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# **Universidad de Valladolid**

FACULTAD DE CIENCIAS ECONÓMICAS Y EMPRESARIALES

DEPARTAMENTO DE ORGANIZACIÓN DE EMPRESAS Y  
COMERCIALIZACIÓN E INVESTIGACIÓN DE MERCADOS

TESIS DOCTORAL

**THE PROJECT-BASED FIRM AS A NEW ORGANIZATIONAL FORM:  
A DYNAMIC CAPABILITIES APPROACH**

Presentada por **Víctor Hermano Rebolledo**  
Para optar al grado de doctor con mención internacional  
Por la **Universidad de Valladolid**

Dirigida por:  
**Dra. Dña. Natalia Martín Cruz**





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Valladolid, 2013



## Acknowledgements

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During the third year of my Ph.D. studies I heard in the radio something like the following: *every nice journey starts like a dream and ends with a book*. Well, here is the book. I hope that through the reading of this dissertation you will understand the journey I started about four years ago. Let these words to introduce the following ones.

First of all, I would like to thank my supervisor. Dear Natalia, thank you so much for your expert guiding, for transmitting me the passion and rigor of academic work, and above all, thank you for forcing me to my limits, hence, taking out the best of me.

Secondly, I would like to thank the support (and all coffee-breaks) of the members of the former Department of Business Economics of the University of Valladolid. Special mentions are addressed to Dr. Juan Hernangómez, for his know-how about how to perform the strategic management lessons, to Dr. Gabriel de la Fuente, for his time and expertise on the Thomson Database, and to Dr. Javier Rodriguez, for his valuable lessons about structural equation modelling.

I would also like to thank all the members of the INSISOC research team. Specially to Dr. Adolfo López and Dr. Javier Pajares. You invited me to the project management master program and so you opened me the gates of the Project Management world.

I turn to my colleagues in the “third module”, -Víctor, Pablo, and Javi, and also to those who left the department, Isa and Celia. Thank you for the good moments, for the laughs, and for your support. Also, I would like to thank my office mates, Pablo, Ismael, and Pilar for their company, and for all the “catharsis moments”.

The most emotive words are addressed to my family and my partner. Thank you all for your love, wisdom and cooperation. Thank you mom for persuading me to start this journey. Finally, thank you Sara for your endless patience, for cheering me up in the bad days, for ... . In short, thank you Sara for these wonderful last two years, and for all those to come.

I conclude by assuming total responsibility of the mistakes that could be noticed in the following pages of this dissertation.



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## **“INTRODUCTION”**



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## INTRODUCTION

### Motivation and aim of the dissertation

In today's turbulent and dynamic environments<sup>1</sup> projects are no longer sporadic endeavors developed as a mean for facing specially challenge operations, but they have become a widespread practice for developing firm's daily work and implementing overall firm's strategy (Irja, 2006; Whittington et al., 1999). Thus, scholars have claimed that both projects and the firms developing these projects (project-based firms-PBFs), should be studied from a management perspective, rather than from a technical one (Reich et al., 2013; Sydow et al., 2004; Thiry & Deguire, 2007). However, although the cross-fertilization between project and strategic management is claimed to have a lot of potential, the opportunities of their union are still under-exploited (Grundy, 1998; Reich et al., 2013). A review of the strategic management literature shows that with few exceptions (Henisz et al., 2012; Moeen et al., 2013; van Oorschot et al., 2013), neither projects nor PBFs appear as keywords in the titles of the papers (Thiry & Deguire, 2007).

Regarding project management literature, PBFs have received increasing attention in recent years as an emerging organizational form that can be found in a wide range of industries (Hobday, 2000; Lindkvist, 2004; Sydow et al., 2004; Thiry & Deguire, 2007; Turner & Keegan, 1999). These PBFs are conceived as a fast and flexible mode of organizing knowledge (Boh, 2007; Sydow et al., 2004). Moreover, PBFs are claim as intrinsically innovative organizational forms able to overcome traditional barriers to change, hence PBFs constitute an organizational form especially suitable to compete in turbulent and dynamic environments (Hobday, 2000; Söderlund & Tell, 2009).

However, although widely treated, the notion of PBFs, also known as project-based organizations (Hobday, 2000), p-form organizations (Söderlund & Tell, 2009), project oriented companies (Whitley, 2006), project-led companies (Hobday, 2000), etc, is not without controversy. Beyond the use of the term "organization" or "firm", Hobday (2000) established the main debate around the essence of the concept, which revolves around the existence of

---

<sup>1</sup> We consider that turbulent and dynamic environments are similar to Eisenhardt and Bourgeois' (1988 : 738) definition of *high-velocity environments*-those where there is dynamism overlaid by sharp and discontinuous change.

functional links coordinating different projects (project-led organizations) versus pure project-based organizations where there is no functional coordination at all.

In this dissertation, we will use the term PBF and both project-led and project-based organizations will be considered in the PBF concept since as we will extensively explained in chapter 3, we understand that the essence of a PBF resides in the capacity to create lasting performance based on multiple projects independently of the internal organizational structure (e.g. matrix, functional or adhocracy) it has.

Regarding PBFs' literature and according to van Donk and Molloy (2008) three different streams have pervaded this research field: (1) projects' fitting within PBFs' structure, (2) the way PBFs deliver different projects, and (3) the achievement of PBF goals through multiple projects performance. The first stream of research focuses on how projects can be fitted in PBFs. Specifically, studies within this literature stream have researched the advantages and disadvantages of locating projects within a functional department, as a separate independent organizational unit or within a mixed matrix organization (Meredith & Mantel, 2009; Turner, 2009). Contrary to several strategic management papers focused on alliance projects (e.g. García-Canal et al., 2003; Lunnan & Haugland, 2008; Schreiner et al., 2009), these studies focused just on projects' fitting without discussing contingency factors or the influence of projects in shaping the PBF once they have been located (van Donk & Molloy, 2008).

The second stream of research has shown how different project-based organizational structures deliver different types of projects (e.g. R&D projects are developed differently than new product development projects? Morris & Hough, 1987; do PBFs use the same project structures for different project types? Chesbrough, 2003; Fujimoto & Clark, 1991). Both academics and practitioners are engaged in a dilemma about the generalization of the same factors for managing each type of project (Pinto & Covin, 1989). While theoretical literature asserts that all projects share the same factors for success, management practitioners assert that each project has its own unique problems. This stream of research includes the evolution of project structures and also it includes the issue of project failure (Flyvbjerg et al., 2002; Shepherd et al., 2011; Shore, 2008).

Finally, the third stream of research, which is nowadays the most prominent one, has focused on applying a management perspective to projects and PBFs. The underlying leitmotiv of this third stream of research is that achieving individual project success constitutes a necessary but not sufficient condition for securing long-term PBF performance (Melkonian & Picq, 2011).



Therefore, the level of analysis shift from project to portfolio or PBF level and the focus of the studies is placed at the management of the project within a framework of simultaneous projects' implementation (Voss, 2012). The achievement of PBF goals based on projects and portfolios performance requires facing an internal tension within the PBF, i.e. the temporary nature of projects versus the long-term perspective of the permanent PBF (Grabher, 2004; Melkonian & Picq, 2011). Thus, studies within this third stream of research focus on the links between projects and the PBF and how these links help to manage PBFs' internal tension. One of the links that has been studied within this stream of research is the role of projects in developing business models and in realizing the strategic objectives of PBFs (Artto et al., 2008; Patanakul & Shenhar, 2012; Peter & Ashley, 2004). However, the relationship between projects and PBF strategy is still unclear and two opposite visions are competing for supremacy, the so called traditional view<sup>2</sup> claiming that projects are obedient servants through which PBF strategy is realized (Mutka & Aaltonen, 2013; Shenhar et al., 2007) versus a new view claiming that projects can create autonomous business models with a bottom-up effect in the overall PBF strategy (Artto et al., 2008; Mutka & Aaltonen, 2013). Aside from business models and PBF strategy, inter-project learning and knowledge transfer constitute another link scholars have been focused on. With few exceptions (Boh, 2007; Brady & Davies, 2004; Prencipe & Tell, 2001) previous research has emphasized that due to the temporal nature of projects and their short-term orientation, PBFs face serious difficulties when attempting to capture and disseminate project learning (Hobday, 2000; Keegan & Turner, 2001; Söderlund & Tell, 2009). Thus, there is a risk that the knowledge gained during project life-cycle is lost when the project is finished. In this situation, the PBF could get caught in the trap of "reinventing the wheel" over and over again (Prusak, 1997). However, scholars have recently found that experiences and routines of one project can solve the troubles of another, hence by developing project capabilities, PBF will be able to share knowledge across projects and achieve superior performance (Boh, 2007; Davies & Brady, 2000; Melkonian & Picq, 2011).

In order to shed light on the existing controversy between the alleged incapacity of PBFs to learn and transfer knowledge from one project to another, this dissertation propose and evaluate a PBF model of dynamic capabilities building. Frequently conceived as an extension of the resource-based view (Barney, 1991; Peteraf, 1993) the dynamic capabilities approach

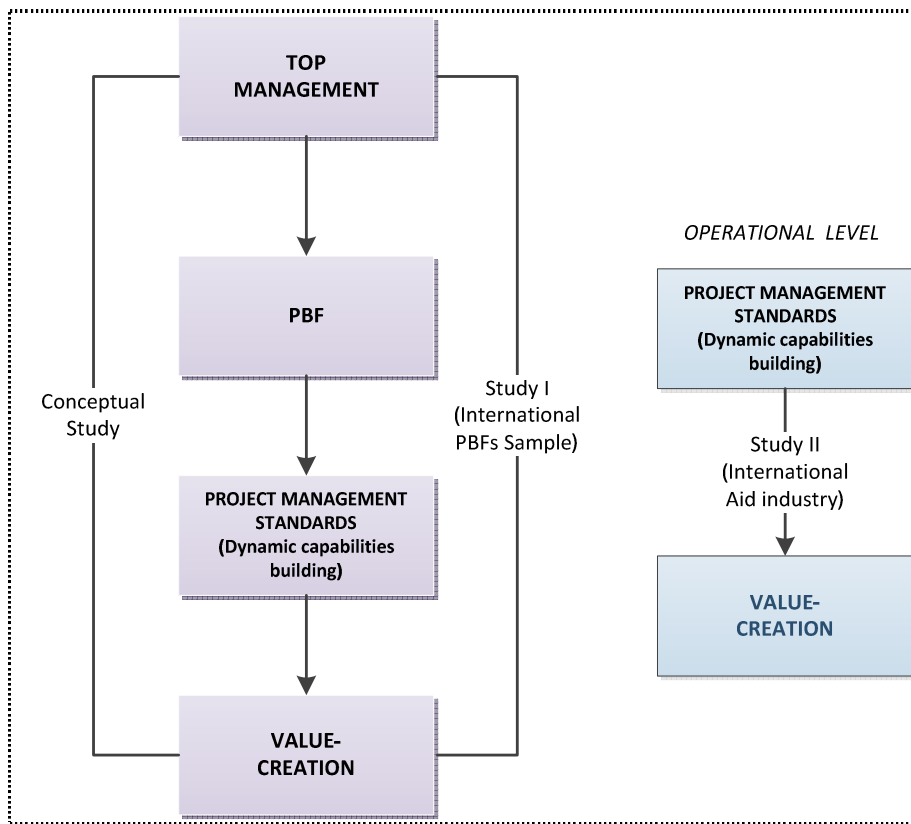
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<sup>2</sup> Traditionally, projects have been defined as temporal endeavors acting as simple vehicles for implementing firm-level goals (Mutka & Aaltonen, 2013; Shenhar et al., 2007).

seeks to explain why some organizations perform better than others in turbulent and dynamic environments (Eisenhardt & Martin, 2000; Teece et al., 1997; Zollo & Winter, 2002). The dynamic capabilities approach suggests that organizations obtain superior performance not just because of their assets endowment but through their ability for learning and reconfiguring their competences to address rapidly changing environments (Teece, 2009, 2007; Teece et al., 1997). Thus, the dynamic capabilities framework arises as a solution of the main critique for the resource-based view, i.e. its inherently static nature (Priem & Butler, 2001). Regarding project management and PBFs, scholars have stressed that the use of organizational and strategic management theories in the study of the PBFs possesses a huge potential for the development of both disciplines (Grundy, 1998; Killen et al., 2012; Reich et al., 2013). However, despite of the recent efforts in studying projects from a dynamic capabilities perspective (Biedenbach & Müller, 2012; Petit & Hobbs, 2010; Petit, 2012), the question of how PBFs develop dynamic capabilities and how they contribute to the overall performance of the PBF are still unanswered.

Given these antecedents, **this doctoral dissertation aims to contribute to a more comprehensive view of the PBF as a new organizational form and the reasons of its superior performance in turbulent and dynamic environments.** To accomplish this general research objective and drawing on the dynamic capabilities approach, we first develop a theoretical model that allows us to explain knowledge transfer and dynamic capabilities building within PBFs. Then, the two empirical studies allow us to test the validity of the model in two very different settings: (1) an international sample of PBFs, and (2) the international aid industry. Specifically, as depicted in Figure I, this doctoral dissertation tries to shed light on the following relations: Top managers adopting a project management philosophy turn the firm into a PBF. Second, top managers should establish a general project management methodology so every project inside the PBF is managed under the same prescriptions and processes. Third, taking the general methodology as the foundation, both project and top managers should establish project and PBF dynamic capabilities. Finally, the dynamic capabilities established at project and PBF level help to achieve project performance under conditions of uncertainty and also overall firm long-term performance through project implementation, hence they contribute to firm value-creation. Moreover, the effect of dynamic capabilities over project and PBF performance is examined from an operational point of view.

**Figure I. Overview of dissertation's studies and specific research objectives**



Source: Own elaboration

The **first specific research objective** is to *develop a two level (project and PBF) dynamic capabilities model that allows us to explain the problem of knowledge transfer and dynamic capabilities building within PBFs, and how both enhance firm performance*. Firms are increasingly shifting towards more flexible project-based structures (Engwall, 2003; Whittington et al., 1999). In fact, there are some firms conducting their business mainly by projects that due to its special features, i.e. its intrinsically flexible and innovative nature, and its capacity to coping with emerging situations and responding quickly and effectively to changing client needs (Hobday, 2000), obtain superior performance when competing in turbulent and dynamic environments. These explanations of PBFs superiority focus on the project level and assume that it is possible to have no learning across projects, hence they go against the new management perspective of project management where projects are not islands anymore, but are embedded within a permanent PBF structure (Engwall, 2003).

Thus, considering the suitability of a rapprochement to organizational and management theories, scholars have recently applied the capabilities and dynamic capabilities framework to the study of the PBFs. Specifically, it has been claimed that only PBFs capable of learning and developing project capabilities would be able to achieve long-term performance through the development of multiple projects and portfolios (Davies & Brady, 2000). However, to the best of our knowledge, there is no model explaining how PBFs build project dynamic capabilities or how these project dynamic capabilities contribute to the overall performance of the firm. Thus, the second chapter of this dissertation is devoted to build a model showing how PBFs transfer knowledge from one project to the rest and how PBFs develop dynamic capabilities. The main conclusion is that by developing sensing, seizing and transforming routines<sup>3</sup> both at the project and PBF level, PBFs are able to create dynamic capabilities that enhance project performance and reconfigure PBF's capabilities endowment so the firm can address environmental changes and achieve a long-term performance.

The **second specific research objective** of the dissertation is to *improve existing understanding of the way top managers enhance project and portfolio performance*. In this regard, existing literature provides an interesting but still unresolved debate about the essence of the influence of top management involvement over project and PBF performance. On the one hand, strategic management has traditionally studied the effect of top managers on firm performance. Specifically, there are two key perspectives from which top managers influence has been addressed: (1) the agency theory, which is focused on the costs associated to a separation between firm property and control (Fama & Jensen, 1983; Jensen & Meckling, 1976); and (2) the upper echelons theory, which is focused on how different characteristics of the top management team such as its size or the different personal traits of its members influence the performance of the firm (Hambrick, 2007; Hambrick & Mason, 1984). Although these perspectives have enriched our understanding of top managers' influence on firm performance, they have yet to fully examine important aspects of this relationship (e.g. empirical inconsistencies in the direct relationship between managerial pay and firm performance, Barkema & Gomez-Mejia, 1998; the generative mechanism of the influence of top managers on firm performance, Boonstra, 2013). On the other hand, project management scholars have empirically proved that top managers are a key factor for project success (Baccarini, 1999; Pinto & Slevin, 1987) and they have elaborated lists of good practices for top

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<sup>3</sup> Teece (2009, 2007) disaggregate dynamic capabilities into three different routines, i.e. one to sense opportunities and threats, other to seize opportunities, and the last one, to maintain competitiveness by reconfiguring organizational capabilities.

managers, but the root-cause of top managers' influence on project and portfolio performance is still unknown (Jarvenpaa & Ives, 1991; Young & Poon, 2013).

The application of the dynamic capabilities model to an international sample of 62 PBFs from a wide range of industries brought the opportunity to shed light on the essence of top managers' influence over project and firm performance and thus to make important contributions. The building of both project and portfolio dynamic capabilities have been identified as the generative mechanism through which top managers influence project performance and portfolio achievement respectively. Thus, project and portfolio dynamic capabilities are mediator variables in the relationship between top managers and project and PBF performance. Moreover, these findings offer important implications for top and project managers. First, project managers should assume that their technical expertise is not so critical for achieving project performance, and second, top managers should assume that their involvement results critical and must be reflected in the establishment of work procedures and decision-making protocols.

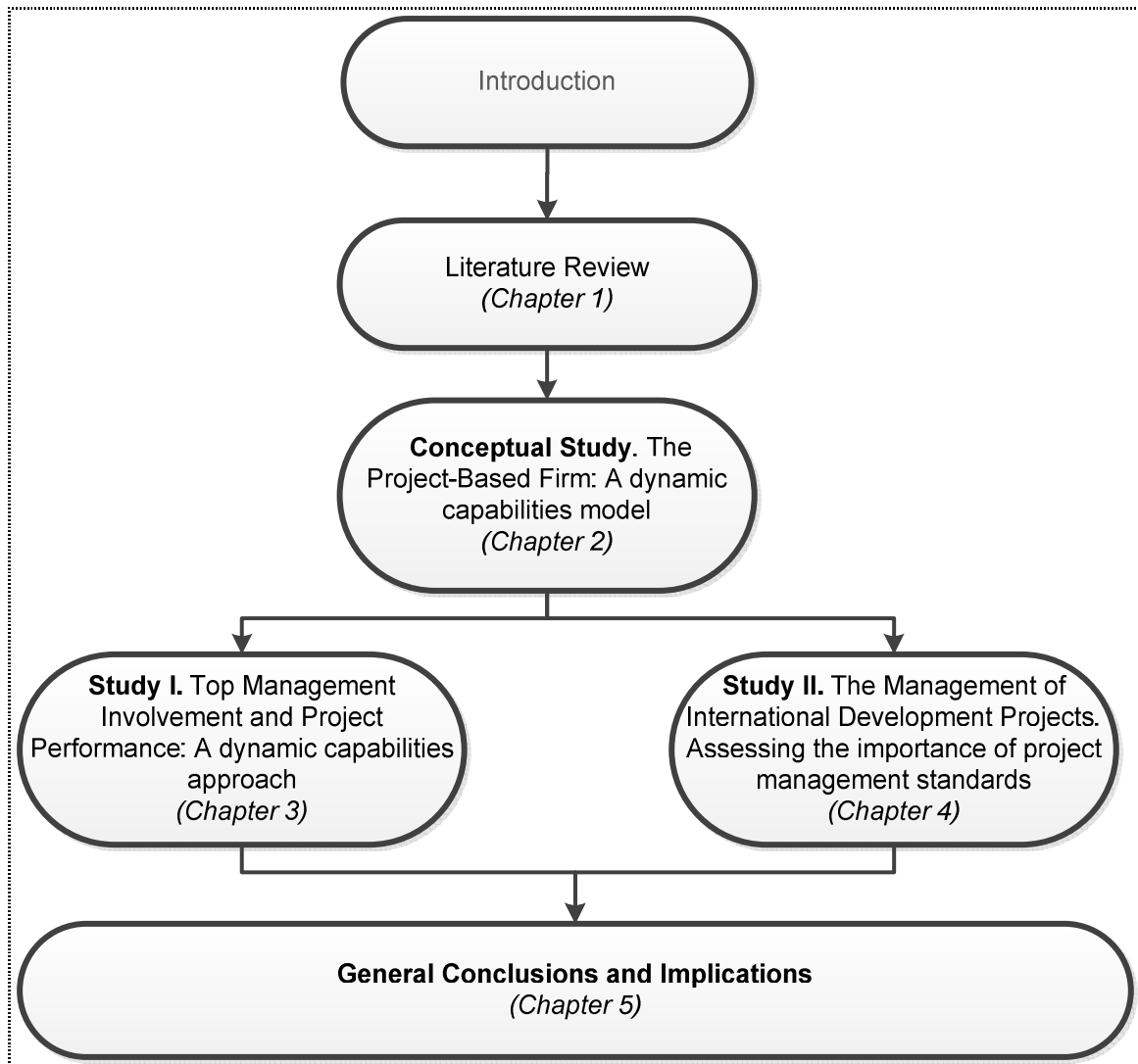
Finally, the **third specific research objective** of the dissertation is to *assess the importance of using a project management standard, and to assess the most suitable alternative to manage International Development (ID) projects successfully*. ID projects are the most common instrument used by policy makers to deliver international aid. At the end of the 1960's the logical framework approach was developed for United States Agency for International Development, and has since been applied by many of international aid donors as the standard to manage ID projects (NORAD, 1999). However, despite its widespread use, the logical framework approach has proved to be an inefficient and very limited project management standard for managing ID projects (Crawford & Bryce, 2003), and poor performance has become a rule rather than an exception (Ika et al., 2012).

Despite of its great importance, total official development assistance in 2009 meant \$136 billion (Klugman & United Nations Development Programme, 2010), project management literature has focused little attention on ID projects (Ika et al., 2012). In particular, very little has been written on the way project managers should manage ID projects or on ID projects success factors, hence, the logical framework approach has remained unchanged since its conception. Although scholars and practitioners assume that the use of a project management standard will enhance project success (Milosevic & Patanakul, 2005; Papke-Shields et al., 2010), empirical studies have found ambivalent results or even no relation at all (Besner & Hobbs, 2006; Crawford, 2005; White & Fortune, 2002).

Taking our dynamic capabilities model as the underlying theoretical framework, our second empirical study evaluate different project management standards based on the way they deal with several critical success factors. The main conclusions obtained after the evaluation of the project management standards are that the PMD Pro1 standard represents the right path for improving ID projects' performance, surpassing the limitations of the logical framework approach, but also with a considerable room for improvement. Moreover, it could be posited that the achievement of project success could not just come by using the processes and routines disclosed in project management standards but in the ability of organizations for building project capabilities out of those processes and routines (Davies & Brady, 2000). Therefore, the superiority of PMD Pro1 over the logical framework approach could not just come from its broader vision of ID projects, but also from its detail description of project routines and processes.

### **Structure of the dissertation**

This doctoral dissertation consists on five chapters, as depicted in Figure II. **Chapter 1** presents the review of the literatures on dynamic capabilities and project management, and on the integration of both literatures, all relevant theoretical bases for this dissertation. **Chapter 2** is a conceptual study devoted to build a two-level model of dynamic capabilities building within PBFs. The two following chapters, **Chapter 3** and **Chapter 4**, present the empirical studies under the assumptions of the theoretical model presented in chapter 2 (Study I and Study II respectively). Instead of an overall methodology chapter, each of the empirical studies (Study I and Study II) has their own methodology section. Finally, **Chapter 5** provides concluding remarks, highlighting the limitations and main implications, both for top and project managers, of the three studies of the dissertation, as well as some paths for future research.

**Figure II. Overview of this doctoral dissertation**





**Chapter 1.**

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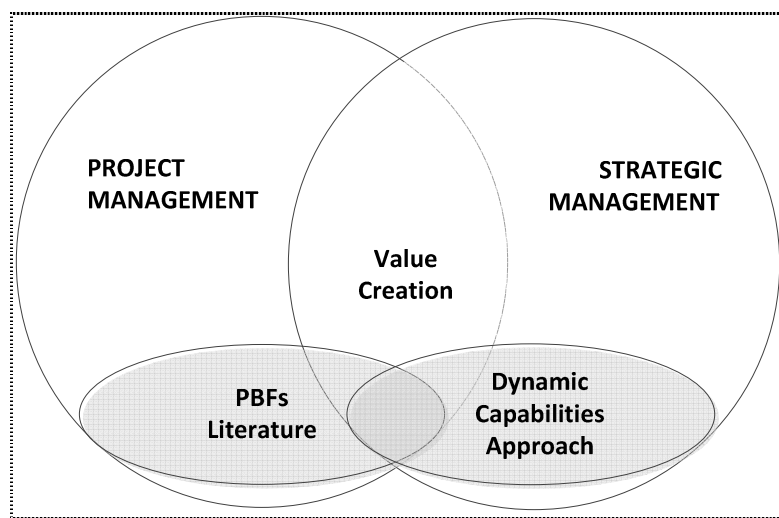
**“LITERATURE REVIEW”**



## LITERATURE REVIEW

Project and PBF dynamic capabilities are a special type of dynamic capabilities that arise inside PBFs providing them the ability to address environmental changes, hence, becoming sources of long-term competitive advantages. This dissertation aims to study the reasons explaining PBFs as a suitable strategic form for competing in turbulent and dynamic environments by focusing on the process of project and PBF dynamic capabilities building. Thus, this dissertation builds on the literatures of project management and strategic management; with special focus on the PBFs literature and dynamic capabilities approach (see Figure 1.1).

**Figure 1.1. Theoretical frameworks for this doctoral dissertation**



Source: Own elaboration based on Estrada Vaquero (2012)

First, a review of the dynamic capabilities approach is performed, emphasizing the role of routines and their micro-foundations. Then, an overview of the project management field is provided, highlighting the evolution of concepts and topics in the last 60 years. Finally, the two disciplines are integrated into a single theoretical framework, justifying the importance and dynamic nature of both project and PBF capabilities.

### 1. Dynamic capabilities approach

#### 1.1. Origins and main features of the dynamic capabilities approach

Frequently conceived as an extension of the resource-based view (Barney, 1991; Peteraf, 1993), the dynamic capabilities approach seeks to explain why some organizations perform better than others in turbulent and dynamic environments (Eisenhardt & Martin, 2000; Teece et al., 1997; Zollo & Winter, 2002). First defined as “the firm’s ability to integrate, build and

reconfigure internal and external competences to address rapidly changing environments”, dynamic capabilities stand as the cornerstone for creating and maintaining competitive advantages (Teece, 2009, 2007; Teece et al., 1997 : 516). Thus, the dynamic capabilities approach arises as an alternative to solve the main critiques of the resource-based view, i.e. its inherently static nature, and its difficulties for explaining how resources transform into competitive advantages (Priem & Butler, 2001). In this context, the dynamic capabilities approach emerges to strength the resource-based view by drawing upon the evolutionary economics (Nelson & Sidney, 1992) and introducing a temporal perspective.

According to Schreyögg and Kliesch-Eberl (2007) and Di Stefano et al. (2010) there are three main articles integrating the intellectual core of the dynamic capabilities approach, that is Teece et al. (1997), Eisenhardt and Martin (2000), and Zollo and Winter (2002). Although differing in some points, these three articles are complementary in many respects. First, there is clear distinction between dynamic and ordinary capabilities. Dynamic capabilities imply change and evolution, and are the potential to do things, not the things that are done (Easterby-Smith & Prieto, 2008). Therefore, changes in ordinary capabilities are the outcome of dynamic capabilities (Winter, 2003). Second, since the roots of the concept of dynamic capabilities lie on the notions of organizational routines and processes (Teece et al., 1997), learning is an important aspect of their creation and evolution (Helfat & Peteraf, 2003; Zollo & Winter, 2002). As stressed by Pisano (2000 : 129) “without learning it is difficult to imagine from where a firm’s unique skills would come”. Finally, although much has been written in the last years about dynamic capabilities, there are still important gaps that have to be filled before considering this framework fully developed (Peteraf et al., 2013).

### *1.2. Sources and origins of dynamic capabilities*

Different interpretations and models on how dynamic capabilities arise, develop, and change over time has been made. We focus on two important cornerstones. First, the so called *innovation routines approach* of Zollo and Winter (2002) stress the role played by learning and path-dependency in the building and development of dynamic capabilities. Specifically, these authors state that routines, and so dynamic capabilities, arise from purposeful learning investments, rather than from ad hoc problem solving or brilliant improvisation (Winter, 2003; Zollo & Winter, 2002). Their model of dynamic capabilities building consists on three different but complementary learning processes: (1)experience accumulation, (2)knowledge articulation, and (3)knowledge codification. On the one hand, experience accumulation is the starting point from which routines, and so dynamic capabilities, built. On the other hand, both

knowledge articulation and knowledge codification represent two deliberate cognitive learning processes arising from the experience already accumulated. Therefore, these authors see dynamic capabilities as collections of routines built upon the three learning processes, with the ability to modify operating routines.

Second, Teece (2009, 2007) provides complementary insights to the creation and evolution of dynamic capabilities by specifying its nature and micro-foundations. Specifically, Teece (2009, 2007) disaggregates dynamic capabilities into three capabilities: (1) the capability to sense and shape opportunities, (2) the capability to seize opportunities, and (3) the capability to maintain competitiveness by enhancing, combining and reconfiguring firm's assets. In addition to the decomposition of dynamic capabilities into the sensing, seizing and transforming capabilities, Teece (2009, 2007) stress the role of managers as builders of dynamic capabilities. As Teece (2007 : 1346) states "managers can sense and even help shape the future, unshackle the enterprise from the past, and stay ahead". Thus, from Teece (2009, 2007) perspective, top managers have a challenge in the process of building dynamic capabilities as those are also impacted by firm processes, systems and structures.

### *1.3. Open debates within the dynamic capabilities approach*

Although much has been written about dynamic capabilities, more than a thousand articles were published over the last ten years, the framework is still under development and several debates remain open for discussion (Peteraf et al., 2013). The first debate revolves around the fact that the dynamic capabilities approach has developed under the influence of two complementary but sometimes contradictory papers (i.e., Eisenhardt & Martin, 2000; Teece et al., 1997) (Peteraf et al., 2013). The dimensions over which these papers differ concern the role of dynamic capabilities as sources of sustainable competitive advantages and the boundary conditions of the dynamic capabilities approach.

Regarding *boundary conditions*, i.e. when and where dynamic capabilities have utility, and according to Teece et al., (1997), dynamic capabilities apply in conditions of rapid technological change. On the other hand, Eisenhardt and Martin (2000) argue that dynamic capabilities encounter boundaries in high-velocity markets. Regarding dynamic capabilities as sources of *competitive advantages*, Eisenhardt and Martin (2000) claim that dynamic capabilities can be a source of limited competitive advantages while Teece et al., (1997) establish no limitations at all. Regarding the *sustainability* of the competitive advantage provided by dynamic capabilities, while Teece et al., (1997) claim that under certain conditions

dynamic capabilities can be a source of sustainable advantages, Eisenhardt and Martin (2000) argue that dynamic capabilities cannot be a source of sustainable advantage.

