people. Insights into the conclusions of the research agreed that people, i.e. the project team, deliver successful projects and it is people’s intelligence that permits them to engage intelligently with the complexity of projects; not methods and tools. In this regards, project team is recommended as one of the important elements of the multi-project set up framework and a future research will focus on defining the detailed processes and technology applied in modern organizations.

Methods and tools are useful guides for certain aspects. Future training in PM therefore needs to focus on developing *reflective* professional potentials and encourage people to operate more effectively in the complexity of projects and portfolios.

Changes in the developmental approach to project managers and project teams are necessary if practice and research want to have PM as a reasonable professional discipline (Crawford et al, 2006). Different certification levels require different experience and knowledge, although they do not guarantee the success of a project as a result of uncertainty and different project settings for each project. Therefore, my PM research focus will be on interdisciplinary approaches to the training and education of project managers. Research into PM education and certification frames focus on *reflective* project manager skills and development of people’s abilities to successfully deal with project complexity in multi-project environments and modern organizations.

Brief Overview

This thesis explores the challenges and opportunities in project management (PM), which are common to multi-project management (MPM) and discusses plausible underlying mechanisms that give rise to these challenges, so finds an open door to possible solutions. The thesis clearly has a limited empirical basis, but, since the interviewees come from significantly different contexts and industries (see Chapter 4), albeit they still illustrate significant commonalities, I believe that the findings represent an important contribution to PM science and practice.

The research began with an extensive historically organized review of the PM literature focusing on MPM (see Chapter 2) with the aim of providing a systematic and thorough understanding of PM and MPM in management science, and with the objective of clearly outlining the existing gaps in the theory in PM literature (see Tables 2, 3, 4, and 5, and comments in sections 2.1 and 2.4).

PM is evolving and converging, so new ideas are constantly emerging. As demonstrated in Chapter 2 and mentioned more than once in other chapters, MPM is one of the rising fields in PM.

After an extensive literature review and discussions with practitioners from numerous perspectives (see Chapters 2 and 3), research objectives, questions, and hypothesis are defined (see Chapter 1). The literature concerning methodology was then reviewed and the research method, framework, and design are presented (see Chapter 3). As explained in Chapter 3 and introduced in Chapter 1, the semi-structured interview was a primary method of data collection. The research results are also both enhanced and supported by the case studies developed by different respected institutes, organizations, and individual researchers interested in PM (see Chapter 5).

The main research questions and objectives concentrate on the conceptualization and definition of MPM, and recommendations related to the multi-project environment in modern organizations. MPM characteristics and different opportunities which distinguish the application possibilities of the MPM among PM and program management in particular are discussed. A multi-project set-up framework is developed and recommended with the mission to strengthen the multi-project manager platform for higher performance (see Chapters 4 and 6).

The multi-project set-up framework is a concept of six elements (teams, decisions, knowledge, analysis, plans, and project management information systems) with accompanying components (people, processes, and technology) and their attributes (motivation, assignment, strategy, micro-knowledge, stakeholders, communication plan, and PM software, etc. (see Chapter 6). At this point, it is important to comment that, as

in the case of other PM frameworks recommended by well-known PM associations such as PMI, IPMA, APM, and ISO, this is one more recommended solution for the MPM conceptualization in modern organizations.

In chapter 6 are also mentioned comments and opportunities for the rethinking of PM and potential future research ideas.