The second debate on the dynamic capabilities approach focuses on the outcomes of dynamic capabilities. Traditionally, the outcomes of dynamic capabilities have been examined in terms of firm economic performance and changes in operational routines (Eriksson, 2013). On the one hand, some scholars posited a direct relationship between dynamic capabilities and firm performance (García-Morales et al., 2007; Wu, 2007). Moreover, this vision has been complemented by studies that identify several factors moderating that direct relationship (Song et al., 2005; Yiu & Lau, 2008). On the other hand, the more prominent currently view is that of dynamic capabilities indirectly influencing performance (Cepeda & Vera, 2007; Eisenhardt & Martin, 2000). Studies within this view posit that the relationship between dynamic capabilities and firm performance is mediated by factors such as the modification of operating routines (Cepeda & Vera, 2007), or opportunity recognition and exploitation (Macpherson et al., 2004).

#### *1.4. Shortcomings of the dynamic capabilities approach*

Although the dynamic capabilities approach has become an influential framework in management research, the framework is still in its infancy and there is considerable room for improvement and development both theoretically and empirically (Di Stefano et al., 2010; Zahra et al., 2006). Several articles have reviewed the dynamic capabilities approach finding logical inconsistencies related mainly to (1) the nature and definition of dynamic capabilities, and (2) the effects and consequences of dynamic capabilities (Arend & Bromiley, 2009; Easterby-Smith et al., 2009; Zahra et al., 2006). Specifically, the existence of logical inconsistencies becomes stronger when the dynamic capabilities approach is applied in empirical studies.

It has been stressed that in order to apply the dynamic capabilities framework to empirical studies a micro-level perspective focus either on micro-foundations or on routines must be adopted (Teece, 2009, 2007; Winter, 2003; Zollo & Winter, 2002). However, existing empirical research has usually studied dynamic capabilities from a macro-level perspective (e.g. Anand et al., 2010; King & Tucci, 2002; Wiklund & Shepherd, 2009), hence considering dynamic capabilities as black boxes. Moreover, the need for longitudinal studies has also been stressed since although very difficult and costly, longitudinal studies are a suitable mean to capture the dynamic essence of dynamic capabilities (Teece & Pisano, 1994).

The second shortcoming of the dynamic capabilities approach is the lack of consensus about the dynamics of dynamic capabilities (Zahra et al., 2006). On the one hand, there is an open debate on which are the changes actually triggering the need for dynamism and capability reconfiguration (i.e. changes in firm's external environment or changes in organizational conditions; Zahra et al., 2006). On the other hand, lack of focus on routines as units of analysis leaves two important questions still unanswered (i.e. how and through which mechanisms dynamic capabilities are built over time; Helfat & Peteraf, 2003).

## **2. Project management discipline**

### *2.1. Origins and evolution of project management discipline: Towards the PBF*

The prevalence of the use of projects within organizations has come along with the development of a discipline dedicated to improve their management (i.e. project management discipline). The evolution of the role played by projects within permanent organizations-from vehicles to undertake just complex operations to their prevalence in developing any kind of task- has been accompanied by a paradigm shift in the project management discipline. Developed in the 1950s by the US Air Force (Morris, 2012), project management discipline has been characterized by a normative character with the focus in the development and improvement of normative tools and techniques. Thus, during this first wave of project management research, project success was just explained by the correct or incorrect deployment of those tools and techniques (e.g. Boynton & Zmud, 1984; De Wit, 1988; Pinto & Slevin, 1988, 1987). However, at the end of the 20<sup>th</sup> century, project management scholars began to think more widely about projects realizing that the ontology perspective based of normative assumptions with the focus on individual projects was not enough to fully gather all roles and limits projects have (Turner & Müller, 2003). A second wave of project management research was thus developed during the end of the 20<sup>th</sup> century and the first decade of the 21<sup>th</sup> century covering not just project planning but what Morris and his colleagues termed the "management of projects" (Morris et al., 2012). The focus of this second wave, covered under the motto "rethinking project management" (Morris, 2012), was the development of contingency models for the management of projects and the study of projects as temporary organizations (e.g. Engwall, 2003; Hobday, 2000; Lundin & Söderholm, 1995; Thiry & Deguire, 2007; Turner & Müller, 2003; Turner & Keegan, 1999). Nowadays, project management discipline has taken a step further and a third wave of research has just started (Morris, 2012).

Characteristics of this third wave are the abandon of the lonely project perspective by studying the theoretical foundations and the history of projects; the awareness of the importance of project environment; a business centric view of projects, and the recognition of projects as temporary organizations and the study of the linkages between the permanent-PBF-, and the temporal-project- organization (e.g. achievement of corporate strategy through projects, the transfer of project knowledge to the whole organization, the creation of organizational capabilities through projects, etc. Artto et al., 2008; Engwall, 2003; Kujala et al., 2010; Morris et al., 2012).

Thus, the problem of achieving individual project goals has been replaced for the problem of achieving organizational goals through projects performance. Within this new framework, developing successful projects has been recognized as necessary but no longer sufficient condition to secure long term organizational performance (Melkonian & Picq, 2011) and the disciplines for managing sets of projects such as project portfolio management and program management<sup>1</sup> are gaining an increasing importance. Within a framework of simultaneous project implementation where projects share and compete for scarce resources getting a structure management of the project landscape is what appears to be the key success factor in achieving organizational goals (Voss, 2012). On the one hand, project portfolio management involves decisions of project selection, prioritization and rejection as well as an efficient policy of resource allocation (Thiry, 2004). A successful project portfolio management represents an organization's investment strategy and has the potential to provide benefits beyond individual projects performance (Voss, 2012). On the other hand, program management is conceived as the missing link between projects and organizational strategy (Morris & Jamieson, 2005). Programs imply a collection of projects and actions grouped together for achieving strategic objectives (Thiry, 2004). Thus, program management is mainly a strategic decision management process imbued in a change environment and aimed at getting effective solutions. Even more, the foci in project management research has shifted from project level to organizational level and the research of PBFs has turned to a relevant literature stream in today's project management research.

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<sup>1</sup> Project portfolio management is defined as a set of projects executed and managed under the sponsorship and management of a specific organization (Thiry, 2004). Program management consists in the purposeful and integrated direction and coordination of a group of actions, their interface and consequences for strategic effectiveness and/or tactical efficiency (Thiry, 2002).



## *2.2. Shortcomings of the project management discipline*

Frequently defined as a practitioner-driving discipline, project management has been claimed to have an insufficient and predominantly implicit theoretical framework (Pollack, 2007). Thus, some important aspects such as the project management components, project management processes or the influence of some environmental variables have not been developed in conceptual studies and can only be treated from the perspective given by professional standards such as the project management body of knowledge (PMBOK®) or the IPMA competence baseline (ICB®). Moreover, it is difficult even to find a definition of project or project management in academic papers. Although there have been some recent attempts for giving project management discipline a theoretical framework (Turner et al., 2010), an underlying strong theoretical framework is recognized as still missing and as one of the most important obstacles for the project management progress (Koskela & Howell, 2002).

Regarding the literature stream focus on PBFs, scholars have also found a number of shortcomings both from a theoretical and empirical perspective (Reich et al., 2013). First, it has been found that PBF studies reference but do not build upon results of previous research. Second, PBF studies suffer from the direct application of theories from domains such as the strategic management or organizational economics without developing an appropriate adaptation. Finally, it has been found that PBF studies create new language to describe phenomena already studied by other disciplines, thus missing the opportunity to adapt already developed knowledge. Therefore, PBFs studies are often practically focused but too specific to be broadly applicable (Reich et al., 2013). Moreover, such studies are not easily generalized and cannot be turned into best practices useful for practitioners.

Take all these shortcomings together, most of project management literature, and specifically, PBF literature, “is not publishable in top management journals”, being thus confined to project management journals (Reich et al., 2013 : 938). Furthermore, project management literature is “mired in the middle”, neither rigorously enough for the academia nor sufficiently insightful for practitioners (Reich et al., 2013 : 938).

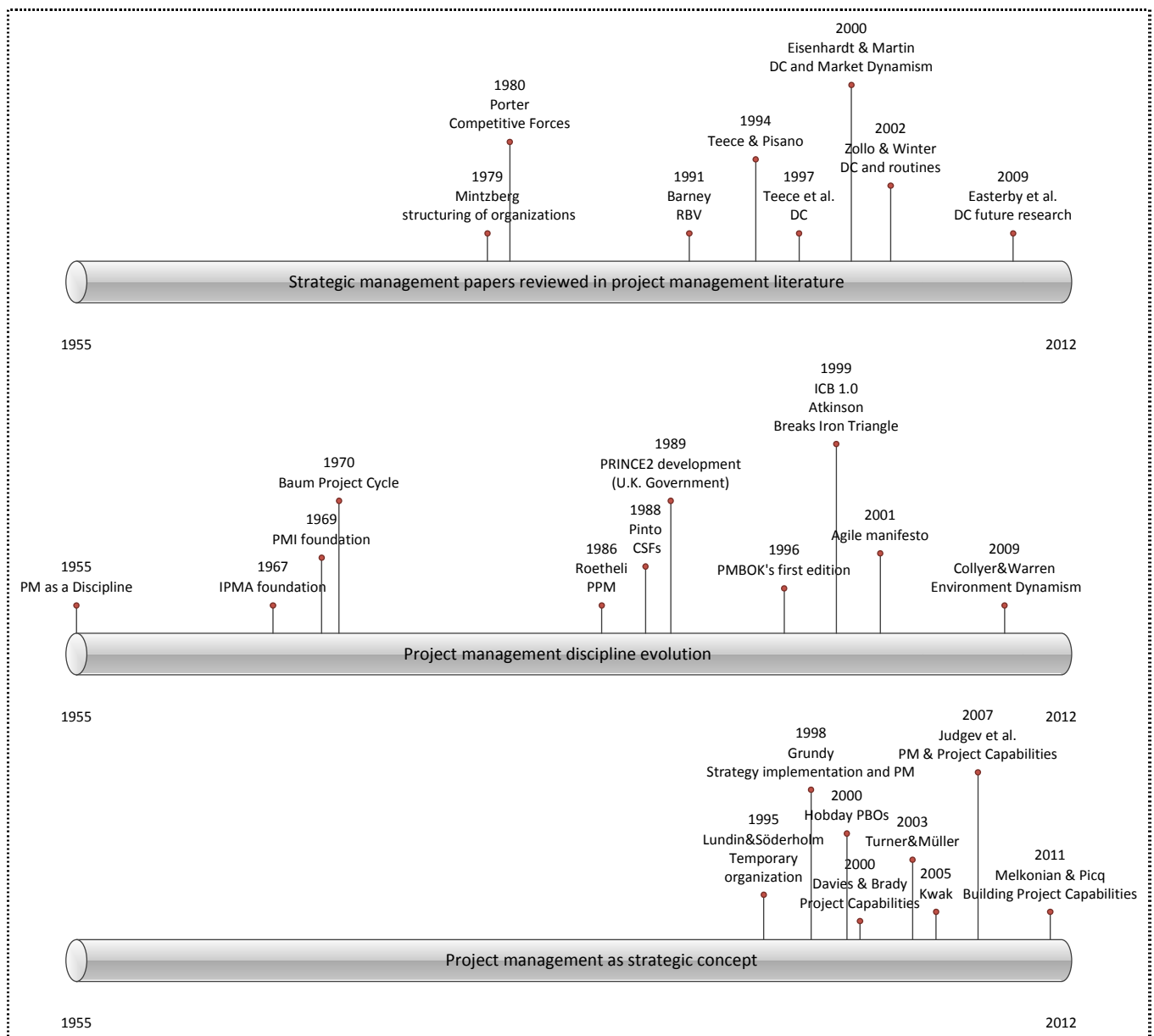
## **3. Linking project management and dynamic capabilities**

### *3.1. Towards an integrative theoretical framework*

The disciplines of project management and strategic management are closely related, and as many authors have claimed, their cross-fertilization would have a lot of potential (Grundy,

1998). However, the two disciplines have developed independently and the opportunities of their union are currently under-exploited (Grundy, 1998). Recently, there have been some intents to study project management from a strategic perspective, being those linking project management with the capabilities approach (e.g. Davies & Brady, 2000; Jugdev et al., 2007; Melkonian & Picq, 2011) and dynamic capabilities approach (e.g. Biedenbach & Müller, 2012; Killen & Hunt, 2010; Petit, 2012) the most prominent ones.

**Figure 1.2 Development of project management and dynamic capabilities milestones**



Source: Own elaboration

Nevertheless, as we can see in Figure 1.2 project management discipline and dynamic capabilities approach have developed quite independently but simultaneously over time. As

already mention in the dynamic capabilities literature review, the three major theoretical papers for dynamic capabilities approach are Teece et al. (1997); Eisenhardt & Martin (2000); and Zollo & Winter (2002) and just in those years, the project management discipline develops its professionalization with the first edition publication of PMI PMBOK<sup>2</sup> and IPMA ICB<sup>®</sup> (1996 and 1999 respectively). Besides, the emergence of papers relating project management and strategy, and the conceptualization of projects as temporary organizations are concentrated around the late 90s and the early 2000s (e.g. Grundy, 1998; Hobday, 2000; Lundin & Söderholm, 1995; Turner & Keegan, 1999). Surprisingly, although there is a paper relating project management with capabilities approach in the year 2000 (Davies & Brady, 2000), this line of research remains barren until the second half of the first decade of the 21<sup>th</sup> century (e.g. Jugdev et al., 2007; Melkonian & Picq, 2011). In 2005, Kwak provides a definition of project management based on Fayol's five functions of a manager in which project management could be understood as the discipline of planning, organizing, coordinating, controlling, and commanding resources in order to achieve specific goals. In fact, this definition is connected to the definition of capabilities given by Helfat and Peteraf (2003) when they define capabilities as the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result.

The first appearance of dynamic capabilities within project management literature is represented by the conceptualization of project capabilities as a third kind of capability different from Chandler's (1992) strategic<sup>3</sup> and functional<sup>4</sup> ones, which are necessary to perform in today's turbulent and dynamic environments (Davies & Brady, 2000; Melkonian & Picq, 2011). Moreover, as shown in Table 1.1 (columns 1 to 3) dynamic capabilities definition along with some of their most distinctive features (e.g. capabilities change and reconfiguration, environmental dynamism, or their relationship with firm competitive advantages) are embedded within project management papers (Collyer & Warren, 2009; Irja, 2006; Kwak, 2005; Shenhar et al., 2001).

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<sup>2</sup> Although developed as a white paper in 1983, the first edition of PMBOK was published in 1996.

<sup>3</sup> Chandler (1992) define strategic activities as those of responding to moves by competitors, of carrying on the long, costly, and risky process of moving into new markets and of adjusting to the constantly changing economic, social and political environment.

<sup>4</sup> Chandler (1992) defines functional activities as those of production, distribution and marketing, obtaining supplies, improving existing products and processes, and the developing of new ones

**Table 1.1. Theoretical overlaps between Dynamic Capabilities framework and Project Management discipline**

Concept	Dynamic Capabilities Framework	Project Management Literature	PMBOK®
Capability	“ability of an organization to perform coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result” (Helfat & Peteraf, 2003 : 999)		PM as the application of knowledge, skills, tools and techniques to project activities to meet the project requirements (Project Management Institute, 2008).
	“is a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type” (Winter, 2003 : 991)	PM as the discipline of planning, organizing, coordinating, controlling and commanding resources in order to achieve specific goals (Kwak, 2005).	PM is recognized to be accomplished through the appropriate application and integration of 42 processes (Project Management Institute, 2008)
Dynamic capability	“firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments given path dependencies and market positions” (Teece et al., 1997 : 516)	“Traditional functional organizations have frequently had to form project teams to respond to rapidly changing market conditions” (Irja, 2006 : 223)	PMBOK®’s chapter 4: project integration management.
	Dynamic capabilities always implies change and evolution (Easterby-Smith & Prieto, 2008)	“Without projects, organizations would become obsolete and irrelevant, and unable to cope with today’s competitive business environment” (Shenhar et al., 2001 : 700).	PMBOK®’s tasks called “integrated change control”; “lessons learned documentation”. PMBOK®’s input called “enterprise environmental factors”
Market dynamism	The level of market dynamism influences dynamic capabilities and their outcomes (Eisenhardt & Martin, 2000)	Depending on the level of context dynamism, projects must be conducted by different approaches (Collyer & Warren, 2009)	In highly dynamic environments agile methods such as SCRUM replace the PMBOK® prescriptions

Source: Own elaboration

Specifically, we find papers in project management literature claiming that project management implies change and evolution (Shenhar et al., 2001; Thiry & Deguire, 2007; Turner & Müller, 2003), hence it is aligned with the definition of dynamic capabilities by Easterby-Smith and Prieto (2008), “those capabilities that connote change and evolution”. In fact, the notion that projects and project management promote change in organizations is pervasive in project management literature, and the following quotes are an example: “efforts to renew business and to change existing operations in business firms are often organized as projects” (Lundin & Söderholm, 1995 : 437). “Traditional functional organizations have frequently had to form a project teams to respond to rapidly changing market conditions” (Irja, 2006 :223), “in almost all cases projects are initiated to create change” (Shenhar et al., 2001 : 699), or “project management is being applied ... , and to the process of implementing strategic change” (Grundy, 1998 : 43). Overall, projects are understood as drivers of change since they are better suited for managing change than the functional organization (Turner, 2003; Turner & Müller, 2003).

Project management literature also recognizes the important role of market dynamism in project performance. Project management interprets context dynamism as a dimension of a project representing the extent to which a project is influenced by changes in the environment (Collyer & Warren, 2009). Shenhar and Wideman (2000) argue that projects surrounded by dynamic environments must have at least two, but typically three different design cycles. Furthermore, those dynamic projects involve the use of novel technologies (Shenhar & Wideman, 2000). Therefore, depending on the level of context dynamism, projects must be conducted by different approaches (Collyer & Warren, 2009). This contingent approach to project management is directly connected to Eisenhardt and Martin (2000) concern about how the level of dynamism shapes dynamic capabilities and their “outcomes”. Another important aspect of Eisenhardt & Martin (2000) model is the observation that dynamic capabilities exhibit common features across firms and could be understood as best practices. However, the existence of commonalities among effective dynamic capabilities does not imply that dynamic capabilities are exactly alike across firms (Eisenhardt & Martin, 2000). This duality, although striking, is widely accepted in project management. On the one hand, a lot has been done in the project management practical side to professionalize project management practices and due to that effort a shared standard consisting of processes and methodology generally accepted have been developed (Melkonian & Picq, 2011). Although general and standard, these project management standards recognize that the practices they include are susceptible

of different applications according to project specifications, needs and objectives, and even the characteristics of the company itself implementing the project are an important variable.

Recently, project management literature is getting closer to the Teece et al. (1997) idea of creating competitive advantages<sup>5</sup>. Scholars suggest that only PBFs capable of developing project (*dynamic*) capabilities would be able to overcome the dichotomy among the individual nature of projects and the long-term and stable objectives of the overall organization's strategy. Project (*dynamic*) capabilities are defined as the internal ability of a PBF to create lasting performance based on multiple short term projects (Davies & Brady, 2000). Thus, project (*dynamic*) capabilities help PBFs to align individual project objectives with the overall organizations strategy creating long term performance through multiple single projects outcomes (Davies & Brady, 2000). Therefore, projects are understood nowadays as sources of organizations' competitive advantages (Killen & Hunt, 2010; Pinto, 2007; Thiry & Deguire, 2007; Turner & Müller, 2003). As Shenhar et al. say (2001 : 700) "without projects, organizations would become obsolete and irrelevant, and unable to cope with today's competitive business environment".

Regarding empirical papers, project management scholars have tried to adapt the dynamic capabilities approach to the portfolio level in an attempt to find solutions for portfolio management and success under conditions un uncertainty and dynamism (Biedenbach & Müller, 2012; Killen & Hunt, 2010; Petit, 2012). However, to the best of our knowledge, there is no paper linking dynamic capabilities to project management neither within the project level nor within the PBF level.

### *3.2. Implications from the operational perspective*

The cross-fertilization between dynamic capabilities approach and project management can be extended to an operational perspective to give theoretical meaning to the guidelines offered by the different global project management standards such as the well-known PMBOK<sup>6</sup>. In

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<sup>5</sup> Teece et al. (1997) seminal paper defines dynamic capabilities as the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments given path dependencies and market positions. In this paper (1997), dynamic capabilities are recognized to be the source of competitive advantages and be constituted by managerial and organizational processes.

<sup>6</sup> Among all the different global PM standards (AIPM®, ANCSPM®, GAPPS PM standard®, ICB®, PMBOK®, P2M®, PRINCE2 2009®, etc.), we have chosen the PMBOK® since its recognition of PM accomplishment through an application of processes fits with the idea that competitive advantage of firms rest in their distinctive processes (Teece et al. 1997). However, this section could have been also developed based on any of the aforementioned global PM standards.

the following, we try to read into the PMBOK®'s processes and indications throughout the dynamic capabilities theoretical framework (see Table 1.1, columns 1,2 & 4).

PMBOK® defines project management as the application of knowledge, skills, tools and techniques to project activities to meet the project requirements (Project Management Institute, 2008). Furthermore, it recognizes that project management is accomplished through the appropriate application and integration of 42 processes (Project Management Institute, 2008). The observation of PMBOK®'s definition of project management as a collection of processes reminds to the definition of capabilities given by Winter (2003) (collection of routines)<sup>7</sup>. Although there are some authors claiming that the temporary nature of projects makes it difficult to develop routines so making also difficult to develop dynamic capabilities<sup>8</sup> (DeFillippi & Arthur, 1998; Hobday, 2000), recent research has shown that PBFs have viable alternatives both individual (e.g. managers of competencies) and collaborative (e.g. industry-wide social networks) by which they can create routines and distribute social learning (Cacciatori, 2008).

Market and general environment dynamism is recognized as an important variable influencing dynamic capabilities (Eisenhardt & Martin, 2000). In moderately dynamic markets, dynamic capabilities rely on complicated processes and existing knowledge and managers effective decision making process is linear and sequential (Eisenhardt & Martin, 2000 : 1106). In contrast, when markets are highly dynamic, dynamic capabilities are very simple and unstable processes that proceed in at iterative fashion (Eisenhardt & Martin, 2000 : 1106). The PMBOK® also recognizes the importance of market and environment dynamism as an important project variable. PMBOK® is labeled as a plan-driven or discipline guide since it is highly structured in a sequential way of action that relies on highly developed and detailed processes. This guide that works well in moderately dynamic environments, suffers in high velocity ones. The first project managers who discover this shortcoming were a group of 17 people who worked in

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<sup>7</sup> Zollo and Winter (2002 : 340) define routines as stable patterns of behavior that characterize organizational reactions to variegated, internal, or external stimuli. They also identify two broad types of routines: operating routines, those related to the operational functioning of the firm, and innovation routines, those seeking to bring about desirables changes in already existing operating routines. PMBOK® defines a process as a set of interrelated actions and activities performed to achieve a pre-specified product, result, or service. Thus, PMBOK® processes have the features of the operating routines defined by Zollo and Winter which are the base of organization's performance.

<sup>8</sup> Dynamic capabilities understood as higher order routines that are able to alter, change and reconfigure operational routines being the critical means by which firms can adapt themselves to environmental changes (Cacciatori, 2008; Teece et al., 1997; Zollo & Winter, 2002).

software development industry, acknowledged as one of the most turbulent and dynamic industries. They met in Utah, on February 2001 to find a common ground in software development and they created what is known as the agile manifesto (Beck et al., 2001). This manifesto is based on 12 principles<sup>9</sup> and represents the main framework for agile methodologies, which are methodologies based on iterative and incremental development.

Another important aspect of dynamic capabilities, based on the definitions given by Eisenhardt and Martin (2000), is the commonalities/firm-specific duality. Dynamic capabilities present common features across firms and can be understood as best practices (Eisenhardt & Martin, 2000). However, as previously stated in section 3.1, the existence of commonalities does not imply that dynamic capabilities are exactly alike across firms (Eisenhardt & Martin, 2000 : 1109). This duality is recognized by project management practitioners. On the one hand, the PMBOK® identifies a subset of the project management standard generally recognized as good practices. Thus, there is a general agreement that the knowledge described in the PMBOK® can enhance the chances of project success, and also, that this knowledge is applicable to the most projects (Project Management Institute, 2008). However, the PMBOK® itself notifies that the knowledge it describes, although accepted as good practices, should not always be applied uniformly to all projects but it is the responsibility of the organization or the project team to decide what is appropriate for any given project (Project Management Institute, 2008 : 3). Delving into this idea, the Project Management Institute (PMI) has developed extensions of the PMBOK® like the construction extension of the PMBOK® or the government extension to the PMBOK® to *provide more information on specific project types or industry information*.

Teece et al. (1997) framework establishes that the foundation for firms' competitive advantage lies in the organizational processes, shaped by organizational position and paths<sup>10</sup>. Therefore, Teece et al. (1997) recognize that both the firm asset endowment (position) and the strategic decision history (path) affect firm's processes and so firm's dynamic capabilities. In this sense, the PMBOK® offers guidance for dealing with both position and path of the firm since in almost all of its 42 processes, the PMBOK® include two *inputs* called enterprise environmental factors

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<sup>9</sup> The 12 principles seek to show a better way for developing software and they hinge on customer collaboration, responding to change, individuals over tools and working software over comprehensive documentation (Beck et al., 2001).

<sup>10</sup> Position is defined as the firm current specific endowment of technology, intellectual property, complementary assets, customer base and its external relations with suppliers and complementors, and paths refer to the strategic alternatives available for firms (Teece et al., 1997 : 518).



and organizational process assets which refer to firm's heritage and firm's asset endowment respectively.



**Chapter 2.**

**CONCEPTUAL STUDY. “A DYNAMIC  
CAPABILITIES MODEL”**

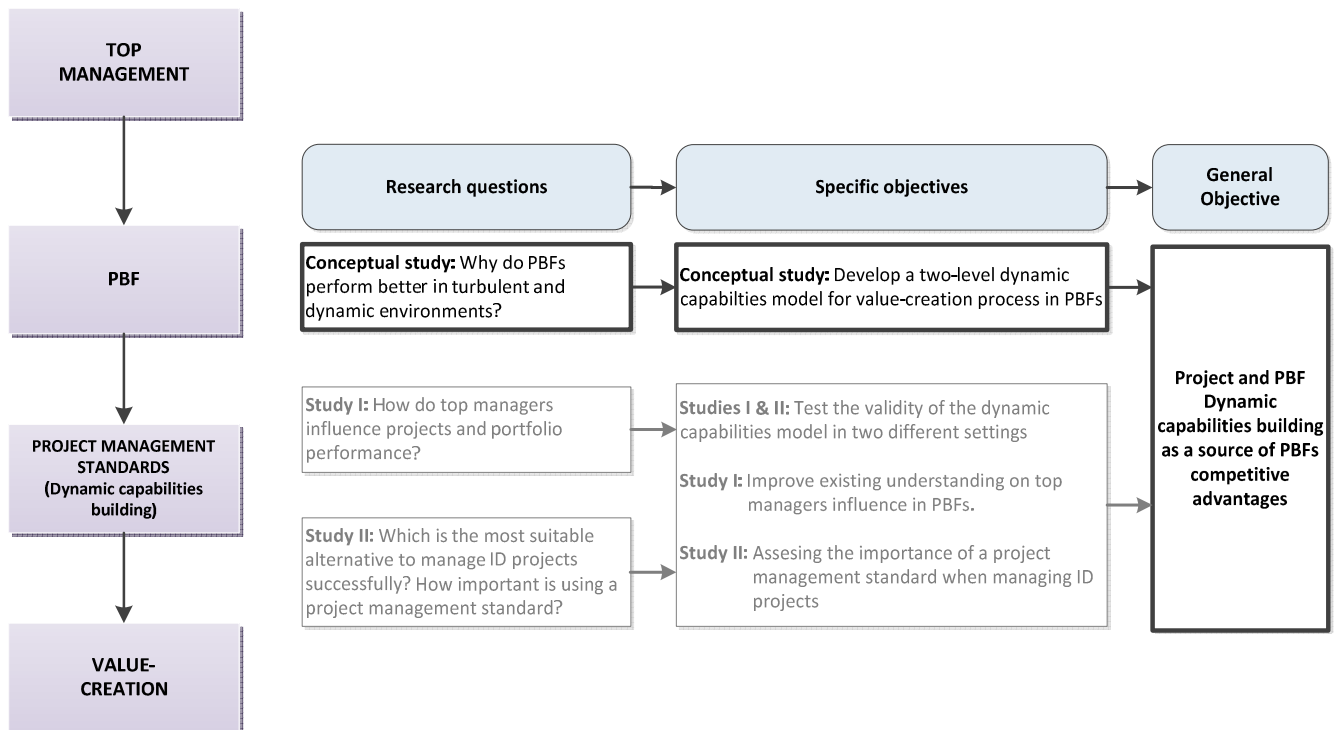


**INTRODUCTION TO CHAPTER 2**

The whole dissertation is built around the idea that by adopting a project-based structure, firms will be capable to better address rapidly changing environments. Specifically, project management literature has appointed as project capabilities as a source of PBFs competitive advantages when competing in turbulent and dynamic environments. However, to the best of our knowledge there is no model explaining neither dynamic capabilities building nor how these dynamic capabilities contribute to PBF value-creation.

Specifically, as depicted in Figure 2.1, our model tries to explain the following relations: Top managers adopting a project management philosophy turn the firm into a PBF. Second, top managers should establish a general project management methodology so every project inside the PBF is managed under the same prescriptions and processes. Third, taking the general methodology as the foundations, both project and top managers should establish project and PBF dynamic capabilities. Finally, the dynamic capabilities established at project and PBF level help to achieve project performance under conditions of uncertainty and also overall firm long-term performance through project implementation.

**Figure 2.1. Specific objectives and position of conceptual study in this dissertation**



Source: Own elaboration

## THE PROJECT-BASED FIRM: A DYNAMIC CAPABILITIES MODEL

### 1. Introduction

In today's turbulent and dynamic environment, firms are shifting towards more-flexible project based structures (Engwall, 2003; Whittington et al., 1999). Projects are being initiated to solve any kind of tasks in almost any type of industry (Engwall, 2003; Irja, 2006). In fact, there are some firms conducting their business mainly by projects – project-based firms (PBFs), also known as project-based organizations, project oriented companies, or p-firms- (Hobday, 2000; Söderlund & Tell, 2009; Whitley, 2006).

Project management scholars claim that due to its special features, i.e. its intrinsically flexible and innovative nature, and its capacity to coping with emerging situations and responding quickly and effectively to changing client needs (Hobday, 2000), PBF constitute an ideal form for competing in industries characterized by increasing product complexity, high rate of change and market and technological uncertainty (Hobday, 2000). Thus, PBFs are recognized as a superior organizational form when competing in those kinds of environments (Huemann et al., 2007; Melkonian & Picq, 2011; Thiry & Deguire, 2007). These explanations of PBF as a superior form assume that it is possible to have no learning across projects due to their uniqueness and lack of commonalities (Cooper et al., 2002).

However, as Engwall (2003) states, “no project is an island” but has to be acknowledged as history dependent and organizationally embedded. Our claim is that even softening the assumption, i.e. assuming that firms can share knowledge across projects; PBFs perform better in dynamic environments. Thus, although previous project management literature has addressed the question of PBF superior performance, it is not completely answered, and there is a need to widen the perspective adopting a more organizational and management framework (Reich et al., 2013; Sydow et al., 2004; Thiry & Deguire, 2007). Specifically, we posit that in order to achieve long-term success, PBFs have to create organizational structures and procedures that allow for knowledge sharing both between projects and between projects and the permanent organization and there is where PBFs have been found to be inherently weak (Boh, 2007; Hobday, 2000; Prencipe & Tell, 2001).

Considering the suitability of a rapprochement to organizational and management theories, a revision of organizational and managerial papers focused on project should be carried out. Recently, management scholars started being interested in shedding light to the problems related to projects. In particular, to the development of new product projects (van Oorschot et

al., 2013), to the extreme governance challenges of civil infrastructure projects (Henisz et al., 2012) or to the question of how a firm's portfolio of outsourced work is managed across suppliers (Moeen et al., 2013). All these papers consider projects as just another activity embedded in the organizational structure that can be studied based on economic and organizational theories, and whose managers (project managers) face the same problems and utilize the same decision-making mechanism as their colleagues – human resource officer, chief financial manager, chief marketing officer, etc. In the recent years, there has been a paradigm shift in project management discipline. The normative project management discipline focused on achieving individual project success by developing and improving tools and techniques (Boynton & Zmud, 1984; De Wit, 1988; Pinto & Slevin, 1988, 1987), shifted to studies that abandon the lonely project perspective and focus on the theoretical foundations and the history of projects; the awareness of the importance of project environment; and the recognition of projects as temporary organizations whose linkages to the permanent-PBF- are a key point in explaining project and organizational success (Artto et al., 2008; Engwall, 2003; Kujala et al. 2010; Morris et al., 2012). Project management scholars claim that there is enough about projects that is organizational so that a cross-fertilization between project and organization and management theory possesses a huge potential for the development of both disciplines (Grundy, 1998; Reich et al., 2013). Specifically, some intents have been made to study projects from a capabilities perspective (e.g. Bienenbach and Müller, 2012; Brady and Davies, 2004, 2000; Melkonian and Picq, 2011; Petit, 2012; Petit and Hobbs, 2010; but the questions of how project capabilities are built and above all, how they influence organizational capabilities and organizational performance are still unanswered.

The aim of this study is to develop a dynamic capabilities-based model of PBFs that shed light on the question of why PBFs perform better in turbulent environments. Drawing on the dynamic capabilities framework, we develop a two level (project and PBF) model that allows us to explain knowledge transfer and capability building within PBFs. We claim that PBFs developing sensing-seizing-transforming processes (Teece, 2009, 2007) both at the project and the overall organizational level are capable of creating project capabilities and what we called a dynamic PBF capability that allow for the achievement of both project and organizational goals and the procurement of long-term competitive advantages.

The rest of the study is structured as follows. Section two provides a literature review of the dynamic capabilities framework and the evolution of PBF concept, with special attention to the

main liabilities this new organizational form is supposed to have. Section three shows our theoretical model for project and organizational capability building. Finally, we discuss the main implications of the theoretical model and present the main conclusion and directions for future research.

## **2. Theoretical background**

This section presents a short review of the main features of dynamic capabilities approach. Second, the origin and evolution of the PBF concept is reviewed. We shed light to PBF by reviewing the evolution of the concept of project over time and its shift from temporal endeavors to projects as temporary organizations embedded in a permanent-PBF (Hobday, 2000; Lundin & Söderholm, 1995; Turner & Müller, 2003) and finish with a definition of PBF based on the fundamentals of the dynamic capabilities approach. Third, we review the main problems for translating project knowledge into organization-wide knowledge (Hobday, 2000; Turner & Keegan, 2001).

### *2.1. Dynamic capabilities approach*

Frequently conceived as an extension of the resource-based view (Barney, 1991; Peteraf, 1993), the dynamic capabilities approach seeks to explain why some organizations perform better than others in turbulent and dynamic environments (Eisenhardt & Martin, 2000; Teece et al., 1997; Zollo & Winter, 2002). First defined as “the firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments”, dynamic capabilities stand as the cornerstone for creating and maintaining competitive advantages (Teece, 2009, 2007; Teece et al., 1997 : 516). Thus, the dynamic capabilities framework arises as a solution of the main critique for the resource-based view, i.e. its inherently static nature (Priem & Butler, 2001). According to Schreyögg and Kliesch-Eberl (2007) and Di Stefano et al. (2010) there are three main articles integrating the intellectual core of the dynamic capabilities framework, that is Teece et al. (1997), Eisenhardt and Martin (2000), and Zollo and Winter (2002). Although differing in some points, these three articles are complementary in many respects. First, there is clear distinction between dynamic and ordinary capabilities. Dynamic capabilities imply change and evolution, and are the potential to do things (Easterby-Smith & Prieto, 2008). Therefore, changes in ordinary capabilities are the outcome of dynamic capabilities (Winter, 2003). Second, since the roots of the concept of dynamic capabilities lie on the notions of organizational routines and processes (Teece et al., 1997), learning is an important aspect of their creation and evolution (Helfat & Peteraf, 2003;



Zollo & Winter, 2002). Finally, although much has been written in the last years about dynamic capabilities, there are still important gaps that have to be filling before considering the framework fully developed (Peteraf et al., 2013).

## *2.2. Towards the project-based firm*

Traditionally, organizations initiated projects in order to face specially challenging operations or for adapting to environmental changes (Irja, 2006). Nowadays, projects are no longer initiated sporadically, but are one of the most significant characteristics in almost every contemporary organization (Engwall, 2003). The notion of projects seems to have evolved parallel to their dispersion through modern society. At the dawn of the project management discipline, projects were seen as temporal endeavors whose performance depends only in the correct application of the appropriate tools and techniques. However, this normative ontology has been surpassed since scholars claim that the vision of projects as endeavors is unable to gather all roles and complexity of contemporary projects (Turner & Müller, 2003). Given the prevalence of projects within organizations, their notion has shifted from tools intended to solve challenging operations to strategic weapons necessary to help organizations to adapt to environmental changes (Grundy, 1998; Thiry & Deguire, 2007). Moreover, some scholars claim that the study of projects in isolation, the so called "lonely project perspective" (Engwall, 2003), has to be at least complemented by research acknowledging projects as history-dependent and organizationally-embedded.

Thus, the problem of achieving individual project goals has been replaced for the problem of achieving organizational goals through projects performance. Within this new framework, developing successful projects has been recognized as necessary but no longer sufficient condition to secure long term organizational performance (Melkonian & Picq, 2011) and the disciplines for managing sets of projects such as project portfolio management and program management<sup>1</sup> are gaining an increasing importance. Within a framework of simultaneous project implementation where projects share and compete for scarce resources getting a structure management of the project landscape is what appears to be the key success factor in

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<sup>1</sup> Project portfolio management is defined as a set of projects executed and managed under the sponsorship and management of a specific organization (Thiry, 2004). Program management consists in the purposeful and integrated direction and coordination of a group of actions, their interface and consequences for strategic effectiveness and/or tactical efficiency (Thiry, 2002).

achieving organizational goals (Voss, 2012). On the one hand, project portfolio management involves decisions of project selection, prioritization and rejection as well as an efficient policy of resource allocation (Thiry, 2004). A successful project portfolio management represents an organization's investment strategy and has the potential to provide benefits beyond individual projects performance (Voss, 2012). On the other hand, program management is conceived as the missing link between projects and organizational strategy (Morris & Jamieson, 2005). Programs imply a collection of projects and actions grouped together for achieving strategic objectives (Thiry, 2004). Thus, program management is mainly a strategic decision management process imbued in a change environment and aimed at getting effective solutions.

The foci in project management research have shifted from project level to organizational level and the research of PBFs has turned to a relevant literature stream in today's project management research. However, although profusely cited, the notion of project-based is not without controversy. In fact, there is no unitary definition of what a PBF is (see Table 2.1). From the definitions contained in Table 2.1 there are at least three different open debates messing up the construction of a unitary definition for PBFs. The first debate revolved around the question of PBF representing a new organizational form with a specific structure or as Thiry and Deguire (2007) claim it is a matter of creating temporary systems for project development independently of the form or structure the permanent organization possesses. The second debate focus on a matter of accuracy. On the one hand, some authors differentiate among organizations that organize almost all their activities in project form-project-based organizations and have no functional links, and organizations that conduct just part of their operations using projects-project-led organizations (Hobday, 2000; Soderlund, 2005). On the other hand, some scholars talk about PBFs without taking into account the number of activities conducted under the project form (Artto et al., 2012; Kujala et al., 2010). Finally, the last debate concentrates on the final client of the project since some scholars claim that a PBF must use projects for their business purposes by delivering projects to external customers (Tikkanen et al., 2007; Turner & Keegan, 2000).

All the debates reflect the need to come with a definition that rather than focusing on a single aspect of the projects developed by the firm, it establishes the organizational sources of PBF competitive advantages as the cornerstone. As many project management scholars claim, the focus of PBF research should be on how to create lasting performance based on multiple short/long term projects (Davies & Brady, 2000; Melkonian & Picq, 2011; Thiry & Deguire,

**Table 2.1 Definitions of a Project-Based Firm**

Reference	Quotation
(Gareis, 1991 : 72)	The 'new' project-oriented company can be defined as a company that carries out small and large projects, internal and external projects, and unique and repetitive projects, simultaneously. It has a specific (project-oriented) structure and culture to manage its single projects and its network of projects, and it applies a variety of project-management methods that are appropriate to different project situations.
(Hobday, 2000 : 874)	The PBO is one in which the project is the primary unit for production organisation, innovation, and competition. Within a PBO the project is the primary business mechanism for coordinating and integrating all the main business functions of the firm. In the PBO, knowledge, capabilities, and resources of the firm are built up through the execution of major projects. Project managers within the PBO typically have very high status and direct control over business functions, personnel, and other resources.
(Turner & Keegan, 2000 : 132)	A project-based organization as a stand-alone entity that makes products for external customers, or a subsidiary of a business unit of a larger firm that makes products for internal or external customers
(Lindkvist, 2004 : 5)	Firms that privilege strongly the project dimension and carry out most of their activities in projects may generally be referred to as project-based firms. PBFs are legally constituted collective actors that control property rights and exercise formal authority over task organization and performance through employment contracts. Some types are able to develop firm-specific capabilities and knowledge through the management of a succession of projects and employment of skilled staff.
(Whitley, 2006 : 79-80)	In contrast, project forms of work organization are particular ways of coordinating tasks and skills that can be established both within individual firms and between them in various interfirm networks and consortia (Powell <i>et al.</i> , 1996, 2002; Jones <i>et al.</i> , 1997). Thus, large firms may organize some of their activities around projects without thereby becoming PBFs, and people from different companies may work together on specific projects without becoming employees of a distinct and separate firm, although in practice it is not always straightforward to draw this distinction sharply, especially where activities are being outsourced and employees are "lent" to sub-contractors
(Thiry & Deguire, 2007 : 649)	Project-based organisations (PBO) refer to a variety of organisational forms that involve the creation of temporary systems for the performance of project tasks.
(Tikkanen, Kujala, & Artto, 2007 : 194)	A project-based firm uses external delivery projects for its business purposes.
(Söderlund & Tell, 2009 : 102)	P-form organizations like Asea/ABB operate projects on a repetitive basis; they develop routines and deep knowledge to handle complex and difficult problems and projects... the characteristics of the P-form organization that we believe are particularly important in the analysis of associated organizational capabilities. We focus on the type of output, user involvement, production technologies and mode of production that have been important in previous analyses of project-based operations. We also include a few classic contingency dimensions common in organization theory as well as knowledge processes and communication types discussed by Hedlund.
(Melkonian & Picq, 2011 : 456)	Broadly defined, the terminology of PBO includes all the organizations that carry out their core operations mainly or even exclusively in project form. In PBOs, projects are the dominant form of activity, value creation and sources of revenues.
(Di Vincenzo & Mascia, 2012 : 6)	In such organizations, projects do not simply occur against a backdrop of relatively established, routine activities. Instead, they constitute the organization, creating a scenario in which knowledge diffusion and emergent working practices are likely to be the result of a complex interplay between structural and environmental project conditions and the role played by each individual who takes part in the project itself.
(Turkulainen, Kujala, Artto, & Levitt, 2013 : 221)	This means that "project-based firms", referring to firms conducting business mainly by projects (Hobday, 2000; Whitley, 2006), face new challenges in designing their organizations.

Source: Own elaboration

2007). Specifically, PBFs have to create permanent structures that allow them to face with the common problems that may appear during different projects implementation (Boh, 2007) and also to link strategy to projects and vice versa (Melkonian & Picq, 2011; Morris & Jamieson, 2005).

Therefore, for the purpose of this study we provide an original definition of what a PBF is based on the capabilities-based view. Specifically, we consider a PBF as an organization where project capabilities shape not just project management process but all internal and external competences<sup>2</sup> of the organization. Thus, we consider that the characteristic feature of PBFs lies in their ability to create and shape organizational capabilities through project processes and learning, independently of their internal organizational structure (matrix, functional or adhocracy), the number of activities developed through projects and the purpose of the projects.

### *2.3. Learning through and within projects*

Considering the definition above of PBFs, the role of project learning and its transfer to the overall organizational level acquires a capital importance. As stressed by Pisano (2000 : 129) without learning it is difficult to imagine from where a firm's unique skills would come. Based on the work of Zollo and Winter (2002), dynamic capabilities are learned patterns of collectively activity that arises from purposeful learning investments. Thus, it is important to review how PBFs learn through and within projects before establishing our theoretical model of capabilities formation.

With few exceptions (Brady & Davies, 2004; Prencipe & Tell, 2001), previous research has emphasized the difficulties PBFs face when attempting to capture the learning built during project execution and when disseminating this knowledge to the overall organization (Hobday, 2000; Turner & Keegan, 2001). Therefore, there is a risk that the knowledge gained is lost when project is finished and the PBF could get caught in the trap of "reinventing the wheel" over and over again (Prusak, 1997). Moreover, the viewpoints of the knowledge gained by projects are ambivalent (Scarbrough et al., 2004).

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<sup>2</sup> The term "competence" is included in the definition of dynamic capabilities given by Teece et al. (1997). Prahalad and Hamel (1990) claim that an organizational competence is larger than the capabilities held by individuals within an organization. The PMI states that organizational competences combine the skills, information, performance measures and the corporate culture that an organization uses to achieve its mission. We integrate both meanings in the definition of PBF.

While some authors highlight the potential for learning through and within projects, they also stress the difficulties for realizing that potential (Scarbrough et al., 2004). There is a substantial disagreement about how to transfer the knowledge generated by an individual project to subsequent projects and also to translate individual project knowledge to the achievement of organizational goals (Thiry & Deguire, 2007).

Project management literature has postulated several possible explanations to learning problems in PBFs. For the purpose of this literature review, we group those explanations into three different groups, (1)the nature of projects, (2)structural characteristics of PBFs, and (3)project managers' behavior. On the one hand, the uniqueness and temporary nature of projects are seen as explanations coping project-based knowledge (Pemsel & Wiewiora, 2013; Prencipe & Tell, 2001). After a project closing, project team is broken up fragmenting project knowledge (Lindner & Wald, 2011). Moreover, in contrast to permanent organizations and due to their uniqueness, projects usually have a short-term orientation which collides with the long-term perspective knowledge management requires (DeFillippi & Arthur, 1998) . Second, PBFs structure is considered to hamper knowledge retention due to the inexistence of departments and divisions able to act as knowledge silos (Lindner & Wald, 2011)<sup>3</sup>. Finally, project managers' behavior has also been considered as possible explanation for PBFs' knowledge problems. Although project managers are passionate about their projects, they have been found to be unwilling to share and seek knowledge from other project managers and to rely only in their own expertise (Pemsel & Wiewiora, 2013). Moreover, project managers are focused on time and product or service deliver rather than on knowledge sharing and learning activities (Pemsel & Wiewiora, 2013).

The dynamic capabilities-based model presented in the next section stress the role played by intra-project, inter-project and project on organization learning for achieving long-term performance. Furthermore, we shed some light on these open debates by presenting the routines and mechanisms that allow PBFs to achieve project learning, building project capabilities, and transfer that learning to the organizational level in the form of new organizational capabilities.

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<sup>3</sup> Scholars suggest that PBFs can overcome the liabilities generated by the absence of knowledge silos by establishing a Project Management Office. They claim that this organizational unit can act as a formal layer of control spanning three organizational levels-upper management, project management office personnel and project team-thus facilitating coordination of knowledge between the PBF and its projects (Pemsel & Wiewiora, 2013).

### 3. A dynamic capabilities model of PBFs

Davies and Brady (2000) claimed that only PBFs capable of learning and developing project capabilities would be able to overcome the dichotomy among individual projects performance and the achievement of overall organizational strategy. Although scholars claimed that there are little commonalities across projects (Cooper et al., 2002), common problems may be encountered across different projects implemented by a single PBF i.e. they have to deal with same suppliers, customers or public institutions, they are developed in the same environment, etc. By sharing knowledge across projects, PBFs may find that experiences and routines of one project can solve the troubles of another, so achieving higher project performance (Boh, 2007). Thus, the development of project capabilities<sup>4</sup> can reduce the costs of reinventing the same solutions over and over again (Boh, 2007; Prusak, 1997). Thus, In order to achieve long-term performance through projects execution, PBFs have to combine both a performance and a learning perspective in the management of projects (Thiry, 2004).

Drawing on the dynamic capabilities approach we develop a model to explain how dynamic capabilities are built consisting in two interacting levels of learning and capability building. First, we introduce the project-level routines whose purpose is to increase project performance under conditions of uncertainty and unexpected changes. Second, we introduce the PBF-level routines that allow the PBF to consolidate project learning and achieve long-term success through the building and reconfiguration of organization-wide capabilities. Unlike earlier managerial approaches (e.g. Porter's competitive forces framework, or the resource-based view) which are static in nature, the dynamic capabilities approach suggests that organizations obtain superior performance not just because of their assets endowment but through their ability for reconfiguring their competences to address rapidly changing environments –dynamic capabilities (Teece, 2009, 2007; Teece et al., 1997). Based on Teece's (2009, 2007) framework, we present a model in which the dynamic capabilities are disaggregated into three different routines, i.e. one to sense opportunities and threats, other to seize opportunities, and the last one, to maintain competitiveness by reconfiguring organizational capabilities; to both the project and the organizational level<sup>5</sup>.

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<sup>4</sup> Davies and Brady (2000) define project capabilities as the internal ability of a PBF to create lasting performance based on multiple short-term projects.

<sup>5</sup> Organizational learning is recognized to be a multilevel phenomenon (Holmqvist, 2004).

### *3.1. Sensing-seizing-transforming at the project level*

At the project-level, the project sensing-seizing-transforming process leads to achieve project performance under conditions of uncertainty and changes in client needs (see Figure 2.2). Sensing opportunities and threats is a scanning, creating, learning and interpretive activity (Teece, 2007). Project sensing encompasses activities related to identify potential changes in project scope, to assess stakeholders' behavior and changes in the project environment as well as the influence of these two variables over project content and project management decision-making process (Aaltonen & Kujala, 2010; Petit & Hobbs, 2010). Moreover, the new wave of risk management is based on the assumption that although planning activities are necessary, there are constraints and unclear tasks that cannot be recognized at an early stage (Perminova et al., 2008). Thus, project managers need to continuously sense project environment in the search for uncertainties that could affect the project, both negatively and positively, and may imply changes in project scope and plans (Pollack, 2007). Thus, project plans need to be flexible enough to allow for revisions and the incorporation of new ideas, and changes in direction that improve their accuracy and suitability with the project dynamic environment (Petit & Hobbs, 2010; Pollack, 2007). As Pollack (2007 : 6) claimed, a shaping approach, instead of a planning one may be more appropriate for complex environments. On the other hand, the role and influence of stakeholders, especially clients, over project success is being increasingly acknowledged<sup>6</sup>. The scanning for changes in the environment must be extended to the study of stakeholders' behavior, their capacity to redefine project parameters, and their changing influence over project performance<sup>7</sup> (Petit & Hobbs, 2010).

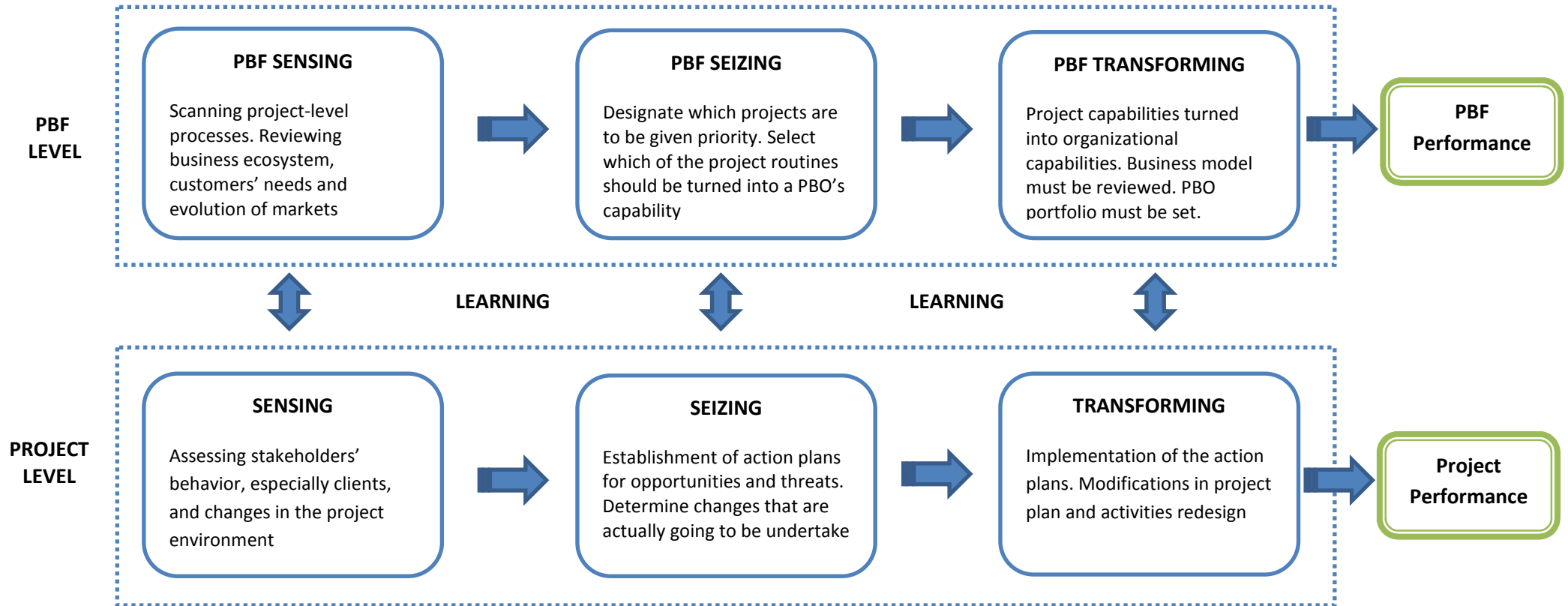
Seizing are the structures, procedures, designs, and incentives for identifying changes required once an opportunity or threat is sensed (Teece, 2009). Seizing implies establishing action plans for all the opportunities and threats previously sensed in each project. Project managers should determine how the opportunities and threats previously sensed would affect project content, and then, decision-making protocols and governance rules must be established to determine the changes that are actually going to be undertake (e.g. if several changes in customers' needs have been sensed, project managers should establish decision-making

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<sup>6</sup> The fifth edition of the Project management body of knowledge (PMBOK®) incorporates a whole chapter dedicated to stakeholders' management.

<sup>7</sup> The capacity of stakeholders to take action and influence project success varies along with project life cycle (Aaltonen & Kujala, 2010).

Figure 2.2. Two-level model of dynamic capabilities inside a PBF



Source: Adapted from Petit (2012)



protocols determining which of those customers' needs are aligned with organization's business model and thus, have to be addressed).

The last routine (transforming) relates to managing threats and reconfiguration (Teece, 2009, 2007). When competing in dynamic environments, organizations have to recombine their resources and reconfigure their existing capabilities, and even build new ones i.e. organizations need to change their routines to address environmental shifts (Teece, 2007). Reconfiguring involves actions taken to ensure that projects and project management processes apply the needed changes identified by sensing and addressed by seizing (Petit, 2012). Therefore, an important function project managers must perform is achieving semi-continuous projects' asset orchestration and project management processes renewal (Teece, 2007). Reconfiguration routine ends the process of dynamic capabilities functioning and implies the execution of the action plans previously designed-seizing- for facing environmental shifts previously detected-sensing. Moreover, reconfiguration could also entail modifications in project plan and activities redesign as project proceeds and later details become clearer<sup>8</sup>.

### *3.2. Sensing-seizing-transforming at the PBF level*

After a project is closed, there is a risk that the knowledge gained is lost due to project team dissolution (Brady & Davies, 2004). Unless lessons learned are well documented and communicated to subsequent projects, there is also the risk of facing the same problems and making the same mistakes, forcing the PBF to reinvent the wheel (Brady & Davies, 2004; Prusak, 1997). We extend our sensing-seizing-transforming model at the project level to the PBF-level and show how the PBF is able to use the learning gained through project life cycle to develop and reconfigure organizational capabilities (see Figure 2.2).

Transferring knowledge from one unit to another has been found to contribute to organizational performance (Argote & Ingram, 2000; Galbraith, 1990). The PBF-level model explains how to consolidate project learning and spreading it throughout the business unit and the entire firm (Brady & Davies, 2004). PBF-level sensing-seizing-transforming includes the routines for capturing project learning, and institutionalizing new organizational routines and capabilities based on those project experiences, so that the project knowledge becomes embedded in the PBF's memory (Brady & Davies, 2004; Keegan & Turner, 2001). Therefore, the objective of PBF-level sensing-seizing-transforming is to reconfigure and extend PBF's

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<sup>8</sup> The PMBOK® assumes the reconfiguration capacity by establishing the rolling wave of planning and progressive elaboration as two principles when developing project planning.

capabilities so the firm can fully exploit its project capabilities and achieve a long-term performance through multiple short-term projects.

PBF sensing must scan the performance of project-level processes in an attempt to discover experiences gained during project life cycle that can be employed in subsequent projects. Also, PBF environment must be sensed for assessing if actual project and PBF capabilities are suitable to fulfill future customers' needs. Moreover, the search activities relevant to PBF sensing should include information about what's happening in the PBF's business ecosystem, the acknowledgement of customers need and the evolution of industries and markets (Teece, 2009, 2007). Top managers should be aware that already developed projects can strengthen existing relationships and may offer future and long-term opportunities such as the creation of new markets or the development of improved technologies (Voss, 2012).

Once the potential of already developed projects is sensed, top managers decide the options that must execute in addition to how and then should be deployed (Petit, 2012). PBF seizing mechanisms designate which of the potential sensed projects are to be given priority, and which ones are to be discarded; which of the potential sensed markets are to be opened, and which of the potential clients are to be satisfied. Moreover, PBF seizing mechanisms must select which of the routines deployed in already developed and developing projects might be useful to subsequent projects and should be transferred to the organizational level and turned into a PBF capability. Finally, PBF seizing relates to human resources policy. As Wright and Snell (1998) claim, human resources constitute a key part of firm capabilities. Therefore, top managers must be able to assess on which project every person is working at and must constantly adapt firm processes for selecting and preparing individuals and groups so they will be able to undertake additional projects in the future (Melkonian & Picq, 2011; Petit, 2012).

PBF transforming is related to top management decisions implementation. The project capabilities identified as highly efficient are dispersed through the entire organization and turned into organizational capabilities likely to be used in future projects. Moreover, already established capabilities could also be reconfigured so PBF avoids to fall into the "success trap" (Levinthal & March, 1993) by favoring short-term, low-risk "exploitation" projects at the expense of the more long-term, radical "exploration" projects which are essential for PBF long-term performance (Killen & Hunt, 2010). Business model and product offerings are also discussed. Specifically, their fit with the new customers and markets already sensed has to be assessed. Finally, top managers must ensure that PBF projects are aligned with the overall

strategy. Thus, future PBF's portfolio must be set by implementing the decisions of reconfiguration by project inclusion and rejection.

#### **4. Discussion**

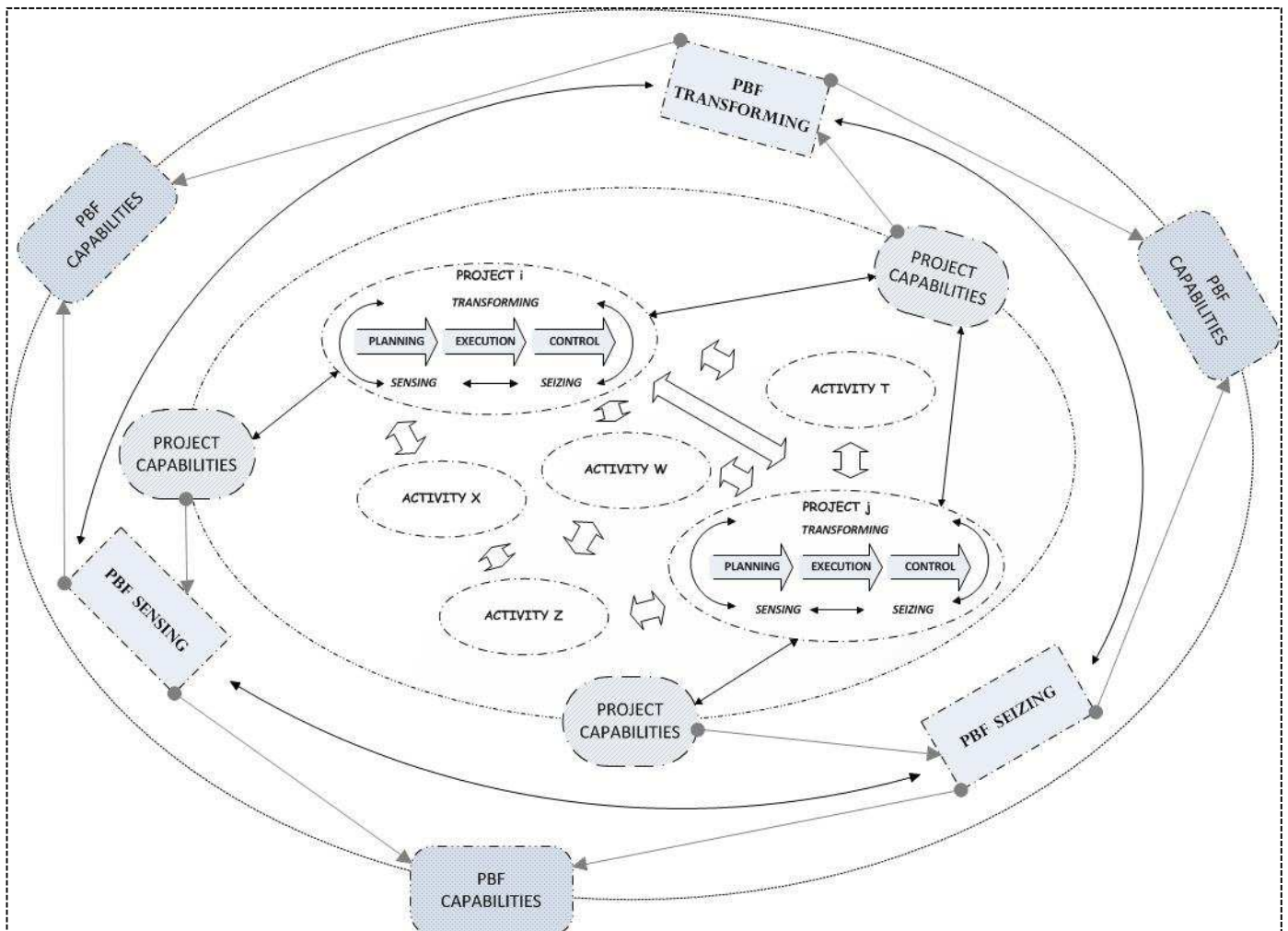
This study argues for the necessity to understand the foundations of PBF competitive advantage in turbulent and dynamic environments. Moreover, we work on the development of a common language for the fields of project and general management that has been appointed as a important but yet unexplored mean for the advancement of the two disciplines (Thiry & Deguire, 2007). As illustrated, although projects are nowadays understood as almost independent temporary organizations, they exist within the boundaries of a permanent organization. Thus, the linkages between the permanent-PBF- and temporal-projects-organizations appear as the key-point in explaining PBFs performance. Drawing on the dynamic capabilities approach we present a two-level model that explains how PBFs achieve superior project performance in turbulent environments and how projects contribute to the achievement of long-term firm performance.

At the project level, our model presents several implications for project managers when managing projects in dynamic environments that can be grouped into three main areas. On the one hand, our model stresses the influence of project environment over project performance. Project managers need to continuously scan project environment in a search for uncertainties that could affect the project, both negatively and positively. Secondly, the model reinforces customer orientation as one of the most significant trends in today's project management research (Perminova et al., 2008). The management of project stakeholders, especially clients, is seen as an essential element of project performance (Aaltonen & Kujala, 2010). Moreover, recent studies have shown that the capacity of stakeholders for influencing project content varies along with project execution and there is a need for a dynamic stakeholders' management (Aaltonen & Kujala, 2010; Perminova et al., 2008; Pollack, 2007). Our model suggests project managers to continually acknowledge stakeholders behavior guiding them to decide when and how stakeholders' claim should be satisfied. Finally, our model aligns with the claim that project management is too rigid and it provides project managers with processes aimed to develop what it is called a shaping approach (Pollack, 2007 : 271), instead of a planning one.

From an organizational perspective, we provide a theoretical explanation for the linkages existing between projects and PBF and the way these linkages work. Drawing on the dynamic

capabilities approach we provide a new definition of PBFs and present how PBFs transfer project knowledge to the overall organization (see Figure 2.3). Our PBF sensing-seizing-transforming model provides the PBF with some mechanisms allowing for capability building and reconfiguration. At the project-level the PBF develops a project that requires the application of a novel process or routine. Then, top managers revise project’s lessons learned and learning project-to-organization occurs by turning the novel project routine into a capability for the whole PBF. We claim that PBFs performing the sensing-seizing-transforming model are able to adapt to environmental changes by transforming processes already developed at the project level into new organizational routines, thus PBFs develop a dynamic capability-*PBF Dynamic Capability*.

**Figure 2.3. PBF structure through the double sensing-seizing-transforming model**



Source: Own elaboration

Moreover, the sensing-seizing-transforming model can be related to exploring and exploiting capacities, and to organizational ambidexterity (Teece, 2007 : 1343). March (1991 : 71) defines

exploration as those activities including research, variation, experimentation, flexibility or innovation which essence is on experimentation of new alternatives. While, exploitation includes things like improvement, choice, production, efficiency or execution which essence is the improvement of competencies, technologies and existing paradigms (March, 1991 : 71). In our model, exploration occurs within the project level since environmental changes and shifts in stakeholders' necessities may demand the execution of novel project routines. Then, in the PBF level, these novel routines are sensed and evaluated, and if considered beneficial to the whole organization are turned into organization-wide capabilities making them available for subsequent projects. Moreover, as these two routines occur at the same time, they provide the PBF with the capacity for ambidexterity (Rivkin & Siggelkow, 2003). Specifically, our model provides a set of processes and mechanisms that encourage project and top managers to split their time into exploring and exploiting activities so providing PBF with contextual ambidexterity<sup>9</sup> (Gibson & Birkinshaw, 2004).

This research also has important managerial implications related to the top management of a PBF. While top managers develop projects for facing specially challenge operations or as a mean to implement the overall organizational strategy (Mutka & Aaltonen, 2013), they should be careful of the potential of projects as precursors of new organizational capabilities and even as the source of autonomous business models with a bottom-up effect (Artto et al., 2008; Mutka & Aaltonen, 2013).

## **5. Directions for future research**

This study suggests wide-ranging opportunities for future research. At first, the two-level model must be empirically tested. Either a case study or a quantitate study must be performed to prove that PBFs developing both project and PBF-level sensing-seizing-transforming are able to adapt to environmental changes and so increasing project and firm long-term success. Moreover, once recognized that PBFs possess dynamic capabilities the next step is to look empirically at the benefits dynamic capabilities provide and its role as source of competitive advantages. One possible stream of research could focus on the measurement of the value created by the two-level model application. On the other hand, project management literature stresses the difficulties PBFs face when attempting to capture the project knowledge and when disseminating this knowledge to the overall organization (Hobday, 2000; Turner &

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<sup>9</sup> Contextual ambidexterity places the emphasis on the organizational capacity to quickly reconfigure activities within the organization (Gibson & Birkinshaw, 2004).

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Keegan, 2001). Our model could be used to assess if PBFs performing the two-level sensing-seizing-transforming model are better in learning through and within projects. Finally, project management literature has established the lack of functional departments as a possible reason of PBFs' difficulties for learning (Lindner & Wald, 2011). Project Management Offices has been defined as knowledge brokers capable to act as knowledge silos and thus facilitating PBFs learning (Pemsel & Wiewiora, 2013). Our model could be used to assess if project management offices are involved in the two-level sensing-seizing-transforming, and if PBFs that possess a project management office are more capable to develop organizational capabilities from project routines and processes.

All this move us to claim that there is a need to widen the perspective when studying PBFs by developing a project management discipline that reflects the paradigms and rhetoric of strategic long-term management. In fact, most of the elements of the strategic management have strong links to project management processes (Morris & Jamieson, 2005).

## **6. Conclusions**

Drawing on the dynamic capabilities approach this study has provided a two-level model for capability building and reconfiguration within a PBF. By acknowledging projects as temporal organizations embedded within the boundaries of a permanent PBF the study has illustrated the processes for turning a project processes into an organizational capability. PBFs are able to develop a dynamic capability that provides them with the ability to address environmental changes by reconfiguring and building new capabilities from project-led knowledge. Project and PBF capabilities must evolve and adapt through learning processes in order to remain relevant in turbulent and dynamic environments. PBFs top managers must bear in mind that projects are not only servants to organizational strategy but also a source of new business models with a bottom-up effect.

**Chapter 3.**

**STUDY I. "TOP MANAGEMENT INVOLVEMENT IN  
PROJECT-BASED FIRMS**



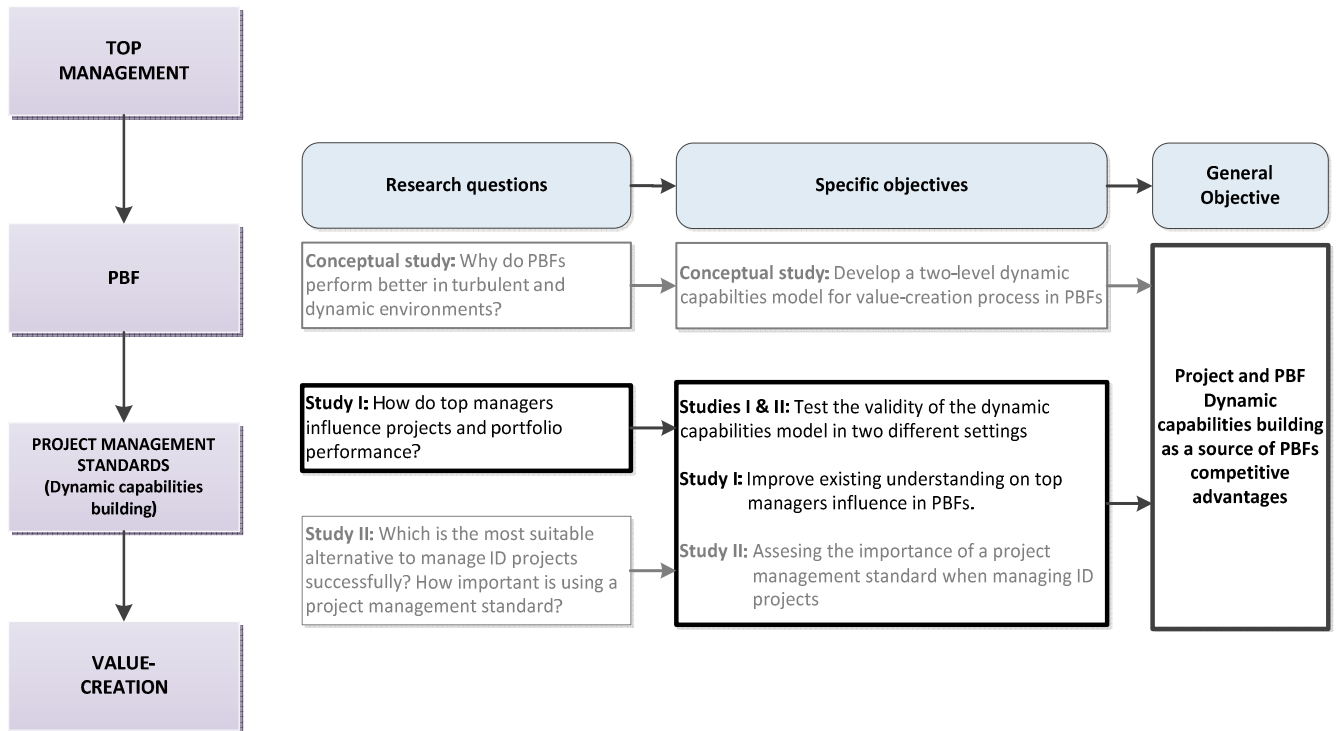


**INTRODUCTION TO CHAPTER 3**

In order to test the validity of the model built in the conceptual study, two empirical studies have been developed within very different settings. Specifically, the empirical study presented in this chapter (study I) focus on the application of the two-level dynamic capabilities model to an international sample of PBFs from a wide range of industries.

Although existing literature has focused on the influence of top managers on firm and project performance, the question of the essence of that influence is still unresolved (Boonstra, 2013). Therefore, as depicted in Figure 3.1, the specific objective of Study I is to improve existing understanding of the way top managers enhance project and portfolio performance, and how these two performances help to achieve overall PBF long-term goals.

**Figure 3.1. Specific objectives and position of Study I in this dissertation**



Source: Own elaboration

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## **TOP MANAGEMENT INVOLVEMENT AND PROJECT PERFORMANCE: A DYNAMIC CAPABILITIES APPROACH**

### **1. Introduction**

Firms are increasingly using projects and portfolios to achieve their business objectives (Artto & Dietrich, 2004; Engwall, 2003; Söderlund & Tell, 2009). Moreover, the PBF, frequently defined as a firm where projects are the primary unit for production, innovation and competition (Hobday, 2000 : 874), has been claimed to be flexible and intrinsically innovative, and so it is viewed as an organizational form ideally suited for compete in turbulent and dynamic environments ( Söderlund & Tell, 2009; Turner & Keegan, 1999). However, there is still limited research evidence for PBFs' superior performance and the reasons for that superiority remain hidden in the shadows (Reich et al., 2013).

Although different than classical organizational forms such as the functional, matrix or multidivisional, PBFs' performance is also strongly influenced by their top management teams. The effect of top managers on firm performance is central to the study of strategic management (Hambrick & Mason, 1984). Prior research has found that top managers enhance firm performance by accelerating decision-making, improving strategy development and fostering capabilities building (Breeneet al., 2007; Finkelstein et al., 2009; Menz & Scheef, 2013). Research in strategic management has addressed top managers' role from two key perspectives. The first perspective, the agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976) , has focused on the costs associated to a separation between firm property and control and it claims that in order to enhance firm performance, both manager's and firm's objectives should be aligned (i.e. managerial pay has to be linked to firm performance). The second perspective, the upper echelons theory (Hambrick & Mason, 1984; Hambrick, 2007), has posited that firms are a reflection of their key decision makers, i.e. top managers, and so it has focused on how different characteristics of the top management team such as its size or the different personal traits of its members influence the performance of the firm.

Although these perspectives have enriched our understanding of top managers' influence on firm performance, they have yet to fully examine important aspects of this relationship. On the one hand, the direct relationship between managerial pay and firm performance that agency theory posits has been empirically found inconsistent, so some scholars are suggesting that this relationship may be influenced by issues such as governance factors and environmental contingencies (Barkema & Gomez-Mejia, 1998). On the other hand, although upper echelons

has studied the influence of top managers on firm performance, the essence of that influence, that is, the generative mechanism of that influence is still unknown (Boonstra, 2013).

Regarding PBFs, theoretical research has focused on the influence of top management involvement on project performance (Atkinson, 1999; Baccarini, 1999; Pinto & Slevin, 1987) and portfolio achievement (Cooper et al., 2000; Meskendahl, 2010), which directly affects the performance of PBFs. Meanwhile, empirical research has been restricted to studies providing lists of good practices for top managers or case studies analyzing the influence of some specific top managers' actions, that at best, constitute lip-service advice or just exhortation, but remain far from the root-cause of top managers' influence on project and portfolio performance (Emery, 1990; Jarvenpaa & Ives, 1991; Young & Poon, 2013). Therefore, despite of the fact that top management involvement is considered a necessary and sometimes sufficient condition for project performance and portfolio achievement (Young & Poon, 2013) some empirical research shows that top managers are usually reluctant to play an active role during project life-cycle since they consider projects as operational concerns rather than strategic tools (Crawford, 2005; Young & Poon, 2013). Moreover, during the last thirty years, scholars in project management has been misdirecting their efforts by stressing the importance of technical factors such as budget, schedule or quality management as the main success factors in projects and relegating to a second place managerial factors such as top management involvement or decision-making processes (Morris et al., 2012; Thomsett, 1989). Thus, further research is needed so project managers and researchers assume that their expert advice has less impact on project success than previously believed and top managers realize that their implication is mandatory (Young & Poon, 2013)

This study address an under-research question that has recently attracted attention in the management and project management literature e.g. (Ragu-Nathan et al., 2004; Young & Poon, 2013): how do top managers influence projects and portfolio performance? Specifically, we aim to provide a deeper understanding of the way top managers enhance project and portfolio performance whatever the project type and sector in which the firm operates. Thus, instead of searching for the specific practices top managers undertake, we focus both on the capacity of top managers for building capabilities both at the project and portfolio level, and on the role these capabilities play in enhancing both project and portfolio performance.

Our approach is consistent with recent calls in strategic and project management literatures that emphasizes the role of capabilities and dynamic capabilities as sources of competitive advantages (Teece, 2009, 2007) and that asks for a business focus in projects rather than a technical one (Engwall, 2003; Thomsett, 1989). As an extension of the resource-based view (Barney, 1991; Peteraf, 1993) the capabilities approach states that firm's competitive advantage does not lie in the specific resources it has, but in the way these resources are deployed and combine<sup>1</sup> (Amit & Schoemaker, 1993; Helfat & Peteraf, 2003). Moreover, the dynamic capabilities approach extends the capabilities framework by defining a special type of capabilities-dynamic capabilities- that allow firms to address environmental changes by reconfiguring their actual capabilities endowment (Teece, 2009, 2007; Teece et al., 1997). Both capabilities and dynamic capabilities literature emphasizes that a prevalent role of top managers as builders of both capabilities and dynamic capabilities (Lambe et al., 2002; Teece, 2007; Zahra et al., 2006). Moreover, recent project management literature have placed capabilities building as the mechanism for creating lasting firm performance based on multiple projects and portfolios (Davies & Brady, 2000). Hence, it is pertinent to study project and portfolio dynamic capabilities as the generative mechanism of top managers' influence on projects, portfolios and firm performance.

We commence by presenting a literature review on top management involvement and the role of project and portfolio dynamic capabilities in PBFs. Then, we introduce our theoretical model and our set of hypothesis. Third, we apply partial least squares (PLS) structural equation modelling (SEM) for testing our model on a sample of 62 PBFs. Finally, we discuss the main results of model testing and some conclusions are presented.

## **2. Theoretical background**

### *2.1. Top management involvement*

Top managers are identified as firm's top tie members, and they are viewed as the driving force behind firm's performance (Hambrick & Mason, 1984). The influence of top managers and their involvement on firm performance remains as one of the most widely studied issues in strategic management (Breene et al., 2007; Certo et al., 2006; Hambrick, 2007; Menz & Scheef, 2013). As presented in the introduction, two different perspectives have studied the influence of top managers on firm performance. On the one hand, agency theory focuses on

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<sup>1</sup> Capabilities are defined as the firm's capacity to deploy resources, usually in combination, to effect a desirable end (Amit & Schoemaker, 1993).

the so called agency dilemma which concerns the difficulties to accomplish that the agent (top managers) act in the best interest of the principal (shareholders) instead of seeking their own interests (Jensen & Meckling, 1976). Thus, agency theory states that top managers are self-serving and that mechanisms such as monitoring or reward structures must be developed for aligning top managers' objectives' to shareholders' objectives (Fama & Jensen, 1983; Jensen & Meckling, 1976). One of the most researched topics inside agency theory is the top management compensation, and specially, the relationship between top managers compensation and firm performance (Barkema & Gomez-Mejia, 1998). Despite of the numerous studies, empirical research has found weak statistically significant relationships between compensation and performance and researchers are nowadays exploring the role played by context and contingency factors such as the R&D level, national culture or the market growth (Barkema & Gomez-Mejia, 1998; Carpenter & Sanders, 2002). On the other hand, upper echelons theory stresses the predominant role of top managers as firm key decision-makers (Hambrick & Mason, 1984). The theory suggests that personal traits of top managers such as age, education, experience or race influence firm performance (Hambrick, 2007). While empirical articles have supported this perspective, recent research has found managers' personal traits as almost irrelevant so suggesting an equivocal nature of the findings (Elenkov, et al., 2005). A possible explanation for the mixed findings might be instead of top managers' personal traits that the processes they developed or even their emotions are the true cause of top managers influence on firm performance (Delgado-García et al., 2010; Elenkov et al., 2005; Harmancioglu et al., 2010).

Regarding project management literature, top management involvement has been defined as devoting time to the [project] in proportion to its cost and potential, reviewing plans, following up on results and facilitating the management problems involved with integrating [project management] with the management process of the business (Young & Jordan, 2008 : 715). As shown in Table 3.1, top management involvement is a classical element of project's critical success factors and has been recently studied for different types of projects such as information systems projects (Boonstra, 2013; Ragu-Nathan et al., 2004; Sharma & Yetton, 2003; Staehr, 2010); alliances projects (Day, 1995; Sivadas & Dwyer, 2000; Wittmann et al., 2009); new product development projects (Rodríguez, et al., 2008; Rogers, et al., 2005; Swink, 2000); international development projects (Hermano et al., 2013; Vickland & Nieuwenhuijs, 2005); and internationalization projects (Hutzschenreuter & Horstkotte, 2013).

However, despite of the efforts to identify top management involvement as a key factor in achieving project success, the essence of the concept is still unclear (Boonstra, 2013). To the best of our knowledge, a conceptual model linking top management involvement and project and portfolio success is missing (Ragu-Nathan et al., 2004). Moreover, stronger empirical evidence is also needed for shedding light into the nature of the role top management involvement plays for achieving project success, so useful implications for researcher and project and top managers could be drawn (Ragu-Nathan et al., 2004; Young & Poon, 2013).

**Table 3.1 Top management involvement as a critical success factor for different types of projects**

Type of project	References
All types of projects	(Atkinson, 1999; Baccarini, 1999; Kerzner, 1995; Pinto & Slevin, 1987; Young & Poon, 2013)
Information Systems Projects	(Boonstra, 2013; Ragu-Nathan et al., 2004; Sharma & Yetton, 2003; Staehr, 2010)
Alliances	(Day, 1995; Sivadas & Dwyer, 2000; Wittmann et al., 2009)
Internationalization	(Hutzschenreuter & Horstkotte, 2013)
New Product Development	(Rodríguez et al., 2008; Rogers et al., 2005; Swink, 2000)
International Development Projects	(Hermano et al., 2013; Vickland & Nieuwenhuijs, 2005)

Source: Own elaboration

### *2.2 Building dynamic capabilities in project-based firms*

In today's dynamic environment, firms from all types of industries are developing projects as a growing part of their daily operations (Hobday, 2000; Thiry & Deguire, 2007). Even more, there are some firms, known as PBFs, conducting the majority of their operations in project mode (DeFillippi & Arthur, 1998). As an emerging organizational form, these PBFs are receiving increasing attention, and are believed to obtain superior performance than traditional functional or matrix organizations when competing in turbulent and dynamic environments (Blindenbach-Driessen & van den Ende, 2006; Melkonian & Picq, 2011; Thiry & Deguire, 2007). Moreover, the concept of project has shifted from a technical perspective that considered projects as temporal endeavors to a managerial perspective where projects are seeing as strategic tools that allow top managers to achieve organizational goals (Artto & Dietrich, 2004; Artto et al., 2012).

Within this managerial perspective, project management scholars have abandoned the search for individual project success in favor of achieving PBF performance through multiple projects and portfolios development. However, the achievement of organizational goals based on projects and portfolios performance is not without problems but requires coping with a limitation inherent to PBFs, i.e. the dichotomy or dilemma of PBFs. Scholars have identified that PBFs suffer for an internal tension between the temporary nature of projects and the long-term perspective of the permanent PBF (Melkonian & Picq, 2011; Sydow, et al., 2004). Grabher (2004) defines the "doing versus learning dilemma" as the tension between projects result-driven/short term orientation and organization vision-driven/long-term orientation. In order to overcome that dilemma, PBFs must foster inter-project learning and must develop dynamic capabilities both at the project and portfolio level (Davies & Brady, 2000). By fostering inter-project learning PBFs may find that accumulated experience in one project can solve the problems of another one, so increasing its performance (Boh, 2007). By developing dynamic capabilities both at the project and portfolio level PBFs are capable of reconfiguring project scope and plan so addressing changes in client needs and project environment, and also be able to consolidate project learning and using it to extend their capabilities endowment. Thus, by developing project and portfolio dynamic capabilities PBFs shall achieve long-term performance through multiple projects development under conditions of uncertainty and change (Biedenbach & Müller, 2012; Davies & Brady, 2000; Killen et al., 2008; Petit, 2012).

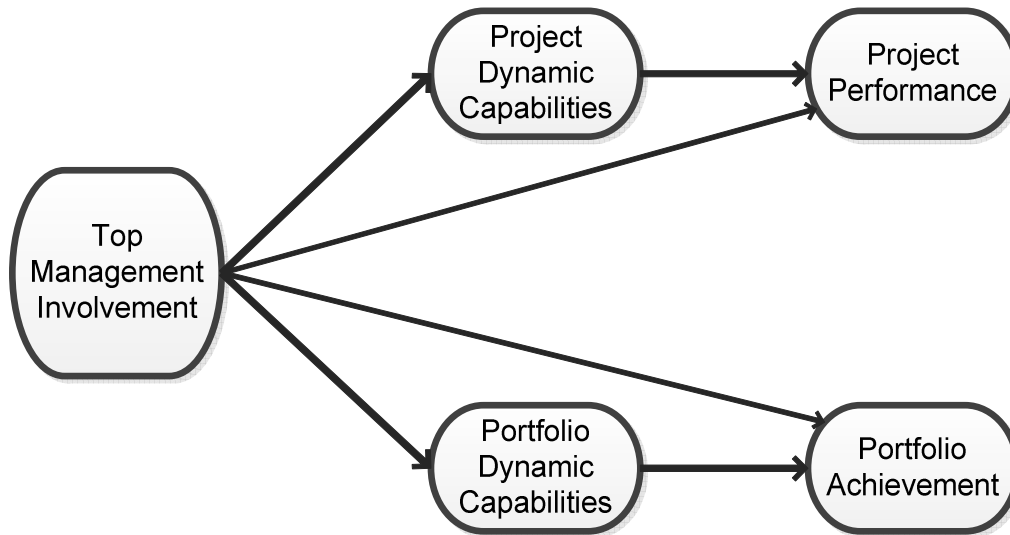
### **3. Model and hypothesis development**

#### *3.1. Model overview*

The *capabilities model for top management involvement* (Figure 3.2) directly links top management involvement to both project performance and portfolio achievement. Hence, we first stick with research in projects and portfolio critical success factors studying the direct effect of top managers' involvement over success. Moreover, the model also indirectly links top management involvement to both project performance and portfolio achievement through the development of dynamic capabilities at project and portfolio level. We suggest that the relationship between top management involvement and project performance and portfolio achievement is mediated by the development of project and portfolio dynamic capabilities respectively. Therefore, project and portfolio dynamic capabilities represent the

generative mechanism through which top management involvement influence both project performance and portfolio achievement (Baron & Kenny, 1986).

**Figure 3.2. A dynamic capabilities model for top management involvement**



Source: Own elaboration

### 3.2. Top management involvement and project performance

Top management involvement appears as the most cited projects critical success factor (Fortune & White, 2006). Moreover, it has been noted that top management involvement is a necessary and sometimes a sufficient condition to ensure project performance (Young & Jordan, 2008; Young & Poon, 2013). Generally, top managers play an important role during early stages of project life-cycle since they participate in both the project definition and in the composition of project team (Boonstra, 2013). Moreover, top managers have the capacity to provide the project with the appropriate funds and resource endowment to ensure project completion (Boonstra, 2013; Swink, 2000). As the head of the organizations, top managers are the only ones who can make difficult decisions, such as those that affect important stakeholders, and resolve problems when crisis and conflicts among the project team and between organizational departments arise (Rodríguez et al., 2008; Young & Jordan, 2008; Young & Poon, 2013).

Finally, scholars have highlighted the influence of institutional context on project performance and the role top managers play in shaping that context to promote project success (Staehr, 2010). Specifically, top managers can turned into project champions that sell the project to the whole organization by unequivocally supporting the project team. When organizational



members perceive top management involvement they become more enthusiastic about the project and more willing to accept required changes and to work in a coordinated manner among themselves (Boonstra, 2013; Rodríguez et al., 2008). Top management involvement encourages project team to overcome problems and fosters a work environment of cross-functional cooperation and communication (Rodríguez et al., 2008). Top management involvement is a force that pulls different departments to work together, making them more willing to resolve conflicts and take the necessary risks (Swink, 2000). Thus, top managers have the capacity to shape the institutional context and provide project team with an environment that promotes projects success (Dong, 2008; Ragu-Nathan et al., 2004; Rodríguez et al., 2008; Sharma & Yetton, 2003; Young & Poon, 2013). Table 3.2 resumes the reasons that turn top management involvement into a project critical success factor. It is therefore hypothesized that:

*H1. The higher the level of top management involvement, the higher the level of project performance.*

**Table 3.2 Fundamentals for top management involvement as a critical success factor**

Top management role	References
Resource provider	(Boonstra, 2013; Dong, Neufeld, & Higgins, 2009; Swink, 2000)
Definition of project and composition of team	(Boonstra, 2013)
Important decision making	(Young & Jordan, 2008; Young & Poon, 2013)
Deal with conflict and crisis	(Pinto & Slevin, 1987; Rodríguez et al., 2008; Swink, 2000; Young & Poon, 2013)
Shape institutional context (create a supportive context for project success, maintain the motivation to change, top managers as project champions)	(Bajwa, et al., 1998; Beath, 1991; Boonstra, 2013; Dong, 2008; Leonard-Barton & Deschamps, 1988; Rodríguez et al., 2008; Sharma & Yetton, 2003; Swink, 2000; Young & Poon, 2013)
Improve communication	(Leonard-Barton & Deschamps, 1988; Rodríguez et al., 2008; Swink, 2000)
Goal alignment	(Ragu-Nathan et al., 2004; Swink, 2000; Young & Jordan, 2008)

Source: Own elaboration

### *3.3. Top management involvement and portfolio achievement*

Project portfolios, defined as collections of projects managed under the same organization that compete for scarce resources (Archer & Ghasemzadeh, 1999), are increasingly being implemented in companies. Moreover, project portfolios represent the organizational investment strategy and so they are an important building block for achieving organizational goals (Meskendahl, 2010; Unger et al., 2012). Therefore, project portfolio management, defined as the simultaneous management of the whole collection of projects as one large entity, is gaining more importance both in theory and practice and is getting attention by top managers (Artto & Dietrich, 2004; Dietrich & Lehtonen, 2005).

Given the importance of project portfolios in strategy implementation, their management has become a key organizational competence and it requires a structured approach led by company's top managers (Beringer et al., 2013; Dietrich & Lehtonen, 2005). Thus, top management involvement can be considered as a portfolio's critical success factor. In order to clarify the importance of top managers in portfolio achievement we break down portfolio management into three different activities, showing the role top managers play in each of them.

Portfolio management is about resource allocation, project selection and strategy (Cooper et al., 2000). All companies have a finite resource endowment, thus, the regular situation is that where projects' resources demand exceeds their supply. Top managers have two main roles in allocating resources among the different projects within a portfolio. On the one hand, they have to establish the initial resource allocation, so they initially determine which projects are to give priority to achieve organizational goals (Beringer et al., 2013). On the other hand, top managers continually scan portfolio performance in case a reallocation of resources might be necessary (Beringer et al., 2013). Project managers have been determined as selfish and with a narrow view focus on their own project goals (Pemsel & Wiewiora, 2013). Thus, each project manager would demand as many resources as possible to ensure project completion. Both the initial and contingent allocation of resources need the involvement of top management since first top managers are the members in the organization with the clearest vision of organizational goals, and second, they have the legitimate authority to reallocate resources from one project to another.

The second activity of portfolio management relates with project selection. Most project selection tools rely on financial methods such as the net present value. The problem with these tools resides in that they acknowledge just one dimension of projects, i.e. its financial

result, but forget about many others such as their strategic fit or the availability of resources. The result is that many projects pass the hurdles and the portfolio goes out of balance (Cooper et al., 2000). Top management involvement introduces strategic fit and resources availability as factors in the project selection process. When top managers are involved, Go decisions does not rely on financial aspects but in the way the project output contributes to strategy achievement and the relation the new project has with the others in the portfolio (Cooper et al., 2000; Meskendahl, 2010; Unger et al., 2012).

Finally, project portfolio management involves monitoring and control activities. Portfolio steering is defined as all the activities deployed for a continuous coordination of portfolios (Müller et al., 2008). Project portfolio management requires gathering information about project performance for the continuous monitoring of strategic alignment (Beringer et al., 2013). If deviations from the target portfolio are detected, correcting actions such as resources withdrawal or project cancelling should be put in place. Again, top managers are the most suitable organizational actors to assess strategic fit of projects, and they are the only ones with the authority to cancel a project even if its performance is acceptable. It is therefore hypothesized that:

*H2. The higher the level of top management involvement, the higher the level of portfolio achievement.*

#### *3.4. Mediating role of project and portfolio dynamic capabilities*

Although the influence of top management involvement over project performance (Ragunathan et al., 2004; Sharma & Yetton, 2003; Staehr, 2010; Young & Jordan, 2008; Young & Poon, 2013) and portfolio achievement (Beringer et al., 2013; Meskendahl, 2010) has been widely studied, there is still no answer for the actual mechanism making that influence work (Boonstra, 2013). Drawing on the dynamic capabilities approach and the upper echelons theory, we claim that project and portfolio capabilities are that generative mechanism. Specifically, we posit that project dynamic capabilities mediate the relation between top management involvement and project performance, and also that portfolio dynamic capabilities mediate the relation between top management involvement and portfolio achievement. As Baron and Kenny (1986 : 1173) established, a variable's mediator function means that this variable (project and portfolio capabilities) is the generative mechanism through which the focal independent variable (top management involvement) is able to influence the dependent variable of interest (project performance and portfolio achievement).

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Project [dynamic] capabilities are broadly defined as the internal ability of an organization to create lasting performance based on multiple short-term projects (Davies & Brady, 2000), and are related with the organizational ability to transfer learning from project to project so avoiding to repeat the same mistakes over and over again (Boh, 2007; Prusak, 1997). Thus, the development of project [dynamic] capabilities provides the firm with a set of procedures and practices that lead the firm to surpass individual project success getting to the achievement of portfolio success based on consistently successful projects (Cooke-Davies, 2002).

According to upper echelons theory, firms and their competences are a reflection of the top management team since top managers are the key decision makers (Hambrick & Mason, 1984). To understand why firms do what they do and why do they have the capabilities they have, it is necessary to consider the rules and processes developed by their top managers (Hambrick, 2007). Thus, according to upper echelons theory and understanding dynamic capabilities as a set of processes and routines that firms use to address environmental changes (Teece et al., 1997; Winter, 2003), top managers could be considered the main builders of firms' dynamic capabilities. Moreover, there are several quotes of well-known theoretical articles that specifically designate top managers as builders of organizational capabilities (e.g. because the strategic direction of organizations is driven by top managers, capabilities are developed or maintained only under the urging of top managers, Lambe et al., 2002 : 147). Regarding project management literature, the essence of top management involvement relates mainly to effective decision-making and the establishment of rules and routines for activities such as project termination, portfolio structuring, conflict resolution, etc. (Unger et al., 2012; Young & Jordan, 2008). Moreover, top managers are responsible for establishing the routines and decisions to translate strategy into projects and portfolios (Cooke-Davies, 2002). Thus top managers are the ones in charge of designing project dynamic capabilities.

For the purpose of this study, project dynamic capabilities are studied in two different levels, the project and the portfolio. At the project level, project dynamic capabilities encompass activities for scanning the environment, establishing action plans, and reconfiguring project plans and processes. Project dynamic capabilities provide project plans and procedures with the flexibility needed to allow for revision and incorporation of new ideas, so driving project managers to apply a shaping approach instead of a planning one (Pollack, 2007). Project dynamic capabilities help project managers to adapt to changes both in project environment and client needs. Thus, project dynamic capabilities enhance project performance under conditions of uncertainty. It is therefore hypothesized that:

*H3. Project dynamic capabilities act as a mediator variable between top management involvement and project performance.*

At the portfolio level, portfolio dynamic capabilities allow firms to consolidate project learning and spreading it throughout the business unit and the entire firm (Brady & Davies, 2004). Hence, portfolio dynamic capabilities allow firms to cope with project knowledge losses after project closing and the dissolution of project team (Brady & Davies, 2004). By developing portfolio dynamic capabilities, firms are able to capture project learning and use it to institutionalize new routines so embedding project knowledge into the firm memory (Brady & Davies, 2004; Keegan & Turner, 2001). The ultimate objective of portfolio dynamic capabilities is to reconfigure and extend firm-level capabilities so the firm can fully exploit its project dynamic capabilities and achieve a portfolio performance. It is therefore hypothesized that:

*H4. Portfolio dynamic capabilities act as a mediator variable between top management involvement and portfolio achievement.*

#### **4. Research methodology**

##### *4.1. Sample and data collection*

A survey design was selected for testing the research model depicted in Figure 3.2. The questionnaire (Appendix 2.1 shows the questionnaire and its cover letter) developed for the study was first subjected to a pretest that involved interviews with 23 participants of the 27<sup>th</sup> International Project Management Association (IPMA) world congress that was held from 30<sup>th</sup> September to 03<sup>rd</sup> October 2013 in Dubrovnik, Croatia. Moreover, a pilot test of the final questionnaire was developed prior to its usage.

The target population for the study is formed by CEOs and project managers of firms from all industries all over the world which are familiar to project execution and project management techniques. In order to identify that population, we search for firms listed in the Thomson One database that use the keyword "project" in their business description. An initial e-mail contact was performed as a presentation of the study. Then, we sent out a paper based questionnaire but also provided the option for filling out an online questionnaire. Follow-up phone calls were made one, two and three months after the initial contact. The response rate was 3.7% corresponding to a sample size of n=62 cases out of the 1686 paper based questionnaires we successfully sent out<sup>2</sup>. Top managers are seen as *notoriously unwilling to submit themselves to*

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<sup>2</sup> Even though we checked each of the postal addresses contained in the Thomson one database, 148 paper based questionnaires were returned back to us claiming unknown or incomplete address.

*scholarly poking* (Hambrick, 2007 : 337) and our low response rate is consistent with that version. In terms of sample quality, diversity is more important than response rate (Blair & Zinkhan, 2006). Firms of 22 different countries are presented in our sample being 56% from Europe, 25% from North America, and 19% from the rest of the world. The industry profile of firms in the sample is very diverse. 21 sectors are presented in the sample being metal mining, oil and gas extraction and business, management and engineering services the more prominent ones. Regarding firms' age, 18% of them have been working for more than 50 years while a 32% were born within the last decade. In terms of company size, 15% are very small (less than 10 employees) companies, 45% can be considered as medium companies (employees ranging between 10 and 250), and a 40% are large companies (more than 250 employees). Finally, 66% of respondents claim that their firm is a project-based one while a 34% claim that it is not.

In order to check for a non-response bias we split the sample into three groups and compared the early responses to the late responses. The underlying assumption is that the group of late respondents is similar to the group of non-respondents (Armstrong & Overton, 1977). The mean comparison test performed showed no statistically significant differences among early and late respondents at the 99% level of significance. Furthermore, as Blair and Zinkhan (2006) recommend, we compared respondents with non-respondents on some key attributes. Based on the information contained in the Thomson One database, we performed three additional mean comparisons that showed no statistically significant differences among respondents and non-respondents in terms of net income, industry, number of employees, and earnings before interests and taxes. Therefore, we can assert that there are no problems regarding non-response bias, and despite of the low response rate, our sample is a quality one.

As a possible limitation we have to point that our data is based on subjective assessment of key informants, which may lead to common method bias (Doty & Glick, 1998). We conducted the Harman's single-factor test<sup>3</sup> founding no general factor accounting for a significant proportion of the variance. Moreover, we performed a mean comparison between different respondents (CEO, project managers, CHRO, other) that showed no statistically significant differences. These results suggest that common method variance is not a problem. In addition, given the unwillingness of top managers to collaborate in research projects, we have just one respondent for each organization. In order to avoid reductions in construct validity due to the presence of single respondent we follow Podsakoff et al. (2003) suggestions of

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<sup>3</sup> Appendix 2.2 show the results of the Harman's single-factor test, and the mean comparisons.

keeping the questions as simple as possible and clearly separate dependent and independent variables in the questionnaire.

#### *4.2. Measurement items*

We measure all scale items with a five-point Likert scale ranging from strongly disagree/never to strongly agree/always (see Table 3.3). The selection of the items is based on the literature review and discussion with interviewees during pretest and pilot tests. When available, we used established scale items previously used. However, for some of the constructs, there were no established scales and ad-hoc new scales have been developed.

Top management involvement was operationalized in six items developed ad hoc that explore the role played by top managers during the whole life-cycle of a project, and the influence of top managers over the project management methodology. We suggest that top management involvement should be constant during the whole life-cycle of a project, so the project team and the rest of the company clearly perceive it. Besides, we suggest that top management involvement should manifest itself in the creation of a project management methodology common to all company's projects.

Project and portfolio dynamic capabilities were operationalized in nine and six items respectively. In order to capture the essence of both project and portfolio capabilities we turn to the processes and routines included in two of the most widespread used project management bodies of knowledge, i.e. the Project Management Body of Knowledge-PMBOK®, and the IPMA Competence Baseline-ICB®. The logic of using processes and routines for measuring project and portfolio capabilities lies in Winter's<sup>4</sup> (2003) definition of capabilities as collections or routines. Thus, we suggest that organizations performing these processes and routines will build project and portfolio dynamic capabilities.

Project performance and project portfolio achievement were operationalized in six and five items respectively, following the approach of Biedenbach and Müller (2012). The most significant contribution of the Biedenbach and Müller's scale is the twofold perspective when measuring project performance. On the one hand, aspects of the project management process (schedule and budget objectives) and the project output (operational and technical

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<sup>4</sup> Winter (2003 : 991) "An organizational capability is a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type".

performance goals) are measured. On the other hand, aspects of project outcome and its relation to business objectives (stakeholders' expectations and satisfaction) are also measured.

**Table 3.3 Operationalization of the constructs**

Construct	Sources	
Operational question		
<b>Top Management Involvement</b>		
Top managers of the company are aware of the methodology used for managing projects.		
Top managers of the company decide the projects that have to be developed		
Top managers of the company have an active role when defining success criteria of projects	Developed ad-hoc for this study	
Top managers of the company are responsible for establishing the project management methodology		
Top managers of the company are frequently informed about the progress of projects		
Top managers of the company are involved in the monitoring and controlling phase of programs and portfolios		
<b>Project and portfolio dynamic capabilities</b>		
All company projects are managed using the same methodology		
Project managers are requested to adapt the project management methodology to individual project features and environmental conditions		
All projects are using a project management plan	Developed ad-hoc for this study based on PMBOK® fourth edition	
All projects are using a project management information system		
Information from project activities is routinely collected as the project progresses		
Project plan and documents are updated frequently as projects progress		
Project managers are requested to document the impact of change requests		
Organizational culture, structure and processes have a strong influence on the project management plan		
Project managers are requested to follow the organizational processes and procedures such as (standardized guidelines, templates, etc.)		
Project managers are requested to document lessons learned and apply them to future projects		
Project managers are requested to identify, define, combine and coordinate the various processes within projects taking into account the characteristics of project environment		Developed ad-hoc for this study based on ICB® 3.1 version
Project managers are requested to maintain, update and change the project organization during the project life-cycle if needed		
Project managers are requested to define a change management policy		
Project managers have to ensure compliance with the company's policies and any regulatory requirements		
Project managers have to consider specific structure, culture, and processes of their company		
<b>Project Performance</b>		
Projects meet their operational performance goals	Developed ad-hoc based on Biedenbach & Müller (2012)	
Projects meet their technical performance goals		
Projects meet their schedule objectives		
Projects stay within budget limits		
Projects results meet stakeholders expectations		
Stakeholders are satisfied with project results		
<b>Portfolio Achievement (formative index)</b>		
Company has the right number of projects for the resources available		
Company's portfolio contains high-value projects		
Company's portfolio has an excellent balance of projects	Biedenbach & Müller (2012)	
Company's projects are aligned with the business strategy		
The budget allocation between projects in the portfolio reflects the business strategy		
<b>Portfolio Achievement (reflective index)</b>		
Company's portfolio leads to a high stakeholders satisfaction	Biedenbach & Müller (2012)	
Company's portfolio achieves time, cost and quality objectives		
Company's portfolio achieves financial objectives		
Company's portfolio fulfills stakeholders requirements		
Company's projects purpose is achieved		



## 5. Results

We used SmartPLS 2.0 M3 to conduct statistical analysis. As a variance-based structural equation model (SEM), Partial Least Square (PLS) does not provide model fit indices that allow for the validation of the model such as the  $\chi^2$  provided by covariance-based SEM (Wetzels et al., 2009). However, as a nonparametric SEM technique PLS does not suffer from indeterminacy problems associated with other modelling techniques, and it does not require normality of the data (Wittmann et al., 2009). Moreover, PLS analysis is most suitable during early stages of theory development supporting both exploratory and confirmatory research (Byrd et al., 2006; Gefen et al., 2000; Premkumar & Bhattacharjee, 2008). When covariance-based SEM restrictions are violated (e.g. minimum sample size, presence of both reflective and formative constructs), PLS analysis is seen as the most suitable methodological alternative for theory testing (Henseler et al., 2009; Kyu Kim et al., 2011).

In order to conduct PLS, the sample size should be at least equal to the larger of: (1) ten times the largest number of structural paths directed at any one of the constructs in the model, or (2) ten times the number of items in the scale with the largest number of formative indicators (Chin, 1998). Because the only formative construct (portfolio achievement) possess five items, and there are, at most, two paths directed at any one construct, the minimum allowable sample size for this study is 50. Thus, our sample size of n=62 is adequate.

### 5.1. Measurement model

Prior to estimating the structural model, a confirmatory factor analysis (CFA) was conducted to verify the measurement model. The CFA verify our measurement model by clearly identifying representative factors of project performance, top management involvement or portfolio performance. The most remarkable result is the division of project management processes and routines into two different factors. Contrary to what one may think, the division is not because of the source of the processes, PMBOK® versus IPMA®, but because of the essence of the routines and the level they belong to. Our interpretation, which is supported by recent literature in project capabilities<sup>5</sup>, is that while the first factor encompasses routines confined

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<sup>5</sup>Recent literature suggest that the key point for achieving competitive advantages in PBFs lies in the reconciliation of both project and organizational goals (Davies & Brady, 2000; Thiry, 2004). Moreover, scholars suggest that only PBFs able to develop project and portfolio capabilities would be able to overcome that dichotomy (Davies & Brady, 2000).

to individual project level (e.g. creation of a project plan, updating project plan and documents, collection of project information, scanning of project environment, etc.), the second one encompasses routines that link projects to portfolios and even the whole organization (influence of organizational culture over project management, documentation and further application of lessons learned, the creation of a general methodology that has to be apply to all projects, etc. ). Therefore, the CFA confirms our claim that firms could build dynamic capabilities at the project level that will lead to project success and also at the portfolio level or firm level, that will lead to the achievement of portfolio and even organizational goals.

For the measurement model, each construct was modeled to be reflective<sup>6</sup>. Measurement model was tested by examining individual item reliability, internal consistency, and convergent and discriminant validity. Individual item reliability is determined by the items loadings, and it expresses the percentage of item variance related to the construct. For a good item reliability all item loadings should be greater than 0.7 (Carmines & Zeller, 1979). All items loadings exceeded the 0.7 limit except for two of the portfolio capabilities constructs, which had an item loading around 0.6 that is considered as acceptable when scales are in early stages of development (Chin, 1998).

Constructs' internal consistency was evaluated by examining both the Cronbach alpha and the composite reliability. As shown in Table 3.4 both the Cronbach alpha and the composite reliability exceeds the boundary of 0.8, which is the strict threshold suggested by Nunnally and Berstein (2010). Constructs' convergent validity expresses the extent to which all items in a construct are measuring the same concept and it is evaluated by examining the average variance extracted (AVE). Table 3.4 shows that for all constructs AVE exceed the recommended threshold of 0.5 (Fornell & Larcker, 1981).

Finally, discriminant validity was evaluated by examining both (1) the extent to which the root square of AVE is larger than inter-constructs correlations and (2) the extent to which each item loads more highly on its intended construct than on others. Results showed that all items loaded more highly on their intended construct. Moreover, as shown in Table 3.5, the square root of AVE was larger than any inter-construct correlation with the exception of the portfolio capabilities and project capabilities that as explained at the beginning of the subsection, has

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<sup>6</sup> Portfolio achievement was measured both with reflective and formative items. The model presented in the results section was tested with the portfolio achievement reflective construct. The results of the model tested with the portfolio achievement formative construct are presented in Appendix 2.2.

been split into two different constructs because of the results of the CFA and theoretical reasons. Taken all these results together we can assert that all indicators possess good measurement properties.

**Table 3.4 Latent variable, measurement item, composite reliability, AVE and Cronbach alpha**

Construct and indicator	Factor loading	t-statistic	Composite reliability	AVE	Cronbach alpha
Top Management Involvement			0.909	0.626	0.880
TMI_1	0.815	16.124			
TMI_2	0.739	8.027			
TMI_3	0.850	16.675			
TMI_4	0.745	10.103			
TMI_5	0.788	13.708			
TMI_6	0.802	14.007			
Project Capabilities			0.938	0.629	0.926
Proj_Cap1	0.749	11.581			
Proj_Cap2	0.790	13.770			
Proj_Cap3	0.708	6.928			
Proj_Cap4	0.793	13.519			
Proj_Cap5	0.824	17.082			
Proj_Cap6	0.824	21.595			
Proj_Cap7	0.879	28.786			
Proj_Cap8	0.732	8.897			
Proj_Cap9	0.822	16.345			
Portfolio Capabilities			0.869	0.529	0.818
Portf_Cap1	0.617	5.266			
Portf_Cap2	0.762	10.519			
Portf_Cap3	0.586	4.846			
Portf_Cap4	0.821	18.024			
Portf_Cap5	0.838	16.272			
Portf_Cap6	0.701	8.543			
Project Performance			0.927	0.681	0.905
ProjectPe_1	0.850	20.737			
ProjectPe_2	0.836	18.697			
ProjectPe_3	0.777	13.478			
ProjectPe_4	0.713	6.906			
ProjectPe_5	0.871	19.183			
ProjectPe_6	0.890	29.988			
Portfolio Achievement			0.930	0.728	0.907
PortfAch_1	0.852	20.593			
PortfAch_2	0.861	27.141			
PortfAch_3	0.815	14.009			
PortfAch_4	0.871	19.821			
PortfAch_5	0.866	22.083			

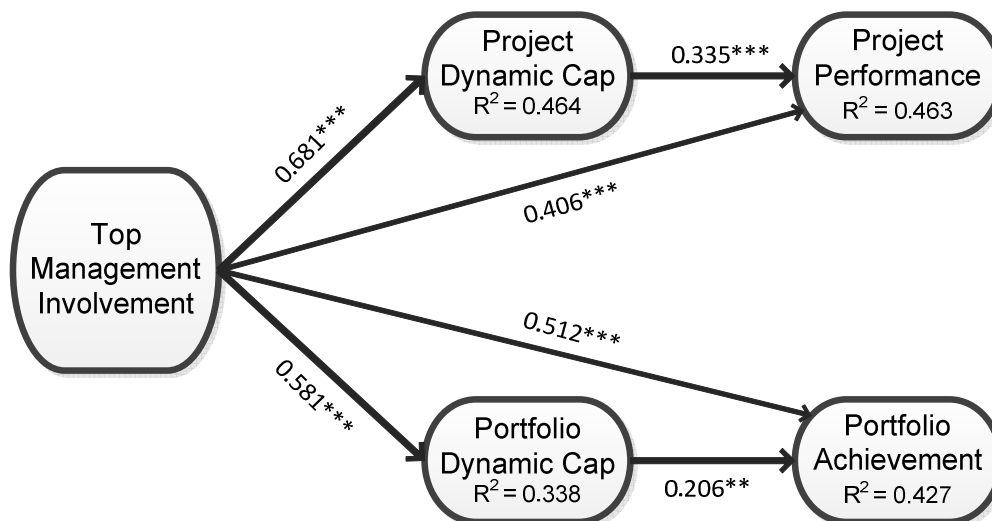
**Table 3.5 Inter-construct correlations and average variance extracted (AVE)**

	1	2	3	4	5
1. Portfolio Achievement	<b>0.853</b>				
2. Portfolio Capabilities	0.503	<b>0.727</b>			
3. Project Capabilities	0.607	0.869	<b>0.793</b>		
4. Project Performance	0.775	0.543	0.612	<b>0.825</b>	
5. TMI	0.631	0.581	0.681	0.635	<b>0.791</b>

Note: The diagonal elements are the square root of AVE

### 5.2. Structural model

The results for the research model, including the path coefficients and the explained variances of endogenous variables ( $R^2$ ) are shown in Figure 3.3. The structural model explained 46.3% of the variance for project performance and 42.7% of the variance for portfolio achievement. Moreover, results show that top management involvement explains 46.4% of the variance of project capabilities and 33.8% of the variance of portfolio capabilities.

**Figure 3.3 Hypothesized top management model with path coefficients**

Note: \*  $p < 0.1$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

As for the results of testing the hypothesis, top management involvement positively influences both project performance (H1,  $t=2.929$ ) and portfolio achievement (H2,  $t=5.048$ ). Thus, top management involvement can be considered a critical success factor in achieving both project performance and portfolio achievement. In addition, top management involvement appears as a source of project ( $t=10.386$ ) and portfolio ( $t=6.818$ ) dynamic capabilities, which might also be

considered critical success factors of project performance ( $t=2.450$ ) and portfolio achievement ( $t=1.666$ ) respectively. Table 3.6 summarizes the results of hypothesis testing.

**Table 3.6 Results of hypothesis testing**

	Hypothesis	Path coefficient	t-value	Outcome
H1	Top Management Involvement → Project performance	0.406	2.929***	Supported
H2	Top Management Involvement → Portfolio achievement	0.512	5.048***	Supported
H3	Top Management Involvement → Project capabilities	0.681	10.386***	Partially Supported
	Project capabilities → Project performance	0.335	2.450***	
H4	Top Management Involvement → Portfolio capabilities	0.581	6.818***	Partially Supported
	Portfolio capabilities → Portfolio performance	0.206	1.666**	

Note: \*  $p < 0.1$     \*\*  $p < 0.05$     \*\*\*  $p < 0.01$

To properly test the mediating role of project (H3) and portfolio (H4) dynamic capabilities, eight additional analyses (i.e. four for the project dynamic capabilities mediating role and another four for the portfolio dynamic capabilities mediating role) were conducted (Frazier et al., 2004). The results are presented in Tables 3.7 and 3.8.

First, in Model 1, a direct positive relationship between top management involvement (the independent variable) and project performance (the dependent variable) was established with a coefficient of 0.645 ( $t=9.456$ ). Second, in Model 2, a direct link between top management involvement and project dynamic capabilities (the mediating variable) was found with a coefficient of 0.590 ( $t=11.345$ ). Third, in Model 3, there is a direct link between project dynamic capabilities and project performance with a coefficient of 0.618 ( $t=5.084$ ). Finally, Model 4, the links between top management involvement and project dynamic capabilities, between top management involvement and project performance, and between project dynamic capabilities and project performance were simultaneously considered. The relationship between top management involvement and project performance suffered from a dramatic reduction in its statistical significance when including project dynamic capabilities in the model. Thus, project dynamic capabilities partially mediate the effect of top management involvement on project performance (H3 is partially supported).

The same situation occurs when studying the mediating role of portfolio dynamic capabilities since as shown in Model 8, the relationship between top management involvement and portfolio achievement suffered a dramatic reduction in its statistical significance when including portfolio dynamic capabilities. Thus, portfolio dynamic capabilities partially mediate

the effect of top management involvement on portfolio achievement (H4 is partially supported).

**Table 3.7 Mediating effect of project dynamic capabilities**

Structural path	Model 1	Model 2	Model 3	Model 4
TMI → Project Performance	0.645 (9.456***)			0.412 (2.830***)
TMI → Project Dynamic Capabilities		0.684 (11.345***)		0.683 (10.804***)
Project Capabilities → Project Performance			0.618 (8.604***)	0.331 (2.340***)

Note: Path coefficients; (t-statistic)

\* p < 0.1    \*\* p < 0.05    \*\*\* p < 0.01

**Table 3.8 Mediating effect of portfolio dynamic capabilities**

Structural path	Model 5	Model 6	Model 7	Model 8
TMI → Portfolio Achievement	0.635 (10.363***)			0.512 (5.384***)
TMI → portfolio Capabilities		0.590 (7.771***)		0.580 (6.91***)
Portfolio Capabilities → Portfolio Achievement			0.511 (5.084***)	0.207 (1.731**)

Note: Path coefficients; (t-statistic)

\* p < 0.1    \*\* p < 0.05    \*\*\* p < 0.01

In order to test the robustness, the PLS analysis of the structural model was replicated with portfolio achievement measured by a formative scale rather than the reflective one. Results of the model are shown in Appendix 2.2 and perfectly match the ones previously shown. All the relationships keep their significance level, and even some problems of the measurement model such as the discriminant validity of project capabilities are solved. Additionally, the structural model was tested including three control variables (i.e. industry, number of employees and years of activity of the company). Results in Appendix 2.2 show no statistical significance for any of the control variables and no significant variation in the model results.

## 6. Discussion and conclusions

### 6.1. Discussion

This study makes two important contributions both to the dynamic capabilities approach and to the management literature, including project management. First, this study shed light on

the nature and essence of top management involvement as a critical success factor for projects and portfolios. Instead of looking at the specific actions top managers undertake for creating a supportive context for project performance, this study presents the generative mechanism through which top managers involvement enhances project and portfolio performance. Our results show that project and portfolio dynamic capabilities mediate the influence of top management involvement over project performance and portfolio achievement respectively. Therefore, our results show that project and portfolio dynamic capabilities are the answer on how top management involvement influences project performance and portfolio achievement. Specifically, we posit that by establishing routines, workflow patterns and work procedures, top managers build dynamic capabilities that help project managers to face unexpected changes and to make difficult decisions. Moreover, the dynamic capabilities built by top managers allow consolidating project learning and spreading it throughout the entire firm so avoiding the repetition of old mistakes and achieving successive projects performance and the portfolio goals. Thus, project and portfolio dynamic capabilities are the engine that makes the influence of top management involvement over projects and portfolio performance works.

Second, it deepens the understanding on the role played by project and portfolio dynamic capabilities in the achievement of project performance and portfolio and organizational goals. The building of project dynamic capabilities has been posited as a necessary condition to transfer projects performance to the portfolio level (Davies & Brady, 2000). However, despite of the recent efforts (Biedenbach & Müller, 2012; Jugdev et al., 2007; Killen & Hunt, 2010; Melkonian & Picq, 2011; Petit, 2012), there is no model for project dynamic capabilities functioning, nor an explanation about what their micro-foundations are<sup>7</sup>. Our study suggest the existence of two different project dynamic capabilities, one situated at the project level whose objective is to secure project performance under conditions of uncertainty, and the other situated at the portfolio level –portfolio dynamic capabilities- whose objective is to achieve portfolio goals through individual projects performance and knowledge. Furthermore, following the approach of Winter (2003) our study suggest that the micro-foundations of both project and portfolio dynamic capabilities are the routines and processes established by top managers and implemented by project managers, project team, and portfolio managers, and we give specific examples of these routines. Therefore, we posit that as the head of the organization, top managers must establish some routines that contribute to project

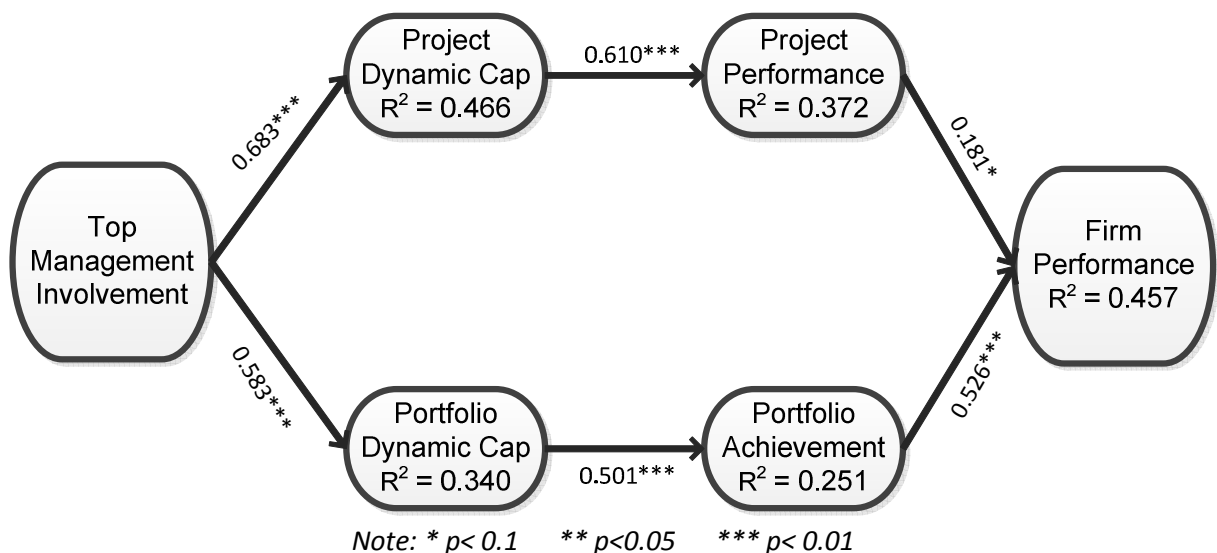
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<sup>7</sup> Micro-foundations are defined as the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines which undergird capabilities (Teece, 2007 : 1319).

performance (so building project dynamic capabilities), and some other routines that consolidate project learning and contribute to portfolio performance (so building portfolio dynamic capabilities).

Scholars recently suggest that project management literature should shift its focus from achieving individual project success to achieving organizational goals through multiple projects and portfolio performance (Melkonian & Picq, 2011; Thiry, 2004; Thiry & Deguire, 2007; Voss, 2012). Figure 3.4 depicts an extension of the dynamic capabilities model for top management involvement that introduces firm performance as the final dependent variable. The extended model, which explains 45.7% of the variance of firm performance, confirms top management involvement as a source of both project and portfolio dynamic capabilities, and also, project and portfolio dynamic capabilities as the mechanism through which top managers enhance project and portfolio achievement. Moreover, the model shows that both project performance and portfolio achievement contributes to the achievement of firm performance. Thus, results suggest that by building project and portfolio dynamic capabilities, top managers are not just enhancing both project and portfolio performance but also achieving firm's long-term goals. Project and portfolio capabilities might thus be considered as sources of long-term firm competitive advantages (Teece, 2007).

**Figure 3.4 A dynamic capabilities model for TMI, project, portfolio and firm performance**



Although our study has exposed the mediating role of both project and portfolio dynamic capabilities, it suffers from the following limitations. The snapshot nature of cross-sectional studies, while convenient, does have its downside in the establishment of causality. Therefore, future research should be developed through longitudinal studies so we can strongly assert



that top management involvement causes the building of dynamic capabilities, and that those dynamic capabilities causes project performance and portfolio achievement. Besides, longitudinal studies would help us to understand if the nature of firm performance achievement is indeed long-term.

## *6.2. Conclusions*

The building of both project and portfolio dynamic capabilities have been identified as the generative mechanism through which top management involvement influences project performance and portfolio achievement respectively. Drawing on the dynamic capabilities framework this study provides a model for understanding how to achieve project performance and portfolio achievement, and how to translate project performance and portfolio achievement into long-term firm success.

This study offers important implications for top and project managers. First, project managers should assume that their technical expertise is not so critical for achieving project performance and portfolio achievement than was previously believed (Young & Poon, 2013). Conversely, they should place the achievement of top managers' involvement as a priority to ensure project performance and portfolio achievement (Boonstra, 2013). Second, top managers should assume that their involvement results critical and must be reflected in the establishment of work procedures and decision-making protocols. Furthermore, top managers must realize that projects are not islands providing a unique and rare output, but they are an important part of firm activities with the potential to influence both successive projects and also other competences of the firm (Engwall, 2003). Projects are no longer operational concerns but important strategic tools that might lead to the achievement of firm goals.



**Chapter 4.**

**STUDY II. "ASSESSING THE IMPORTANCE OF PROJECT  
MANAGEMENT STANDARDS"**

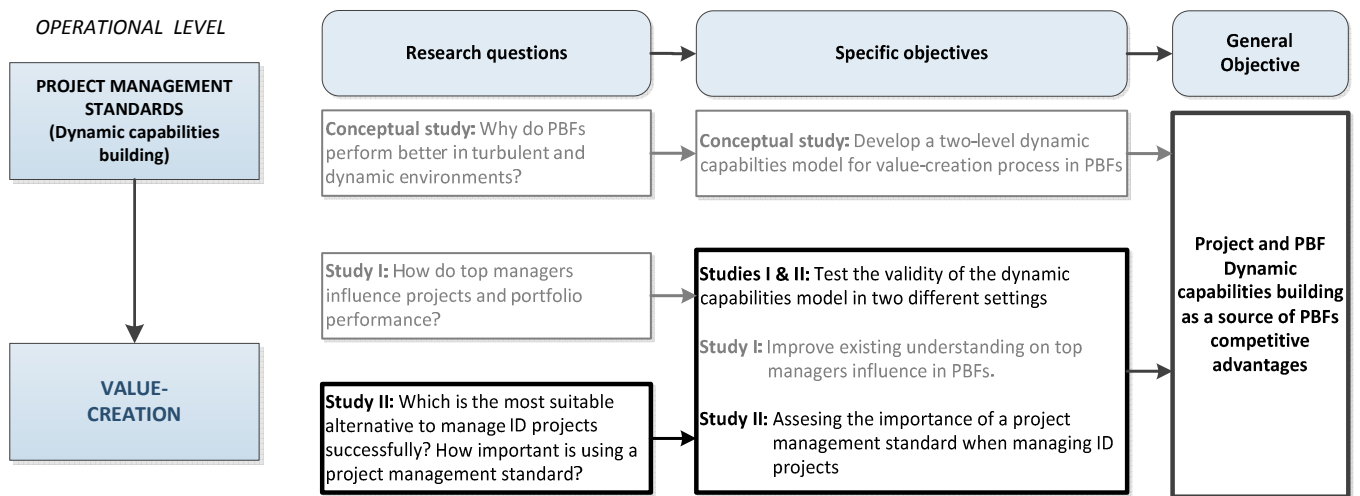


**INTRODUCTION TO CHAPTER 4**

In order to improve our model’s validity test performed in Study I, this chapter presents another empirical study. Specifically, from an operational perspective, the empirical study presented in this chapter (study II) focus on the application of the two-level dynamic capabilities model to International Development (ID) projects.

ID projects are the most common instrument used by policy makers to deliver international aid. However, despite its widespread used and economic importance, ID projects poor performance is the regular situation. Since the standard used to manage ID projects, the logical-framework approach, is seen as an inefficient and old-fashioned tool, different organizations have developed a new project management standard, the PMD Pro1, specifically designed to improve ID projects performance. Therefore, as depicted in Figure 3.1, the specific objective of Study II is to assess the importance of project management standards (as possible sources of project and PBF dynamic capabilities) and to assess the most suitable alternative for managing ID projects.

**Figure 4.1. Specific objectives and position of Study II in this dissertation**



Source: Own elaboration

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## THE MANAGEMENT OF INTERNATIONAL DEVELOPMENT (ID) PROJECTS. ASSESSING THE IMPORTANCE OF PROJECT MANAGEMENT STANDARDS

### 1. Introduction

#### 1.1. *International aid overview*

International development (ID) projects are the most common instrument used by policy makers to deliver international aid. These ID projects are delivered by donor countries under diverse forms of funding and collaboration, for example, using bilateral agreements with recipient governments or through a “middlemen” – frequently a non-governmental organization (NGO) (Crawford & Bryce, 2003; Zetland, 2010). Speaking in numbers and according to the United Nations Development Programme (UNDP) Human Development Report 2010, total official development assistance (ODA) in 2009 meant \$136 billion (Klugman & United Nations Development Programme, 2010). From the recipient countries perspective, low human development index (HDI) countries received ODA approaching 15 percent of their Gross National Income (GNI) in 2007.

Until the 1960's there was no specific standard<sup>1</sup> within the project management field for managing ID projects. However, at the end of the 1960's the logical framework approach (LFA) was developed for United States Agency for International Development (USAID), and has since been applied by many of international aid donors as the standard to manage ID projects (NORAD, 1999). In words of one of its designers, “the LFA is a set of interlocking concepts which must be used together in a dynamic fashion to develop a well-designed, objectively-described and evaluable project” (Rosenberg & Posner, 1979). Therefore, the LFA is a methodology designed to ease and guide ID projects design and evaluation all over the world.

Despite its widespread use, the LFA has proved to be an inefficient and very limited project management standard for managing ID projects, especially in the monitoring and evaluation phase of the project life cycle (Crawford & Bryce, 2003). In fact, poor performance of ID projects and the disappointment of beneficiaries seem to be the rule (Ika et al., 2012). According to Crawford and Bryce (2003) the problems with LFA stem from four main issues: (1)the absence of a time dimension; (2)the inappropriateness of assigning efficiency-level

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<sup>1</sup> A project management standard is a structured approach for delivering a project that consists of a set of processes and routines, with each process having clearly defined resources and activities (Turner, 2007).

objectively verifiable indicators; (3) the inadequacy of the means of verification; and (4) the static nature of the logframe.

Poor performance has turned the international aid literature to focus on an aid effectiveness debate (Easterly, 2009). On the one hand, and from a macro-level perspective, most results have found zero effects of international aid on recipients' economic growth (Boone, 1996; Burnside & Dollar, 2000); or have linked international aid's effectiveness to the quality of the recipient institutions (Burnside & Dollar, 2000). On the other hand, from an emerging micro-level perspective some studies have found some ID projects to be cost-effective and to have positive effects for the recipients (Duflo & Kremer, 2003; Duflo & Hanna, 2005).

Surprisingly, project management literature has focused little attention on ID projects and consequently, it has not joined in the aid effectiveness debate (Ika et al., 2012). In particular, very little has been written on the way project managers should manage ID projects nor on ID projects success, and the critical factors for achieving that success<sup>2</sup> (Diallo & Thuillier, 2004; Diallo & Thuillier, 2005; Ika et al., 2012; Khang & Moe, 2008).

Taking a wider perspective about how to manage ID projects, a possible solution to solve LFA limitations and improving ID projects performance can be the direct application of well-known project management standards such as the Project Management Body of Knowledge (PMBOK®) or the International Project Management Association Competence Baseline (ICB®). Scholars and practitioners assume that the use of a project management standard will enhance project success (Milosevic & Patanakul, 2005; Papke-Shields et al., 2010). Specifically, the use of a project management standard will provide the organization with a consistent method for planning, controlling, monitoring and reporting across projects and hence improving inter-organizational communication and reducing duplication costs (Clarke, 1999; McHugh & Hogan, 2011). However, there is still limited empirical evidence linking adherence to project management standards to better performance (Thomas & Mullaly, 2008). Furthermore, some studies have found ambivalent results or even no relation at all (Besner & Hobbs, 2006; Crawford, 2005; White & Fortune, 2002), and scholars begin claiming that both organizational and external environmental context (e.g. project size, industry type or environmental uncertainty) influence the relation between the use of project management standards and project success (Besner & Hobbs, 2006; Crawford & Pollack, 2007; Zwikael &

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<sup>2</sup> We consider that *critical success factors* are those characteristics, conditions, or variables that can have a significant impact on the success of the project when properly sustained, maintained or managed (Milosevic & Patanakul, 2005 : 183).

Globerson, 2004). The achievement of project success could not just come by using the processes and routines disclosed in project management standards but in the ability of organizations for building project capabilities out of those processes and routines (Davies & Brady, 2000). By building project capabilities the knowledge and experiences accumulated on a project will be disseminated through the whole organization and hence will benefit successive projects (Boh, 2007; Davies & Brady, 2000; Newell & Edelman, 2008).

Regarding international aid industry, the use of standardized project management tools and methods appear to be not suitable to manage ID projects due to the special features these projects have (Khang & Moe, 2008). Aid industry and ID projects in particular are recognized to be unique within project management environments (Crawford & Bryce, 2003). Firstly, project goals are complex and intangible since they are concerned with poverty alleviation or social transformation; therefore the usual profit motive is missing. Secondly, ID projects have a social and political nature which attracts a complex web of stakeholders. Thirdly, the operating environment is unique since it is surrounding by socio-political instability, geographic and cultural separation among actors, etc. Finally, knowledge transfer to beneficiaries is a priority during each and every phase of the project (Crawford & Bryce, 2003; Khang & Moe, 2008; PM4NGOs, 2010; Youker, 2003).

### *1.2. Towards a new wave of ID project management*

Keeping in mind the special features of ID projects, we identified three alternatives as plausible solutions to increase ID projects poor performance. On the one hand, it looks pretty clear that traditional project management standards cannot be applied to ID projects without a proper adaptation (Khang & Moe, 2008). Therefore, one line of research could take care of that necessary and also very complicated adaptation. On the other hand, instead of trying to adapt already existed project management standards, a completely new framework specifically created to manage ID projects could be developed (Landoni & Corti, 2011). Finally, a third solution could be the modification of LFA in a way that solves the already mentioned drawbacks this approach has.

Regarding the last alternative, international agencies have worked recently in possible improvements of the LFA (Landoni & Corti, 2011). The Australian Agency for International Development (AusAID) uses a modified version of the logframe with four columns and five rows. On the other hand, USAID has “abandoned” the LFA and nowadays its ID projects are managed through a results framework. However, the resultant framework essentially possesses



the same scope as the LFA and so it shares the same drawbacks (Landoni & Corti, 2011)

Another alternative is represented by the Project Management for Development Professionals (PMD Pro1) that has been recently developed by the Project Management for Non-Governmental Organizations (PM4NGOs) international group. PMD Pro1 is an interesting initiative straddling between the first and second alternatives previously advanced because although based on the already developed project management standards, it constitutes a new specific framework for managing ID projects. This new project management standard provides main guidelines to project management within the context of the international development sector and is based on two main assumptions: (1) project managers in the international aid industry share many fundamental challenges; (2) project managers in the international aid industry can learn from their colleagues working on other sectors. The guide is organized in two parts. Section one talks about the roles, responsibilities, competencies and skills required for project managers, and also it explains the relationships between managing projects, programs and portfolios. Finally, this first section introduces the concept of project life cycle. On the other hand, section two discusses individually each of the six phases of project life cycle (identification and design; initiation; planning; implementation; monitoring, evaluation and control; end of project transition). This second section provides project managers with the main tools and methodologies for performing the activities associated to each phase.

This study aims to assess the most suitable alternative to manage ID projects successfully. To achieve this objective we first identify the critical success factors for ID projects and then, we evaluate two different project management standards (LFA and PMD Pro1) based on the way they deal with each of the previously advanced critical success factors. Thus, this study provides a first evaluation of the young PMD Pro1 as the new framework to manage ID projects, appointing to the main differences this new framework has with the hitherto used LFA.

The remainder of the study is structured as follows. Section 2 provides a literature review on critical success factors both in broad terms and for the international aid industry, and concludes with an explanation of the ID projects' critical success factors we selected. Then, section 3 shows the methodology used both for identifying the critical success factors specific to ID projects and for performing the comparison of the LFA against the PMD Pro1. Section 4 evaluates the two ID focused project management standards by assessing how each of them deals with the selected critical success factors. Finally, the study concludes with a discussion on

the study findings about the efficiency of PMD Pro1 as a new framework for managing ID projects and the implications for the international aid industry.

## 2. Literature review

Although project success is a widespread research topic in project management literature its definition remains elusive (Baccarini, 1999). Regarding the concept itself, several issues have been studied, but still are in debate. Some authors (Baccarini, 1999; Cooke-Davies, 2002) argue that the success of a project needs to be divided into two separate concepts: (1) project management success, which is related to the traditional concepts of cost, schedule and quality (the well-known iron triangle); and (2) project success, which is concerned to stakeholders' satisfaction and the achievement of company strategic goals.

Other authors claim that project success is not a simple unitary concept but it depends on the stakeholder who is assessing that success (Baccarini, 1999; Lim & Mohamed, 1999). In this sense, Freeman and Beale (1992 : 8) provide an eloquent example of the different points of view of stakeholders about project success: "An architect may consider success in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollar spent under budget ...". From this point of view, we should be aware of the stakeholders whose perspective is going to be considered for assessing project success since we acknowledge that an objectively measure of project success is somewhat an illusion (De Wit, 1988).

Another aspect of project success that has been studied is the dichotomy between a static view of project success versus a dynamic one. Khang and Moe (2008) designed a project success framework in which the critical factors to achieve project success vary depending on the phase of the life-cycle the project is evaluated. Similarly, Pinto and Slevin (1988) recognize the importance of knowing when to determine project success. At the early stages of the project, internal factors such as budget or cost are the most critical ones, but later after project delivery, external factors like clients could detract the actual consequences of project implementation.

If we change the focus to the critical factors<sup>3</sup> for achieving projects success (critical success factors) we see that project management literature although profuse, is not without

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<sup>3</sup> We are aware of the great number of articles analyzing project success. However, in order to get an accurate review, we obviate papers focusing on general success, or success indicators and measures. Consequently, we have limited our literature review to those articles focusing strictly on critical success factors (Critical success factors).

controversy (Khang & Moe, 2008). Traditionally, the concept and measurement of project success was linked to cost, time, and quality -the iron triangle- probably because the own definition of project management include them (Atkinson, 1999). Despite of the fact critical success factors were supposed to be known and managed, projects still perform badly. Therefore, project management literature assumed that the iron triangle was not enough and asked itself about the possibility of discovering new factors also affecting project success.

One of the first issues appearing on the scene was the client perspective. In their (1988) paper, Pinto and Slevin claim that issues like client satisfaction or use have much more to deal with perceived project success or failure than the iron triangle. Along with this idea, the client role is being acknowledged as a more and more important factor, and aspects such as client consultation has been included as a critical success factor being lately extended to stakeholders issues (Baccarini, 1999; Pinto & Covin, 1989).

External environment has also been recognized as an influencing issue over project success and environmental factors such as cultural, political, legal, economic or social have been included in papers researching the true critical success factors (Belassi & Tukel, 1996; Kwak, 2002).

Therefore, and as we can see in Table 4.1 the project management literature has acknowledged more and more issues as potential critical success factors. In order to shed light over this issue, we could group the critical success factors into four different areas that cover almost all possible aspects affecting a project performance (Belassi & Tukel, 1996).

- Factors related to the project.
- Factors related to the team (including the project manager).
- Factors related to the organization.
- Factors related to the external environment

In order to accomplish an extensive review of critical success factors, we have also analyzed the traditional management literature. We have selected five well-known management journals<sup>4</sup>, three of which are in the top five of Thomson Reuters Journal Citation Report, and we have searched for articles focusing on project success and critical success factors. Surprisingly, keeping aside some scarce exception (Bryson & Bromiley, 1993; Dvir, et al., 2003), management literature has obviated the project success research topic.

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<sup>4</sup>The journals reviewed have been the Strategic Management Journal, The Academy of Management Review, The Academy of Management Journal, Management Decision, and Journal of Organizational Change.

Most of the articles focused on success and critical success factors are based on a strategic level rather than a micro-project view. Therefore, it is easy to find articles focused on how to turn a strategic decision such as a merge (Homburg & Bucerius, 2006), a technology venture (Zhu & Allee, 2008), or the organizational learning strategy (Madsen & Desai, 2010) into a successful one. However, none of the articles studied specific projects success.

**Table 4.1 Summary of the research on critical success factors**

Cooke-Davies (2002)	Pinto and Slevin (1987)	Kerzner (1995)	LimandMohamed (1999)	Baccarini (1999)	V.D. Wsetuizen and Fitzgerald (2005)
Time (6factors)	Project mission	Corporate understanding of project management	Macro (users satisfaction)	Project Management success	Quality of Project management process
Cost (2factors)	Top management			Time Cost Quality	Within time
Effective benefits delivery and management process	Schedule	Commitment to project managers	Micro Time Cost Quality	Project management process Stakeholders	Within budget
	Client consultation				Specified system quality
Portfolio&Programme management	Personnel	Organizational adaptability	Performance Safety	Product Success User needs Stakeholders' needs (related to product) Project owners strategic objectives	Specified information quality
	Technical tasks				Stakeholders satisfaction
A line of sight feedback	Client acceptance	Project management selection criteria			Specified service quality
Learning from experience	Trouble-shooting				Net benefits
	Monitoring&feedback	Project management leadership style			Use
	Communication	Planning and control			User satisfaction

Source: Developed for this study

Regarding the critical success factors in ID projects, we have first reviewed the specific ID journals and then the project management ones. Analyzing the ID literature we have realized that articles assess the organizations (NGOs, World Bank, International Agencies, etc.,) and their strategic decisions' success rather than the success of the projects those organizations delivered (Bagnoli & Megali, 2011; Gazley, 2010; Woller & Parsons, 2002). If we look for articles focused on a micro-view, we realize that researches evaluate the success of specific ID projects (Duflo & Kremer, 2003; Duflo & Hanna, 2005), but there is no articles assessing the success nor its antecedents for the ID projects in general.

Focusing on the project management literature, we have already highlighted the little attention project management literature has focused on ID projects. However, there are few studies that have attempted to address the specific critical success factors for ID projects. On the one hand, and because of the special features ID projects have, the four areas identified by Belassi and Tukel (1996) as cause of critical success factors, could not be directly applied. In this sense, Diallo and Thuillier (2004) propose three "macro-dimensions" as the origin of the critical success factors.

- Macro-dimension 1 – Profile: It is related to the political value of the ID project and of its management.
- Macro-dimension 2 – Management: It is related with the well-known iron triangle.
- Macro-dimension 3 – Impact: It is related with the outcomes of the ID project.

In a subsequent paper, a dimension related to trust and communication between donor, recipient, project designers and implementers is added (Diallo & Thuillier, 2005).

On the other hand, we can use the life-cycle approach to assess critical success factors of ID projects. In fact, Khang and Moe (2008) develop a list of 16 critical success factors linked to the different phases of the life-cycle.

Therefore, there is no consensus about the critical success factors for ID projects, nor even about the graduation (general factors as those in Kwak, 2002; versus project-specific ones as in Khang & Moe, 2008) of the lenses used for their analysis. This situation concurs with the existing debate on ID literature over the scale that has to be used in ID project performance evaluation (Easterly, 2009). On the one hand, some researchers evaluate ID projects performance by studying their impact over recipient country's macro indicators (GDP or life-expectancy) (Boone, 1996). On the other hand, a micro-view asserts that ID projects' performance has to be assessed over the impact a project has on its beneficiaries (Duflo & Kremer, 2003).

### **3. Methodology and specific critical success factors for ID projects**

For the purpose of this research we identify the critical success factors for ID projects and then, we evaluate the LFA and the PMD Pro1 by assessing how these project management standards deal with those critical success factors. In order to identify the critical success factors for ID projects we have searched in project management literature, ID literature and also strategic management literature for papers focusing on the critical success factors for ID

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projects. For performing this literature review we have introduced the keywords *critical success factors* in two full-text scientific databases ScienceDirect and John Willey and Sons. Then, we have refined our search by considering only those papers referring to ID projects. From the literature research we have obtained a list of 25 critical success factors specific to ID projects. Finally, we have made our own list by grouping those critical success factors that although named differently, were referred to the same concept, and we have used the criteria of the number of citations<sup>5</sup>, selecting those critical success factors cited at least in two papers. The final list of seven critical success factors for ID projects and the papers they are cited in are presented in Table 4.2.

For performing the comparison of the LFA against the PMD Pro1 we have evaluated how each of these project management standards deal with the previously identified critical success factors. We consider that a project management standard deals with a critical success factor if there is a part of it dedicated to the management of that critical success factor. However, we haven't considered the depth of treatment in our analysis. For the purpose of this research the project management standards under study are considered to deal with a critical success factor whether they dedicate a whole section to its management, or just a paragraph. We also consider that the project management standards under study are considered to deal with a critical success factor if they claim that the management of the specific critical success factor is an important issue to take into account when managing ID projects whether they propose tools and methods for that task or not.

Taking into account the results of Table 4.2 and the criteria of the number of citations, seven critical success factors are selected for evaluating both the LFA and PMD Pro1. In the following, we briefly evaluate the importance of each of the selected critical success factors in the international aid industry.

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<sup>5</sup> We consider that the most cited a CSF is, the most relevant it is.

**Table 4.2 Critical success factors in ID projects and articles they are cited in**

Critical success factor	Reference
Team building	Khan et al. (2003); Vicland and Nieuwenhuijs (2005); Struyk (2007); Khang and Moe (2008)
Local environment	Struyk (2007); Khang and Moe (2008)
Implementation approach	Khan et al. (2003); Vicland and Nieuwenhuijs (2005)
Learning opportunities	Khan et al. (2003); Struyk (2007)
Policy characteristics	Struyk (2007); Khang and Moe (2008)
Availability of resources	Struyk (2007); Khang and Moe (2008)
Stakeholders/beneficiaries satisfaction	Diallo and Thillier (2004); Khang and Moe (2008)

Source: Developed for this study

- Project team characteristics: Effective delivery of ID projects occurs when the right implementing team is selected and when its personnel are sufficiently motivated (Khan et al., 2007)
- Local environment: ID projects are developed in a unique operating environment surrounded by socio-political instability or cultural separation among actors (Crawford & Bryce, 2003). Therefore, local environment characteristics directly affect project success (Struyk, 2007)
- Implementation approach: ID projects operating environment is recognized as an uncertain one (Youker, 2003). Thus, the use of "what if" scenarios and different ways to deal with them seem to be necessary.
- Learning opportunities: Knowledge transfer to beneficiaries is view as one of the most important goals for ID projects performance (Youker, 2003)
- Policy characteristics: When implementing an ID project one must take into account that ID projects belong to country level master-plans, so ID project objectives must serve agency or even country level goals (Rosenberg & Posner, 1979). Furthermore, it has to be acknowledged that some ID projects are technically simple and politically innocuous and so, they are easier to implement than others (Struyk, 2007).
- Availability of resources: In the recipient countries all resources are in shortly supply. Besides, local implementers may have a different sense of time and work (Youker, 2003).

- Stakeholders' acknowledgment/treatment: ID projects possess a wide variety of stakeholders (Youker, 2003). This complex net of stakeholders is one of the most challenging issues when managing an ID project (Khang & Moe, 2008).

#### 4. Comparative review of project management standards for managing ID projects

Table 4.3 lists, both for the LFA and the PMD Pro1, the chapter, section or page where each of them deals with each of our seven critical success factors for ID projects. The two project management standards selected are the LFA and PMD Pro1 as the main frameworks in ID projects management. In the following, we offer a brief explanation of both standards.

- LFA: Developed at the end of the 1960's for the USAID, the LFA follows a project life-cycle approach that helps project managers to assess whether the ID project profile is logically conceived.
- PMD Pro1: Developed in April of 2010 by the PM4NGOs, this guide provides a project management framework within the context of ID sector. This recent project management standard aims to mix the LFA main guidelines with the ideas, tools and techniques exposed in the general project management standards (PMBOK® or ICB®).

As already mentioned in the introduction, the LFA is a methodology designed to ease and guide ID projects design and evaluation (Rosenberg & Posner, 1979). Therefore, this methodology deals with the selected critical success factors whose influence could be managed during the design phase of ID projects, forgetting all problems that may arise during problem implementation. Consequently, some of the identified critical success factors are not even mentioned in LFA. On the other hand, the critical success factors being treated by the LFA could be extensively explained, or just mentioned in an example.

One of the most useful practices LFA forces to apply to ID projects managers is the recognition of factors beyond project managers' control whose influence could be vital to project success. In this sense, LFA warns ID project managers to evaluate **local environment** characteristics by giving an example where local climate was relevant to ID project performance. In another example, the LFA shows that ID project managers should acknowledge **resource availability** in recipient countries before implementing any actions of the project. Thus, we can consider that LFA deals, at least briefly, with two of our critical success factors.



**Table 4.3 Review of Logical Framework Approach and PMD Pro1**

Critical Success Factor	LFA (LogFrame Matrix)	PM4NGOs
Team Building	n.a.	Section 1; leadership/interpersonal characteristics – facilitate team building.  Section 4; Managing the project human resources.
Local environment	3. Assumptions covering all factors beyond project manager's control could be related to local environment characteristics ( <b>briefly explained with an example</b> ).	Section 1; International development specific competency area.  Section 2; Environmental impact assessments.
Implementation approach	n.a.	Page 44: "the intention of project implementation plan is to provide a model of the project ... (it) identify(ies) "what if" scenarios and consider(s) alternative approaches".  It also gives information of some tools and techniques suitable to be used for managing the project.
Learning opportunities	4. Objectively verifiable indicators: one should not be reluctant to change LFA during design ... ( <b>organizational</b> ).  <b>There is no beneficiaries learning</b>	Introduction; Knowledge transfer is considered as a priority (but is not plausible how to get it).  Section 2, chapter 6; After action review ... record lessons and knowledge arising
Policy characteristics	1. Hierarchy of project objectives; Goal level of objectives could be situated at an Agency level or even at the country strategic level. Project is just one of the necessary conditions to achieve policy goals.	Section 2, chapter 1; External program consideration (not discussed, just mentioned).  Section 2, chapter 1; Interpreting the LF Matrix
Availability of resources	3. Assumptions covering all factors beyond project manager's control could be related to resources availability ( <b>briefly explained with an example</b> ).	Introduction; special characteristics of ID projects.  Section 2, chapters 1 and 3; Resource availability
Stakeholders/beneficiaries satisfaction	n.a.	Section 2, chapter 1; Project identification and design; Definitions of needs (Identifying project ideas). It exists a section named "stakeholders analysis" but it forgets beneficiaries (Venn diagrams, stakeholders' analysis matrix).  Section 2, chapter 4; Project implementation; managing communications

Source: Developed for this study

Note: n.a. not available

Another critical success factor mentioned in the LFA is that referred to **learning opportunities**. LFA urge project managers to learn during project life and change those aspects of project design that are not adapted to project reality. However, the **learning opportunities** critical

success factor does not mean just the organizational learning, but also beneficiaries learning. LFA has a huge liability since it does not recognize beneficiaries' importance over project performance nor the importance of beneficiaries' satisfaction as the main goal of ID project.

The main strength of LFA related to our ID projects' critical success factors is the clear hierarchy of project objectives it establishes. LFA depicts four levels of objectives in any ID project. The higher of these levels is called the *goal level* and it is located above project purpose linking project aspirations to those of the international agency or even donor country. Thus, LFA urges project managers to think that ID projects are always located inside a wider **policy**. Consequently, ID project goals have to serve to a higher level (international agency or donor country) of goals.

Finally, we have to list the three critical success factors (**project team characteristics**, **stakeholders satisfactions**, and **implementation approach**,) that LFA does not manage. (1)LFA does not give any guidance about the steps or considerations a project manager has to follow for building the project team. (2)As already mentioned in this section, LFA does not acknowledge beneficiaries' nor any other stakeholder's importance over project performance. (3)LFA does not propose alternative tools or techniques for managing ID projects different from the log-frame matrix.

Before analyzing how the PMD Pro1 deals with our seven critical success factors there is an important consideration that has to be made. PMD Pro1 is a recent tool, created by the PM4NGOs, aiming to "provide an introductory, platform-independent exploration of the principles and terminology of project management within the context of the international development sector" (PM4NGOs, 2010 : 3). This new framework has been created by mixing the LFA main guidelines with the most recognized tools contained in the project management standards. In fact, the PMD Pro1 has a headland named "interpreting the logical framework matrix" which tries to familiarize the reader with the LFA logic and techniques. Therefore, the PMD Pro1 represents a good standard for managing ID projects and improves their performance since it shares all benefits provided by the LFA, but also extends LFA methodology by including the philosophy, tools and techniques that have been developed in the project management discipline over the last 20 years. In this sense, the PMD Pro1 starts with a clear definition of the roles and responsibilities of a project manager stressing the managerial part of project managers and thus, highlighting the idea of project managers as managers instead of technicians. Moreover, PMD Pro1 gives an exhaustive list of the competencies and skills that project managers should possess and the benefits of each of the competencies when managing ID projects. Finally, the PMD Pro1 provides project managers

with the tools and techniques that could be used for performing the required activities in each of the phases of project life cycle.

If we look at the results shows in Table 4.3 we see that the PMD Pro1 deals with all our seven critical success factors. PMD Pro1 has a section dedicated to managing the project human resources (***project team characteristics***); has a section treating environmental impact assessment (***local environment***); urge project managers to use "what if" scenarios and consider different approaches to deal with them (***implementation approach***); urge project managers to record lessons after each action review (***learning opportunities***); deals with the ***policy characteristics*** both because it recognizes the LFA hierarchy of project objectives and because it has an own chapter treating external project considerations such as the objectives beyond project scope; has two chapters dealing with the ***resource availability***; and has a section dealing with stakeholders analysis (***stakeholders satisfaction***). The one and only liability of PMD Pro1 related to our seven critical success factors is that although knowledge transfer (***learning opportunities***) is considered a priority of ID projects, nothing is said about the way for transferring knowledge to local beneficiaries.

## 5. Discussion and conclusions

### 5.1. Discussion

In spite of its big size, international aid industry and ID projects in particular have turned poor performance into a rule rather than an exception (Ika et al., 2012). Therefore, the purpose of this study, as indicated in its title, was to discover the way for managing ID projects and get them successfully. In order to do that, we first identify what are the critical success factors for ID projects and then we evaluate the two project management standards specific to the international aid industry, the hitherto used LFA and the newly created PMD Pro1.

In order to identify the critical success factors specific to ID projects we have done a literature review searching for papers talking specifically about critical success factors in an international aid context. After reviewing project management literature, ID literature and strategic management literature we have obtained a list of 25 critical success factors. Finally, and using the criteria of the number of citations, we have built a list of seven critical success factors specific for ID projects –team building, local environment, implementation approach, learning opportunities, policy characteristics, availability of resources, and stakeholders/beneficiaries satisfaction. The main characteristic of these critical success factors is that almost all of them are mainly related to the especial characteristics of ID projects, such as the complex web of

stakeholders, the unique operational environment, or the necessity of knowledge transfer (Crawford & Bryce, 2003; Khang & Moe, 2008; Youker, 2003).

Although the LFA is widely used in the international aid field, project management literature has proved that it has important drawbacks, especially in project monitoring and evaluation. Contrary to other project management standards, the LFA does not provide the organization with a set of routines or processes for developing project activities, and hence project activities are inconsistent across projects and project capabilities cannot be built. Thus, we can assert that the LFA is an inefficient and very limited project management standard for managing ID projects (Crawford & Bryce, 2003). Our results corroborate this negative vision of the LFA. The results in Table 4.3 show that the LFA has liabilities not only in project monitoring and evaluation, but also when managing team building, different implementation approaches, or a complex web of stakeholders. Therefore, although very useful at the time that was designed, LFA shows itself as an inefficient project management standard for successfully managing ID projects.

One of the possible solutions to revert the poor performance of ID projects is to develop a new framework covering those methodologies and techniques already explained in general project management standards such as PMBOK® or ICB®, but also, taking into account the peculiarities of international aid industry. This idea has been developed by the PM4NGOs international group resulting in the PMD Pro1 guide. As expected, this new project management standard surpasses LFA and so it is proved in the results of Table 4.3. PMD Pro1 has a wider coverage than the LFA. In fact, PMD Pro1 gathers all the benefits of LFA, but also extends its benefits by providing project managers in the international aid industry with the tools and methods for dealing with the main critical success factors. We could assert that PMD Pro1 represents a good framework for managing ID projects since it gathers the benefits LFA provided to project managers, but also, it incorporates the tools and methodologies that have been developed in project management discipline over the last 20 years, adapting them to the specific features of the international aid industry. Thus, the use of the PMD Pro1 may improve ID projects performance levels.

However, before concluding the evaluation of PMD Pro1 there is one last debate that has to be discussed. Project management literature is engaged in a dilemma about the generalization of the same critical success factors for all type of projects (Pinto & Covin, 1989). On the one hand, theoretical literature asserts that all projects share the same critical success factors. On the other hand, management practitioners assert that each project has its own unique problems. Closing this debate is beyond the aspirations and objectives of this study, notwithstanding, we

adopt the conclusions of Pinto and Covin (1989) and we believe that although adopting a project-specific approach is necessary, there are fundamental similarities in critical success factors within different types of projects.

The evaluation of PMD Pro1 in section 3 has been made based on the critical success factors specific to ID projects. In order to follow the findings of Pinto and Covin (1989) a deep evaluation of PMD Pro1 requires assessing how this new framework deals with general critical success factors. In Table 4.4, there is a summary of the general critical success factors identified following a similar methodology than the one used in section 2<sup>6</sup>.

**Table 4. 4 General Critical success factors in project management literature and articles they are cited in**

Critical success factor	Reference
Schedule management	Pinto and Slevin (1987); Baccarini (1999); Lim and Mohamed (1999); Cooke-Davies (2002); Van der Westhuizen and Fitzgerald (2005)
Budget management	Baccarini (1999); Lim and Mohamed (1999); Cooke-Davies (2002); Van der Westhuizen and Fitzgerald (2005)
Stakeholders/clients satisfacion	Pinto and Slevin (1987); Baccarini (1999); Lim and Mohamed (1999); Van der Westhuizen and Fitzgerald (2005)
Quality of PM process	Kerzner (1995); Baccarini (1999); Van der Westhuizen and Fitzgerald (2005)
Feedback/monitoring	Pinto and Slevin (1987); Kerzner (1995); Cooke-Davies (2002)
Top management support	Pinto and Slevin (1987); Kerzner (1995); Baccarini (1999)
Quality management	Baccarini (1999); Lim and Mohamed (1999); Van der Westhuizen and Fitzgerald (2005)

Source: Developed for this study

General Critical success factors (Table 4.4) are very different to those specific for ID projects with the exception of *stakeholders acknowledgement*, which is common to both lists. Within the list in Table 4.4, we see that some of the critical success factors identified match the liabilities identified for the LFA, e.g., the absence of a time dimension (Crawford & Bryce,

<sup>6</sup> We have searched in the main project management journals (i.e. International Journal of Project Management, and Project Management Journal) for papers including the keyword critical success factors. From the literature review we have obtained a list of 43 critical success factors gathered from 25 different papers. Finally, we have made our own list of general critical success factors by considering the criteria of the number of citations, and selecting those critical success factors cited at least in three papers.

2003), and could be considered an explanation of the poor performance of ID projects managed through LFA.

**Table 4.5 Project management standards review**

Critical success factor	LFA (LogFrame Matrix)	PMI (PMBOK®)	IPMA (NCB)	PM4NGOs	
Schedule management	n.a.	Chapter 6: project time management	Technical competences: 1.11 time and project phases	Technical competency: manage the schedule to ensure that work is assigned and completed on time and within budget	2.3 Project Planning; Schedule development
Budget management	n.a.	Chapter 7: project cost management	Technical competence: 1.13 cost and finance		
Quality management	Activities, outputs, outcomes and goals are defined and so are the indicators and sources of verification.	Chapter 5: project scope management; Chapter 8: project quality management	Technical competence: 1.5 quality; 1.10 scope and deliverables	Technical competency: ensure that deliverables are of acceptable quality.	2.3 Project Planning; using the WBS to define Project Scope
Quality of Project Management Process	n.a.	8.1.3.4 Process Improvement Plan	Technical competence: 1.5 quality	Page 5: high-quality comprehensive PM practices are indispensable.	
Feedback and Monitoring	4. Objectively verifiable indicators (signal successful achievement). 5. Means of verification	3.6 Monitoring and controlling process group (this processes are developed in several chapters).	Technical competence: 1.16 Control and reports	2.5 Project monitoring, evaluation and control	
Stakeholders/clients Satisfaction	n.a.	10.1: Identify stakeholders; 10.4 manage stakeholders expectations	Technical competence: 1.02 Interested parties	2.1 Project identification and design; Definitions of needs (Identifying project ideas). It exists a section named "stakeholders analysis" but it forgets beneficiaries (Venn diagrams, stakeholders' analysis matrix).	2.4. Project implementation; managing communications
Top Management Support	Goal level of objectives takes care of the strategic view of the top management.	n.a.	Contextual competence: 3.05 Permanent Organization	n.a.	

Source: Developed for this study

Notes: n.a. not available,

Original spelling of project management standards has been respected

Finally, we evaluate the LFA and PMD Pro1 (Table 4.5) based on how each of them deals with each of our seven general critical success factors. Furthermore, we add the PMBOK® and ICB®

as the most recognized general project management standards in project management literature and industry.

Results in Table 4.5 show that the LFA has problems dealing with *schedule* and *budget*, two of the most important critical success factors in classic project management literature and part of the well-known iron triangle. Besides, the *quality of project management process* and the *top management support* are also ignored by LFA. Regarding the PMD Pro1, we see that with the exception of the *top management support*, all of our general critical success factors are managed. However, some of the critical success factors are just mentioned or barely explained. If we compare the PMD Pro1 with the two general project management standards we see that either the PMBOK® or the ICB® has specific chapters or sections dedicated to each of our seven general critical success factors. In fact, the extension of PMD Pro1 (90 pages) is significantly smaller than the PMBOK® (459 pages) or the ICB® (236 pages). Nevertheless, we consider that the PMD Pro1 represents a big progress in the ID projects' management.

## 5.2. Concluding remarks

After evaluating both the LFA and the PMD Pro1 based on specific ID critical success factors and on the general ones, we can assert that LFA is an inefficient and very limited framework for managing ID projects. On the other hand, the PMD Pro1 represents the right path for improving ID projects' performance, surpassing all LFA limitations, but also with a considerable room for improvement. As the guide exposes in its introductory section the PMD Pro1 provides an introductory, platform-independent exploration of the principles and terminology of project management within the context of the international aid industry. Thus, this guide is just a first effort for developing a project management standard to manage ID projects. In order to improve the guide, on the one hand, ID project managers should apply its processes, tools, and techniques to real projects so they can assess its validity and propose changes and improvements based on their experienced and projects learned lessons. Future research should be developed to assess if the processes described in the PMD Pro1 guide have turned into the foundation of project capabilities. Thus, future research should also study the process of cross-project learning and the performance of successive ID projects over a time period. On the other hand, some of the sections of the guide (e.g. stakeholders management, lessons learned, etc.) have an informative purpose and need to be developed. In the same line that other project management standards such as the PMBOK® or the ICB®, the PMD Pro1 cannot stay static and we hope that some improved versions acknowledging both academic and practitioner debates will come to light in the next years.





**Chapter 5.**

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**“CONCLUSIONS”**

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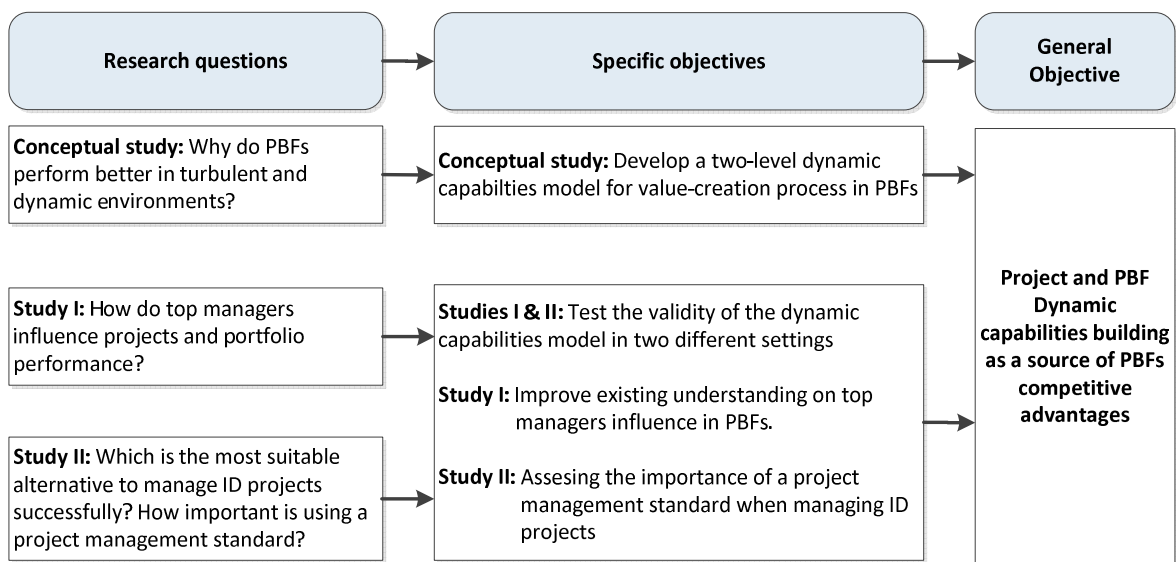


**CONCLUSIONS**

**1. Concluding remarks**

This doctoral dissertation aims to contribute to a more comprehensive view of the PBF as a superior organizational form when competing in turbulent and dynamic environments. To accomplish this general research objective we first develop a two-level dynamic capabilities model showing how PBFs can achieve both project and overall firm performance. Then, in order to empirically test the validity of the dynamic capabilities model, two empirical studies have been developed within two different settings (i.e. an international sample of PBFs, and the international aid industry). In order to show the contributions of this dissertation we first summarize partial conclusions of each of the three studies and then, based on these partial conclusions, an overall conclusion for the whole dissertation is built (see Figure 5.1).

**Figure 5.1. Partial an overall findings of the dissertation**



Source: Own elaboration

*1.1. The project-based firm: A dynamic capabilities model*

The conceptual study focus on the understanding of the foundations of PBF competitive advantage in turbulent and dynamic environments. Drawing on the dynamic capabilities approach a two-level model is developed to explain how PBFs achieve superior project performance in turbulent environments and how projects contribute to the achievement of long-term firm performance.

On the one hand, our model suggests that project managers developing three types of routines (i.e. sensing, seizing and transforming) will enhance project performance. Project sensing encompass routines for identifying potential changes in project scope, and assessing stakeholders' behavior and changes in the project environment (Aaltonen & Kujala, 2010; Petit & Hobbs, 2010). Then, project managers and the project team establish action plans (seizing) in order to exploit opportunities and to protect against threats previously sensed. Finally, transforming entail modifications in project plan and activities redesign by following the action plans previously built. Therefore, at the project level our model explicitly depicts routines for detecting important changes and adapting project plans and documents for addressing these changes.

At the PBF level, our model explains how to consolidate project learning and how to spread it throughout the business unit and the entire firm. PBF-level routines includes capturing project learning, and institutionalizing new organizational routines and capabilities based on those project experiences, so that the project knowledge becomes embedded in the PBF's memory (Brady & Davies, 2004; Keegan & Turner, 2001). Therefore, the objective of PBF-level sensing-seizing-transforming is to reconfigure and extend PBF's capabilities so the firm can fully exploit its project capabilities and achieve a long-term performance through multiple short-term projects.

Our conceptual study thus provides a theoretical explanation for the linkages existing between projects and PBF and the way these linkages work. Specifically, we show how project and PBF dynamic capabilities are built and how they enhance both project and firm long-term performance.

### *1.2. Study I: Top management involvement in project-based firms*

The first empirical study (study I) shed light on the nature and essence of top management involvement as a critical success factor for projects and portfolios. Instead of looking at the specific actions top managers undertake for creating a supportive context for project performance, this study presents the generative mechanism through which top managers involvement enhances project and portfolio performance. Results show that project and portfolio dynamic capabilities mediate the influence of top management involvement over project performance and portfolio achievement respectively. Therefore, project and portfolio dynamic capabilities arise as the engine that makes top management involvement influence both projects and portfolio performance. Specifically, by establishing routines, workflow patterns and work procedures, top managers build dynamic capabilities that help project

managers to face unexpected changes and to make difficult decisions. Moreover, the dynamic capabilities built by top managers allow consolidating project learning and spreading it throughout the entire firm so avoiding the repetition of old mistakes and achieving successive projects performance and the portfolio goals.

Moreover, study I deepens the understanding on the role played by project and portfolio dynamic capabilities in the achievement of project performance and portfolio and organizational goals. Although the building of project dynamic capabilities has been posited as a necessary condition to transfer projects performance to the portfolio level (Davies & Brady, 2000), there is no model showing how that process actually works. Results suggest the existence of two different project dynamic capabilities, one situated at the project level whose objective is to secure project performance under conditions of uncertainty, and the other situated at the portfolio level –portfolio dynamic capabilities- whose objective is to achieve portfolio goals through individual projects performance and knowledge.

Finally, results also shows that both project performance and portfolio achievement contributes to the achievement of firm performance. Thus, by building project and portfolio dynamic capabilities, top managers are not just enhancing both project and portfolio performance but also achieving firm's long-term goals. Project and portfolio capabilities might thus be considered as sources of long-term firm competitive advantages (Teece, 2007).

### *1.3. Study II: Assessing the importance of project management standards*

Study II applies the model presented in the conceptual study to the specific domain of international aid industry. Specifically, study II seeks to assess the importance of project management standards in dynamic capabilities building and hence in project performance. Moreover, Study II contributes to the project management discipline by explaining why ID projects have turned poor performance into a rule rather than an exception. Moreover, study II also assesses the implications for applying a project management standard into a specific an understudied field of project management (i.e. the international aid industry). To those ends, we first identify the critical success factors for ID projects based on an extensive literature review on both strategic and project management research. Then, we evaluate the two project management standards specific to the international aid industry, the hitherto used logical framework approach and the newly created PMD Pro1.

Results show that the logical framework approach is an inefficient and very limited project management standard for managing ID projects (Crawford & Bryce, 2003). Specifically, the

logical framework approach has liabilities not only in project monitoring and evaluation, but also when managing team building, different implementation approaches, or a complex web of stakeholders. Meanwhile, the PMD Pro1 surpasses the logical framework approach. In fact, PMD Pro1 gathers all the benefits of logical framework approach, but also extends its benefits by providing project managers in the international aid industry with the tools and methods for dealing with almost any critical success factors. Thus, the use of the PMD Pro1 may improve ID projects performance levels.

However, if we compare the PMD Pro1 with the two general project management standards we see that either the PMBOK® or the ICB® have specific chapters or sections dedicated to each critical success factors while the PMD Pro1 just mentioned or barely explain how to deal with some of them. Therefore, although the PMD Pro1 represents the right path for improving ID projects' performance it also has a considerable room from improvement. Moreover, future research should assess if the processes described in the PMD Pro1 have turned into the foundation of project capabilities, which is the final end of applying a project management standard.

#### *1.4. Overall conclusion: Towards a more comprehensive view on the PBF as a superior organizational form when competing in turbulent and dynamic environments*

Firms are increasingly developing projects and portfolios as a strategy to compete in turbulent and dynamic environments where change and flexibility is a necessary condition. Thus, PBFs are receiving increasing attention in recent years as an emerging organizational form that can be found in a wide range of industries (Hobday, 2000; Lindkvist, 2004; Sydow et al., 2004; Thiry & Deguire, 2007; Turner & Keegan, 1999). Despite some important insights provided by prior research (Hobday, 2000; Martinsuo, Gemünden, & Huemann, 2012; Thiry, 2008; Thomas & Mullaly, 2008), the reasons of PBF superiority and the specific value of project management are still not well understood (Reich et al., 2013). This dissertation aims to contribute to a more comprehensive view of PBFs taking into account that strategic management theories have a lot of potential in explaining issues related to projects and their management (Grundy, 1998; Killen et al., 2012; Thiry & Deguire, 2007) and that capability building has been posited as a possible explanation of PBF superiority (Brady & Davies, 2004; Davies & Brady, 2000).

Drawing on the dynamic capabilities approach, the notions of project and PBF capabilities, inter-project learning and top management involvement provide the guiding thread to draw these three overall conclusions: (1) by developing project dynamic capabilities PBFs are able to

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address changes both in project environment and stakeholders expectations so enhancing project performance; (2) by developing PBF dynamic capabilities PBFs are able to consolidate project learning and institutionalizing new organizational capabilities based on those project experiences so enhancing long-term PBF performance; and (3) projects and portfolios should no longer be conceived as endeavors to face specific problems but as strategic tools with the capacity to create new business models and provide long-term competitive advantages.

Project capabilities have been claimed as the mean to resolve the internal tension between projects short-term focus and PBF long-term perspective (Davies & Brady, 2000). This dissertation posits that in order to accomplish that objective, project capabilities are built in two different levels, one dedicated to achieve project performance under conditions of environmental uncertainty, and the other dedicated to achieve firm goals by transferring project knowledge to the overall firm level. Furthermore, some of the micro-foundations of both project and PBF dynamic capabilities are brought to light. Specifically, project management standards are posited as possible sources of the routines that will built both project and PBF dynamic capabilities.

By acknowledging project and PBF dynamic capabilities as a source for PBF long-term competitive advantage, the notion of project and inter-project learning must necessarily have a significant role. Contrary to previous postulates (Cooper et al., 2002; Hobday, 2000; Söderlund & Tell, 2009) we posit that it is possible to share knowledge across projects within a PBF. By sharing knowledge across projects, PBFs may find that experiences and routines of one project can solve the problems of another, so achieving higher project performance (Boh, 2007). Moreover, knowledge gained in one project could also be used to reconfigure firm capabilities so avoiding falling in a “success trap” and enhancing long-term performance (Killen & Hunt, 2010; Levinthal & March, 1993).

This dissertation stresses the leading role of top managers in both project and PBF performance. Top managers should not see themselves as secondary actors but they should assume that their involvement results critical for project performance and must be reflected in the establishment of work procedures and decision-making protocols. Moreover, the essence of the influence of top managers over project and PBF performance is brought to light and it is rooted in the mediating role of both project and PBF dynamic capabilities.

As shown, the cross-fertilization between dynamic capabilities approach and project management has potential to enrich both disciplines. On the one hand, the dynamic capabilities approach provides significant guidelines to project managers for facing problems

whose root of cause is managerial rather than technical (Sauser, et al., 2009; Shore, 2008). On the other hand, project management and projects help to clarify concepts still elusive in the dynamic capabilities framework by providing empirical examples of the dynamic capabilities performance and evolution (e.g. pharmaceutical and biotechnology R&D projects, Biedenbach & Müller, 2012; special forces operations, Melkonian & Picq, 2011; telecommunications, projects, Killen, et al., 2008, etc.).

## **2. Implications for practice**

Based on the two empirical studies (study I and Study II) some recommendations for project and PBF management are offered both to top and project managers. Given the two levels of analysis performed in this dissertation (i.e. the project and the PBF), these recommendations concern both how to enhance project performance and how to achieve PBF goals based on that project performance.

### *2.1. Recommendations for top managers*

**Becoming a PBF.** Giving the superior performance scholars have granted to PBFs when competing in turbulent and dynamic environments, top managers could consider configuring their firms as project-based as a way to achieve superior performance in difficult environments. However, top managers should understand that becoming a PBF implies much more than simply hire project managers and develop a bunch of projects. In order to become a PBF top managers must promote the establishment of a general methodology for project management. Moreover, project capabilities must be developed out of the routines and recommendations contained in that general methodology and top managers must understand that project capabilities shape not just PM process but all internal and external competences of the organization. Becoming a PBF thus implies implementing a project management philosophy at all levels of the firm.

**The concept of projects.** Top managers within PBFs must understand that the concept of project has evolved from the initial consideration of temporal endeavor. Nowadays, projects represent agents for change implementation and even strategic weapons able to create economic value and become a source of competitive advantages (Meskendahl, 2010; Thiry & Deguire, 2007). Therefore, top managers must bear in mind that projects are not only servants to organizational strategy but also precursors of new organizational capabilities and even as the source of autonomous business models with a bottom-up effect (Artto et al., 2008; Mutka & Aaltonen, 2013).



**Level and nature of involvement in project management issues.** Top managers cannot afford to play a passive role during project life-cycle, as empirical studies have shown (Crawford, 2005; Young & Poon, 2013). Instead, top managers should assume that their involvement results critical in achieving project performance and it must be reflected in the establishment of work procedures and decision-making protocols.

**How to achieve PBF success through project performance.** This dissertation provides several insights for achieving PBF long-term success through projects performance. First, top managers need to scan project-level processes and project lessons learned in an attempt to discover experiences gained during project life cycle that can be employed in subsequent projects. Moreover, top managers should search for the opportunities already developed projects offer (e.g. the creation of new markets or the development of improved technologies). Second, based on the potential of already developed projects, top managers should decide the composition of the future portfolio and the novel project processes that should be turned into an organizational routine. Thus, in order to achieve PBF long-term performance, top managers should acknowledge that past projects have the potential to both reshape firm capabilities and overall firm strategy.

## *2.2. Recommendations for project managers*

**How to achieve success under uncertain conditions.** There are three important aspects that project managers should carefully manage for achieving project success under uncertain conditions. First, project managers need to continuously scan project environment in a search for uncertainties that could affect the project, both negatively and positively. Second, the management of project stakeholders, especially clients, is seen as an essential element of project performance since they have the capacity of influencing project content and requirements. Finally, project managers should not be slaves of project plans. Although planning activities are necessary, there are constraints and unclear tasks that cannot be recognized at an early stage. Thus project plans need to be flexible enough to allow for revisions and the incorporation of new ideas, and changes during project life-cycle.

**Behave like CXOs.** This dissertation shows that project managers and CXOs<sup>1</sup> are much closer than professionals of both disciplines believe. In fact, some papers claim that project managers

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<sup>1</sup> The term CXOs refers to the top managers of the companies such as the Chief Executive Officer or the Chief Financial Officer (Thiry & Deguire, 2007).

are performing roles traditionally attached to organizational managers (Thiry & Deguire, 2007). Therefore, project managers should not behave like technical experts anymore. Instead, they have to actively participate in building the strategy of the whole PBF and show to top managers the opportunities discovered through project implementation. Moreover, given the closely relation between project and PBF strategy, project managers should assume that their expert technical advice has less impact on project success than previously believed.

**A correct use of project management standards.** This dissertation offers new insights on how to properly use a project management standard. Specifically, project managers should understand that project management standards are not a panacea that automatically leads to project success. Instead, project management standards are a source of valuable knowledge and widely recognized best practices that should be taken as the foundations for project and PBF dynamic capabilities building.

### 3. Limitations

Despite the above-discussed conclusions and implications, this dissertation suffers from some important limitations. As a whole, taking the dynamic capabilities approach and the project management discipline as the two main theoretical frameworks implies the assumption of the different shortcomings these two frameworks possess. In spite of the great number of articles focused on the study of dynamic capabilities and projects and PBFs, both frameworks still are underdeveloped (Di Stefano et al., 2010; Pollack, 2007). Both frameworks suffer from logical inconsistencies that involved controversy in the definitions of key concepts (e.g. what is a dynamic capability, what is a PBF, etc.) or the existence of different and opposite models for the explanation of key phenomena (e.g. the PMBOK® vs the ICB®, Teece, 2007, sensing-seizing-transforming model vs Zollo and Winter, 2002, experience accumulation–knowledge articulation–knowledge codification model).

On a pure methodological level, this dissertation suffers from two important limitations: (1)the application of a cross-sectional study, (2)the development of a questionnaire as the mean for data gathering. On the one hand, the application of a cross-sectional study for the analysis of dynamic capabilities building and their consequences has been claimed as problematic. The snapshot nature of cross-sectional studies, while convenient, does have its downside in the establishment of causality. Moreover, cross-sectional studies overlook the process nature of routines and dynamic capabilities, hence, making impossible to capture the dynamic essence of dynamic capabilities. On the other hand, although significant tools and recommendations have been developed for the improvement of questionnaire application, this mean of data-

gathering still has important shortcomings (e.g. there is no way to tell how truthful a respondent is being, there is no way of telling how much thought a respondent has put in, people may read differently into each question and therefore reply based on their own interpretation of the question, etc., Ackroyd & Hughes, 1981; Popper, 2002). Despite the above-mentioned limitations the use of a cross-sectional, questionnaire-based study provides significant benefits. Specifically, the benefits provided are twofold. On the one hand, it fulfills the need to adopt a micro-level perspective by specifically asking about routines as the main building blocks of dynamic capabilities (Dosi et al., 2000; Teece, 2007). On the other hand, since the questionnaire was addressed to an international sample of firms from very different industries, our results can be considered to apply to almost every PBF. Thus, we don't suffer for the generalization problems of qualitative studies such as case studies.

On a more pure conceptual level, a key limitation should be noticed (i.e. the assumption of Teece, 2009, 2007; sensing-seizing-transforming model). In order to build our dynamic capabilities model within PBFs, we adopted Teece (2009, 2007) sensing-seizing-transforming model as a reference. This model defines dynamic capabilities as "the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997 : 516). The definition of dynamic capabilities as abilities has been claimed as tautological (Priem & Butler, 2001). Moreover, scholars claim that the specifications of Teece's model do not allow for a clear distinction of dynamic capabilities as sources or consequences of firm competitive advantages (Priem & Butler, 2001; Williamson, 1999). Despite above-mentioned limitations, Teece's framework offers valuable insights to dynamic capabilities approach since by disaggregating dynamic capabilities into its component parts (i.e. their micro-foundations), Teece opens up the black box of dynamic capabilities, hence, allowing researchers to perform micro-level empirical studies.

#### **4. Future research**

Beyond the relevant list of contributions and the research efforts to overcome the above-mentioned limitations, this dissertation provides some interesting paths for future research. Some of these paths have been already highlighted in the concluding section of each study. In the following, other three main paths for future research, more broadly derived from the dissertation, are presented.

**Longitudinal studies.** The model presented in the conceptual study shows the logic and functioning of capability building and reconfiguration within a PBF. In order to provide relevant insights on the validity of the model as precursor of PBF long-term performance or to

strength findings of both study I and II, longitudinal studies, whether qualitative or quantitative must be conducted. In fact, scholars have stressed that longitudinal studies are the only mean to actually capture the dynamic essence of dynamic capabilities (Teece & Pisano, 1994).

**Role of project learning and its transfer.** Project and inter-project learning are pervasive concepts embedded in the whole dissertation. However, they have not been addressed specifically and several paths are thus opened for future research. On the one hand, it could be assessed if PBFs performing the two-level dynamic capabilities model are more capable of achieving project learning and dispersing that learning through the whole firm than PBFs which don't have dynamic capabilities. On the other hand, project management literature has established the lack of functional departments as a possible reason of PBFs' difficulties for learning (Lindner & Wald, 2011). Project management offices has been defined as knowledge brokers capable to act as knowledge silos and thus facilitating PBFs learning (Pemsel & Wiewiora, 2013). Thus, the study of project management offices as agents involved in the process of dynamic capability building appears as a promising research path (e.g. PBFs that possess a project management office are more capable to develop organizational capabilities from project routines and processes?). Moreover, project management offices could be considered as substitutes for top management involvement and vice-versa (Pemsel & Wiewiora, 2013). Assessing if PBFs with a project management office and high levels of top management involvement perform better/worse/or equal than PBFs without the project management office represent another promising research path.

**The influence of different project management standards.** Through the whole dissertation it has been posited that both project and PBF dynamic capabilities are a collection of routines, and that those routines can be derived from the tools, processes and methodologies provided by project management standards. However, there are many project management standards with a very different approach to project management (e.g. the PMBOK® is focused on the processes needed to correctly manage a project, the ICB® is focused on the competencies good project managers should have, PRINCE 2® is also a process-based standard, etc.). Thus a promising line for future research could continue walking the research path opened in Study II, hence, focusing on assessing the validity of each of these project management standards as sources or antecedents for dynamic capabilities. Moreover, this line of research could contribute to unify the different perspectives within today's project management standard with the development of a global project management standard.

## **“APPENDIXES”**



## APPENDIXES CHAPTER 2

## Appendix 2.1 Cover letter and questionnaire



Universidad de Valladolid

Valladolid (Spain), June 2013

Dear participant,

The Social Systems Engineering (INSISOC) Research Group based in Spain is conducting a research project focused on the performance of Project-Based Organizations worldwide from a dynamic capabilities perspective. Because you are a top manager from a company with experience developing projects, we are inviting you to participate in this research study by completing the questionnaire enclosed to this letter (you can also fulfill the on-line questionnaire attached at [http://www.insisoc.org/cuestionarioPBO/Questionnaire\\_PBOs.pdf](http://www.insisoc.org/cuestionarioPBO/Questionnaire_PBOs.pdf)).

Our research group assures you that all information will be kept confidential and will be treated anonymously. The questionnaire will require approximately 10 minutes to be fulfilled. The data collected will provide useful information regarding the fundamentals for an explanation of project-based organizations obtaining superior performance in turbulent environments.

If you require additional information or have any questions do not hesitate to contact us at any of the numbers listed below. Moreover, if you would like a summary copy of this study please complete the request for information form at the end of the questionnaire. We look forward to learning about your experiences in managing projects and project-based organizations. Your participation will be greatly appreciated.

Thank you for taking the time to assist us in our research endeavors.

Sincerely,



José Manuel López Rodríguez  
Vice-Chancellor for Research  
University of Valladolid



Adolfo López Parédes  
Full Professor in Managerial Economics  
Director of the MSc in Project Management  
Senior Project Manager  
University of Valladolid

**Please send us back your fulfilled questionnaire by ordinary mail: A pre-paid enveloped is enclosed**

Business School, University of Valladolid – Avenida Valle Esgueva 6, 47011 Valladolid (SPAIN)  
Phone. 0034 983 185948 – Fax. 0034 983 186484 – e-mail: vhermano@eco.uva.es

Department of Business Management  
and Marketing Research



Universidad de Valladolid

RESEARCH PROPOSAL  
**CREATING VALUE THROUGH  
PROJECT BASED ORGANIZATIONS (PBOs)**

Thank you for agreeing to complete this questionnaire. We apologize if you have already received this questionnaire by any other mean (in that case, please do not complete the questionnaire again)

**PRIOR CONSIDERATIONS BEFORE FULFILLING THE QUESTIONNAIRE**

**Research  
Background**

This questionnaire is embedded within a **Ph.D dissertation** focused on **value creation processes in PBOs**. In order to achieve this objective we propose **university-firm collaboration**. Research team belongs to **INSISOC Excellence Research Group**

**Research  
Objective**

Research proposal focuses on the study of the **capabilities** PBOs develop, their reconfiguration, and the influence those capabilities have over the **value-creation process**.

**To Whom is the  
questionnaire  
addressed?**  
(check your box/boxes)

- Chief Executive Officer (CEO)  
 Project Manager (specify certification level .....)  
 Chief Human Resources Officer (CHRO)  
 Other (.....)

All information provided will be treated **anonymously**.  
Research team assures you that all information will be kept **confidential**.  
A **report** showing research **main results** will be provided to all companies asking for it.

**Research Team  
contact**

**Víctor Hermano Rebolledo**  
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*Universidad de Valladolid*



**I. COMPANY'S MAIN FEATURES**

(Leave a blank if the question has no answer)

① strongly disagree/never    ⑤ strongly agree/always

Company's projects represent the primary unit of production organization, innovation and competition.	1	2	3	4	5
Company's projects are the primary business mechanism for coordinating and integrating all the main business functions of the firm.	1	2	3	4	5
Company's knowledge, capabilities and resources are built up through the execution of major projects	1	2	3	4	5
Project Managers within the company hold senior and/or top management roles and have direct control over business functions, personnel and other resources	1	2	3	4	5
Company creates temporary structures for the performance of project tasks	1	2	3	4	5
Company's outputs embody application of new knowledge	1	2	3	4	5
Company's outputs are produced in small batches	1	2	3	4	5
Communication flows mainly between similar hierarchical levels	1	2	3	4	5
Stakeholders' collaboration is usually requested during project life-cycle (initiation, planning, execution, monitoring and closing)	1	2	3	4	5
The production process is organized using temporary teams	1	2	3	4	5
The production process implies the use of high-technologies	1	2	3	4	5
The production process requires a high degree of knowledge creation and combination	1	2	3	4	5
Improvements in the production process are implemented through projects	1	2	3	4	5
Company delivers projects for its business purposes	1	2	3	4	5

**II. THE PROJECT MANAGEMENT PROCESS**

(Leave a blank if the question has no answer)

**Regarding Top Management involvement:**    ① strongly disagree/never    ⑤ strongly agree/always

Top managers of the company are aware of the methodology used for managing projects.	1	2	3	4	5
Top managers of the company decide the projects that have to be developed	1	2	3	4	5
Top managers of the company have an active role when defining success criteria of projects	1	2	3	4	5
Top managers of the company are responsible for establishing the project management methodology	1	2	3	4	5
Top managers of the company are frequently informed about the progress of projects	1	2	3	4	5
Top managers of the company are involved in the monitoring and controlling phase of programs and portfolios	1	2	3	4	5
Top managers have been trained in project management	1	2	3	4	5

**Regarding project management methodology**

Projects, programs, and portfolios are managed by a specialized organizational unit	1	2	3	4	5
Project management processes are well documented and controlled	1	2	3	4	5
Project management processes are standardized and subject to some improvements	1	2	3	4	5
Project management processes are adapted to specific project features and measured in terms of quality	1	2	3	4	5
Project management processes suffer continuous updates	1	2	3	4	5

All company projects are managed using the same methodology	1	2	3	4	5
Project managers are requested to adapt the project management methodology to individual project features and environmental conditions	1	2	3	4	5
All projects are using a project management plan	1	2	3	4	5
All projects are using a project management information system	1	2	3	4	5
Information from project activities is routinely collected as the project progresses	1	2	3	4	5
Project plan and documents are updated frequently as projects progress	1	2	3	4	5
Projects managers are requested to document the impact of change requests	1	2	3	4	5
Organizational culture, structure and processes have a strong influence on the project management plan	1	2	3	4	5
Project managers are requested to follow the organizational processes and procedures such as (standardized guidelines, templates, etc.)	1	2	3	4	5
Project managers are requested to document lessons learned and apply them to future projects	1	2	3	4	5
Project managers are requested to identify, define, combine and coordinate the various processes within projects taking into account the characteristics of project environment	1	2	3	4	5
Project managers are requested to maintain, update and change the project organization during the project life-cycle if needed	1	2	3	4	5
Project managers are requested to define a change management policy	1	2	3	4	5
Project managers have to ensure compliance with the company's policies and any regulatory requirements	1	2	3	4	5
Project managers have to consider specific structure, culture, and processes of their company	1	2	3	4	5

### III. PROJECT, PROGRAM and PORTFOLIO PERFORMANCE

(Leave a blank if the question has no answer)

#### Regarding projects success

①strongly disagree/never ⑤strongly agree/always

Projects meet their operational performance goals	1	2	3	4	5
Projects meet their technical performance goals	1	2	3	4	5
Projects meet their schedule objectives	1	2	3	4	5
Projects stay within budget limits	1	2	3	4	5
Projects results meet stakeholders expectations	1	2	3	4	5
Stakeholders are satisfied with project results	1	2	3	4	5

#### Regarding program performance and achievement

Programs implementation reflect the business strategy	1	2	3	4	5
Programs impact exceeds stakeholders expectations	1	2	3	4	5
Programs achieved cost-benefits objectives	1	2	3	4	5

#### Regarding project portfolio performance

Company has the right number of projects for the resources available	1	2	3	4	5
Company's portfolio contains high-value projects	1	2	3	4	5
Company's portfolio has an excellent balance of projects	1	2	3	4	5
Company's projects are aligned with the business strategy	1	2	3	4	5
The budget allocation between projects in the portfolio reflects the business strategy	1	2	3	4	5

**Regarding project portfolio achievement**

Company's portfolio leads to a high stakeholders satisfaction	1	2	3	4	5
Company's portfolio achieves time, cost and quality objectives	1	2	3	4	5
Company's portfolio achieves financial objectives	1	2	3	4	5
Company's portfolio fulfills stakeholders requirements	1	2	3	4	5
Company's projects purpose is achieved	1	2	3	4	5

**Regarding firm performance**

Top managers are satisfied with sales in comparison with other companies in the industry	1	2	3	4	5
Top managers are satisfied with sales growth in comparison with the strongest competitors	1	2	3	4	5
Top managers are satisfied with market share in comparison with other companies in the industry	1	2	3	4	5
Top managers are satisfied with company's adaptability to environmental conditions	1	2	3	4	5
Top managers are satisfied with company's adaptability to customer needs	1	2	3	4	5

**IV. COMPANY'S GENERAL OVERVIEW**

Main industry where the company competes .....  
 2<sup>nd</sup> industry ..... 3<sup>rd</sup> industry .....

Years of activity of the company <10  10-20  20-50  >50

No. of employees in year 2011 (on average) <10  10-50  51-250  >250

% of employees (2011) with a project management certification (approximately) <5  5-10  >10

% of employees by certification organization (approximately) PMI ..... IPMA ..... Other .....

No. of years implementing project management techniques: <2  2-5  5-10  >10

Company has an organizational unit for managing projects, programs and portfolios Yes  No

Do you consider your company a "project-based organization"? Yes  No

----- THANK YOU VERY MUCH FOR YOUR TIME! -----

If you consider that the results of this research could be of your interest please fulfill the form below this paragraph and a report with main results and conclusions will be sent to you.

Company name .....

E-mail .....

*Universidad de Valladolid*

## Appendix 2.2 Statistics tables of Study I's additional analysis

**Table A.1 Latent variable, measurement item, composite reliability, AVE and Cronbach alpha**

Construct and indicator	Factor loading / weight	t-statistic	Composite reliability	AVE	Cronbach alpha
Top Management Involvement			0,909	0,626	0,880
TMI_1	0,817	16,378			
TMI_2	0,745	8,436			
TMI_3	0,851	17,295			
TMI_4	0,747	10,466			
TMI_5	0,782	13,179			
TMI_6	0,800	13,290			
Project Capabilities			0,938	0,629	0,926
Proj_Cap1	0,750	10,909			
Proj_Cap2	0,790	12,562			
Proj_Cap3	0,708	6,293			
Proj_Cap4	0,793	12,454			
Proj_Cap5	0,824	16,581			
Proj_Cap6	0,824	23,682			
Proj_Cap7	0,879	28,554			
Proj_Cap8	0,732	8,546			
Proj_Cap9	0,822	15,816			
Portfolio Capabilities			0,869	0,530	0,818
Portf_Cap1	0,647	6,286			
Portf_Cap2	0,770	10,941			
Portf_Cap3	0,565	4,415			
Portf_Cap4	0,817	15,350			
Portf_Cap5	0,835	15,493			
Portf_Cap6	0,697	8,077			
Project Performance			0,927	0,681	0,905
ProjectPe_1	0,850	20,576			
ProjectPe_2	0,836	19,171			
ProjectPe_3	0,777	13,906			
ProjectPe_4	0,712	7,104			
ProjectPe_5	0,871	19,711			
ProjectPe_6	0,890	30,980			
Portfolio Achievement (formative)			---	---	---
PortfAch_1	0,001	0,011			
PortfAch_2	0,275	1,773			
PortfAch_3	0,148	1,026			
PortfAch_4	0,164	1,137			
PortfAch_5	0,608	2,669			

**Table A.2 Inter-construct correlations and average variance extracted (AVE)**

	1	2	3	4	5
1. Portfolio Achievement	---				
2. Portfolio Capabilities	0.605	<b>0.728</b>			
3. Project Capabilities	0.867	0.713	<b>0.793</b>		
4. Project Performance	0.543	0.559	0.612	<b>0.825</b>	
5. TMI	0.575	0.724	0.679	0.631	<b>0.791</b>

Note: The diagonal elements are the square root of AVE

**Table A.3 Relationships and path coefficients**

Relationship	Path coefficient	t-value
Top Management Involvement --> Project performance	0,400	2,818***
Top Management Involvement --> Portfolio achievement	0,562	3,990***
Project capabilities --> Project performance	0,341	2,495***
Portfolio capabilities --> Portfolio achievement	0,282	1,921**
Top Management Involvement --> Project capabilities	0,679	10,299***
Top Management Involvement --> Portfolio capabilities	0,575	6,745***

Note: \* p< 0.1    \*\* p<0.05    \*\*\* p< 0.01

**Table A.4 Controls**

Control	Dependent Variable	Path Coefficient	t-statistics
Industry	Project Performance	0.020	0.352
	Portfolio Achievement	0.034	0.529
No. employees	Project Performance	0.038	0.537
	Portfolio Achievement	-0.090	1.131
Years of activity	Project Performance	0.007	0.123
	Portfolio Achievement	-0.107	1.266

**Table A.5 Key variable's mean comparison between respondents and non-respondents**

Key variable	F-statistic	p-value
SICCode	,009	,924
tf.Earnings Before Interest And Taxes	,121	,728
tf.Net Income	,067	,795
tf.Employees	,266	,606
Founded year	,763	,383

**Table A.6 Items' mean comparison between early and late respondents**

<b>Item</b>	<b>F-statistic</b>	<b>p-value</b>
TMI_1	,000	1,000
TMI_2	3,941	,054
TMI_3	,297	,589
TMI_4	,068	,796
TMI_5	,554	,461
TMI_6	,026	,873
TMI_7	1,226	,275
PMO	,479	,493
Portf_Cap1	,019	,892
Proj_Cap1	2,323	,135
Proj_Cap2	3,078	,087
Portf_Cap2	4,038	,051
Proj_Cap3	,783	,382
Proj_Cap4	,857	,360
Proj_Cap5	5,545	,024
Portf_Cap3	2,851	,099
Portf_Cap4	,378	,542
Portf_Cap5	,113	,739
Proj_Cap6	,443	,510
Proj_Cap7	3,074	,087
Proj_Cap8	2,453	,125
Proj_Cap9	1,934	,172
Portf_Cap6	,409	,526
ProjectPe_1	,297	,589
ProjectPe_2	,022	,882
ProjectPe_3	,850	,362
ProjectPe_4	,014	,905
ProjectPe_5	,362	,551
ProjectPe_6	,002	,965
ProgSuc_1	,000	1,000
ProgSuc_2	,076	,785
ProgSuc_3	,249	,621
PortPer_1	1,756	,193
PortPer_2	1,792	,188

<b>Item</b>	<b>F-statistic</b>	<b>p-value</b>
PortPer_3	1,670	,204
PortPer_4	,070	,793
PortPer_5	,014	,905
PortAch_1	,005	,945
PortAch_2	,287	,595
PortAch_3	,282	,599
PortAch_4	,000	1,000
PortAch_5	,018	,895
Company_1	,786	,381
Company_2	,072	,790
Company_3	,213	,647
Company_4	2,916	,095
Company_5	,002	,966

**Table A.7 Item's mean comparison  
between respondents (CEO, Project  
manager, CHRO, Other)**

<b>Item</b>	<b>F-statistic</b>	<b>p-value</b>
TMI_1	1,281	,288
TMI_2	1,333	,269
TMI_3	2,527	,050
TMI_4	,827	,514
TMI_5	,625	,646
TMI_6	,929	,454
TMI_7	,641	,635
PMO	,579	,679
Portf_Cap1	1,264	,295
Proj_Cap1	,454	,769
Proj_Cap2	,918	,460
Portf_Cap2	1,558	,199
Proj_Cap3	2,362	,064
Proj_Cap4	2,218	,079
Proj_Cap5	,884	,479
Portf_Cap3	1,000	,415
Portf_Cap4	,349	,844
Portf_Cap5	,482	,749
Proj_Cap6	,506	,731
Proj_Cap7	,492	,741
Proj_Cap8	,829	,513
Proj_Cap9	,778	,544
Portf_Cap6	,863	,492
ProjectPe_1	2,287	,071
ProjectPe_2	,785	,540
ProjectPe_3	,635	,639
ProjectPe_4	1,219	,313
ProjectPe_5	1,009	,411
ProjectPe_6	1,419	,240
ProgSuc_1	2,499	,052
ProgSuc_2	,826	,514
ProgSuc_3	,278	,891
PortPer_1	2,525	,051

<b>Item</b>	<b>F-statistic</b>	<b>p-value</b>
PortPer_2	1,072	,379
PortPer_3	1,402	,245
PortPer_4	1,484	,219
PortPer_5	2,364	,064
PortAch_1	1,084	,374
Port_Ach_2	,235	,917
PortAch_3	1,725	,158
PortAch_4	2,837	,032
PortAch_5	,877	,484
Company_1	,987	,423
Company_2	,829	,513
Company_3	,808	,526
Company_4	,199	,938
Company_5	,487	,745

**Table A.8 Results of the Harman's single factor test**

Component	Initial Eigenvalues			Sums of Squared Loadings extraction		
	Total	% of the Variance	% Accumulated	Total	% of the Variance	% Accumulated
1	23,008	37,110	37,110	23,008	37,110	37,110
2	5,560	8,968	46,077	5,560	8,968	46,077
3	3,421	5,518	51,596	3,421	5,518	51,596
4	3,067	4,947	56,543	3,067	4,947	56,543
5	2,582	4,165	60,708	2,582	4,165	60,708
6	2,443	3,940	64,648	2,443	3,940	64,648
7	2,211	3,566	68,213	2,211	3,566	68,213
8	1,899	3,063	71,277	1,899	3,063	71,277
9	1,847	2,979	74,255	1,847	2,979	74,255
10	1,736	2,801	77,056	1,736	2,801	77,056
11	1,561	2,518	79,574	1,561	2,518	79,574
12	1,283	2,069	81,643	1,283	2,069	81,643
13	1,256	2,026	83,669	1,256	2,026	83,669
14	1,123	1,812	85,481	1,123	1,812	85,481
15	1,019	1,643	87,124	1,019	1,643	87,124



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## GENERAL APPENDIXES

### Appendix I. Published papers

Two pieces of this doctoral dissertation have already been published. Specifically, an early version of the conceptual study titled “Towards strategic project management” is accepted for publication in the book *“Managing Complexity: Challenges for Industrial Engineering and Operations Management”*. This book, which will be published in the *SPRINGER* series *LNMI*, came out from the selected proceedings of the 7<sup>th</sup> International Conference on Industrial Engineering and Industrial Management CIO 2013, and the XIX International Conference on Industrial Engineering and Operations Management, ICIEOM 2013, that were held on Valladolid 10 – 12<sup>th</sup> July, 2013.

Second, a version of Study II titled “How to manage international development (ID) projects successfully. Is the PMD Pro1 Guide going to the right direction?” was published in the volume 31, issue 1, 2013 of the *International Journal of Project Management* (© Thomson Reuters 2012 impact factor 1.686).

In the following, both a copy of the book chapter and the journal article is included.

7th International Conference on Industrial Engineering and Industrial Management.  
XVII Congreso de Ingeniería de Organización. Valladolid, July 10-12, 2013

## Towards Strategic Project Management

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### Abstract

This paper focuses on the application of the Dynamic Capabilities framework to Project Management discipline. A review of project management literature illustrates the new project and project managers' conceptualization and the shift towards a more strategic perspective. Commonalities and overlaps between project management and dynamic capabilities approach are highlighted both from a theoretical and professional point of view. The findings indicate the closeness between project management and dynamic capabilities by creating an integrative framework useful both for top and project managers. Besides, we show the potential benefits of the application of strategic management theories to Project Management.

**Keywords:** Project Management; Strategic management; Theoretical framework; Dynamic capabilities approach.

### 1 Introduction

Since the 1950s, when it was recognized as a distinct discipline, project management has become a widespread practice in modern organizations (Whittington et al. 1999). In today's turbulent and dynamic environments, traditional elements of business success – owning tangible assets, controlling costs, maintaining quality- are necessary but appears to be insufficient to obtain sustainable abnormal results (Teece 2007). In order to compete in this environment, organizations are increasingly shifting towards more-flexible project-based structures instead of rigid traditional ones (Whittington et al. 1999, Nohria 1996). Based on the report “New challenges for a land on expedition”, developed by the Deutsche Bank, in 2020, the “project economy” delivers 15% of value creation in Germany (Hofmann, Rollwagen & Schneider 2007). Moreover, project-based organizations (PBOs) have been considered to obtain better results, especially in unstable and dynamic environments (Huemann, Keegan & Turner 2007, Thiry, Deguire 2007, Melkonian, Picq 2011).

This “projectification” process comes along with a paradigm shift in project definition. As Turner and Müller (2003) claim, the traditional conceptualization of project as an endeavor or task is unable to fully gather all roles, functions and limits of projects, therefore, this definition is just not enough. Nowadays, projects are conceived as organizations' best drivers for change (Thiry, Deguire 2007, Turner, Müller 2003). Even more, some authors perceive projects as powerful strategic weapons initiated to create economic value and thus, being source of sustainable competitive advantages (Shenhar et al. 2001, Meskendahl 2010). Therefore, projects are conceived as central element for implementing companies' intended strategy (Meskendahl 2010), and are nowadays defined as agencies for change, and even, as

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temporary organizations (Turner, Müller 2003, van Donk, Molloy 2008). Therefore, a paradigm shift seems to be happening and projects are becoming vectors of organizations' strategy (Thiry, Deguire 2007).

Although project management theory has been frequently recognized as predominantly implicit and practitioner-driving, in the last years, project management academics have increased their efforts in a new attempt to create a strong theoretical framework for project management discipline. Specifically, some authors claim that a cross-fertilization among strategy and project management could create great opportunities to enrich analysis and techniques in both disciplines (Meskendahl 2010, Grundy 1998). However, although project and strategic management have developed parallel, there is a gap between these disciplines both in theory and in practice (Thiry, Deguire 2007, Turner, Müller 2003, Meskendahl 2010, Grundy 1998). A review of strategic management literature shows that Project Management does not appear as a keyword for papers nor for conferences (Thiry, Deguire 2007). Project management as a research topic is confined to specific project management journals such as the PMI Project Management Journal, or the IPMA International Journal of Project Management.

This paper works, first, on the conceptualization of projects as temporary organizations, and the importance of PBOs as flexible organizational forms well prepared for competing in today's turbulent environment. Therefore, the objective of this paper is to close the gap between project and strategic management. Specifically, we claim that project management constitutes a dynamic capability which helps PBOs to adapt to rapidly changing environments. We seek to show the potential convergence between dynamic capabilities and project management by providing a framework for the consideration of project management as a dynamic capability both from a theoretical and a professional point of view. Thus, we shed light on the need to find the fundamentals that allow for an explanation of PBOs as a superior form of organization.

## **2 From Project Management to Project-Based Organizations**

Traditionally, organizations formed temporal project teams inside their functional structure in order to deal with specially challenging operations (e.g. new products development; commissioning of a new procedure; etc.) or to respond to rapidly changing market conditions (Irja 2006). Projects were understood as temporal endeavours undertaken to achieve a particular objective. Classic project management literature was only concerned for the critical success factors in project operations, while in a more professional side, the concerns focused on professionalizing project management techniques (Melkonian, Picq 2011). All these efforts were oriented to secure single project success. However, in a more and more complex and uncertain environment, undertaking successful projects has been recognized as necessary but no longer sufficient strategy to secure long term and sustainable performance (Melkonian, Picq 2011).

Thus the focus has been shifted from individual projects to portfolios, and a new area of practice, known as Project Portfolio Management, has appeared (Melkonian, Picq 2011). The key point in project portfolio management is not to secure single project performance but to create structures able to optimize the use of resources among many projects and thus, allowing organizations to efficiently coordinate collections of projects (Thiry, Deguire 2007). Furthermore, nowadays project management literature has adopted an even more strategic perspective since the focus has moved from project portfolio management to the organizational level -PBOs (Melkonian, Picq 2011). Scholars claim that organizations carrying out their core operations mainly in project form -PBOs- could obtain better results in dynamic environments (Thiry, Deguire 2007, Melkonian, Picq 2011).

Although profusely cited, the concept of PBO, also cited as project-oriented company, project-based firm, and p-form organization; is not without controversy. There is one literature stream emerging from Hobday's seminal paper (2000) that identifies PBOs as those organizations executing projects in industries focused on complex industrial products and systems. These PBOs are intrinsically innovative as they continually reorganize their structure around the demands of each project and to changing client needs. Thus, these PBOs are very flexible and able to cope with project uncertainties and risks (Hobday, 2000). However, these PBOs suffer when company projects are not independent from each other. Specifically, these PBOs are weak in coordinating cross-project resources and promoting organizational

knowledge and learning. Moreover, these PBOs could promote individual project objectives over the overall organization goals.

Scholars have recently suggested that only PBOs capable of developing project capabilities would be able to overcome the dichotomy among the individual nature of projects and the long-term and stable objectives of the overall organization's strategy (Melkonian, Picq 2011). Project capabilities are defined as the internal ability of a PBO to create lasting performance based on multiple short term projects (Davies, Brady 2000). Following Hobday (2000, p.874), a PBO is one in which the project is the primary unit for production organization, innovation, and competition, and project management is the main source for capabilities and knowledge formation. For the purpose of this paper, we define PBOs through a translation of Hobday's (2000) ideas into the dynamic capabilities approach. Unlike earlier approaches (e.g. Porter's competitive forces framework, or the resource-based view) which are static in nature, from the dynamic capabilities approach organizations obtain superior performance not just because of their assets endowment but through their ability for reconfiguring their competences to address rapidly changing environments –dynamic capabilities- (Teece, Pisano & Shuen 1997: 516). Drawing on the dynamic capabilities approach, we define PBOs as those where project capabilities shape not just project management processes but all internal and external competences of the organization. In a PBO, project (dynamic) capability represents the mechanism for integrating, building and reconfiguring organizational competences, so project (dynamic) capability constitutes the main source for a competitive advantage.

### **3 Project Management and Dynamic Capabilities: Implications from a professional perspective**

The cross-fertilization between dynamic capabilities approach and project management can be extended to a professional perspective to give theoretical meaning to the guidelines offered by the different global project management standards such as the well-known PMBOK®. In the following, we interpret the PMBOK®'s processes and indications throughout the dynamic capabilities theoretical framework. We focus on the main components and routines of dynamic capabilities and the guidelines provided by the PMBOK® for dealing with them.

PMBOK® defines project management as the application of knowledge, skills, tools and techniques to project activities to meet the project requirements (Project Management Institute 2008). Furthermore, it recognizes that project management is accomplished through the appropriate application and integration of 42 processes. The observation of PMBOK®'s definition of project management as a collection of processes reminds to the definition of organizational capabilities given by Winter (2003) -collection of routines that confers a set of decision options for producing significant outputs -<sup>3</sup>. Although there are some authors claiming that the temporary nature of projects makes it difficult to develop routines so making also difficult to develop dynamic capabilities (Hobday 2000), recent research has shown that PBOs have viable alternatives both individual (e.g. managers of competencies) and collaborative (e.g. industry-wide social networks) by which they can create routines and distribute social learning (Cacciatori 2008). Therefore, and based on the work of Winter (2003) we consider organizational project capabilities as collection of routines that can be clarified through the study of the 42 processes (routines) contained in the PMBOK®.

Regarding the components of dynamic capabilities and for the purpose of this paper, we assume the framework established by Teece et al. (1997) in their seminal paper where dynamic capabilities possess three different roles -coordination/integration, learning, and reconfiguration/transformation (Teece et al. 1997). The first one, coordination/integration refers to the tasks managers perform for coordinating and integrating activities inside the firm and also for the coordination of external activities and technologies (Teece et al. 1997, p.518). The PMBOK® possess a whole chapter (chapter four) dedicated to project integration management in which the integration role is defined as the processes (routines) and activities needed to identify, define, combine, unify and coordinate the various processes and project management activities within the Project Management Process Group (Project Management Institute 2008). Processes

<sup>3</sup> Zollo and Winter (2002) define routines as stable patterns of behavior that characterize organizational reactions to variegated, internal, or external stimuli (p.340).

in that chapter detail how to develop the project management plan, how to direct and manage project execution or how to monitor and control project work. Regarding the second role, learning, is defined as a process (routine) by which repetition and experimentation enable tasks to be performed better and quicker (Teece et al. 1997, p.520). By learning, firms recognize dysfunctional routines and prevent strategic blind spots. The learning role is a prevalent concept in the PMBOK®. Practitioners claim that after developing a project, the implementing organization and actors must have learned something, and the PMBOK® includes that idea by including document lessons learned as a task to perform during project closing. Finally, the reconfiguration/transformation role refers to the need to reconfigure the organizational asset structure to address environmental changes (Teece et al. 1997, p.520). The PMBOK® establishes the concepts of *rolling wave of planning* and *progressive elaboration* as two principles when developing project planning. Those two concepts refer to the process of making the project plan in successive waves as the project proceeds and later details become clearer. Moreover, PMBOK® suggests to create change requests as an output of almost all of its 42 processes. These change requests refer to modifications in project procedures, policies or documents that are requested by the project team due to issues found while project work is being performed. PMBOK® also advise project managers to perform the task called integrated changed control by which project managers have to review all change requests, and manage changes to deliverables, organizational process assets, and project documents and plans.

Teece et al. (1997) recognizes that both the firm asset endowment –position- and the strategic decision history –path- affect firm’s processes and so firm’s dynamic capabilities. In this sense, the PMBOK® offers guidance for dealing with both position and path of the firm. In almost all of its 42 processes (routines), the PMBOK® include two inputs called enterprise environmental factors and organizational process assets which refer to firm’s heritage and firm’s asset endowment respectively.

Finally, an important aspect of dynamic capabilities is the commonalities/firm-specific duality. Dynamic capabilities are not exactly the same across firms even though they present common features and can be understood as best practices (Eisenhardt, Martin 2000). This duality is recognized by project management practitioners. On the one hand, the PMBOK® identifies the processes (routines) configuring the subset of the project management body of knowledge generally recognized as good practices. However, the PMBOK® itself notifies that the knowledge it describes, should not always be applied uniformly to all projects. Delving into this idea, the Project Management Institute has developed extensions of the PMBOK® like the construction extension of the PMBOK® or the government extension to the PMBOK® to provide more information on specific project types or industry information.

#### **4 Conclusions, Implications, and Direction for Future Research**

This paper highlights that the new conceptualization of both projects and project managers is imbued with strategic essence. Project management literature focus on achieving success for the lonely project is being substituted by papers claiming that projects should be understood in relation to previous projects, future plans and the environment surrounding the implementing organization (Engwall 2003).

Drawing on the dynamic capabilities approach we consider a PBO as an organization where project capabilities shape not just project management processes but all internal and external competences of the organization. By considering project management as a dynamic capability we offer an explanation of the better results PBOs are considered to obtain in dynamic and unstable environments (Thiry, Deguire 2007, Melkonian, Picq 2011). Thus, we show that dynamic capabilities and project management as well as project and top managers are much closer than what professionals of both disciplines believe. We claim that project management dynamic capability constitutes a source of competitive advantage for PBOs.

From the project management point of view, the cross-fertilization first provides a strong theoretical framework, the dynamic capabilities approach, for the project management discipline. A strong theoretical foundation is recognized as missing for the project management discipline (Turner, Müller 2003, Pollack 2007) and as one of the most important obstacles for the project management progress (Koskela, Howell 2002). Thus, we strengthen the incipient project management theoretical framework with the explanatory power and theoretical foundations of the dynamic capabilities approach.

We also claim that dynamic capabilities foundations could be useful to face project management problems such as frequent project failures or slow rate of methodological renewal (Koskela, Howell 2002, Kharbanda, Pinto 1996). Specifically, the issue of project failure has been studied through the traditional CSFs –typically attached to the iron triangle, and through single project case studies focused on technical aspects. However, recent studies have demanded to focus on managerial aspects instead of technical ones, since for many cases, the root of failure is constituted by issues such as the decision-making process (Shepherd, Patzelt & Wolfe 2011).

Finally, this paper suggests wide-ranging opportunities for future research. First of all, taking the dynamic capabilities as research background scholars could research the conditions under which the project management processes become dynamic capabilities. Secondly, once recognized that project management could be understood as a dynamic capability, the next step is to look empirically at the benefits that project management dynamic capabilities provide to the organizations possessing and developing it and their role as source of competitive advantages. One possible stream of research, following the path initiated by Thomas and Mullaly (2008), could focus on the measurement of the value created by project management application.

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International Journal of Project Management 31 (2013) 22–30

International Journal of  
**Project  
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## How to manage international development (ID) projects successfully. Is the PMD Pro1 Guide going to the right direction?

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Received 29 March 2012; received in revised form 7 July 2012; accepted 10 July 2012

### Abstract

International Development (ID) projects have turned project failure into a rule rather than an exception. Developed in the 1960's, the Logical Framework Approach (LFA) is the most widespread body of knowledge for managing ID projects. However, LFA has proved to have several liabilities. This paper aims to provide a list of the critical success factors (CSFs) for ID projects. Then, the paper assesses how the LFA and the newly developed PMD Pro1 deal with those CSFs. Results confirm that the LFA presents several drawbacks while the PMD Pro1 appears as a more efficient tool for managing ID projects successfully.

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*Keywords:* Project success; Critical success factors; International development; Logical framework approach

### 1. Introduction

International development (ID) projects are the most common instrument used by policy makers to deliver international aid. These ID projects are delivered by donor countries under diverse forms of funding and collaboration, for example, using bilateral agreements with recipient governments or through a “middlemen” – frequently a non-governmental organization (NGO) (Crawford and Bryce, 2003; Zetland, 2010). Speaking in numbers and according to the United Nations Development Programme (UNDP) Human Development Report 2010, total official development assistance (ODA) in 2009 meant \$136 billion (Klugman and United Nations Development Programme, 2010). From the recipient countries' perspective, low human development index (HDI) countries received ODA approaching 15 percent of their Gross National Income (GNI) in 2007.

Until the 1960's there was no specific approach within the project management (PM) field for managing ID projects. However, at the end of the 1960's the logical framework approach (LFA) was developed for the United States Agency for International Development (USAID), and has since been applied by many international aid donors as the methodology to manage ID projects (NORAD, 1999). In words of one of its designers, “the LFA is a set of interlocking concepts which must be used together in a dynamic fashion to develop a well-designed, objectively-described and evaluable project” (Rosenberg and Posner, 1979). Therefore, the LFA is a methodology designed to ease and guide ID projects' design and evaluation all over the world.

Despite its widespread use, the LFA has proved to be an inefficient and very limited body of knowledge for managing ID projects, especially in the monitoring and evaluation phase of the project life cycle (Crawford and Bryce, 2003). In fact, poor performance of ID projects and the disappointment of beneficiaries seem to be the rule (Ika et al., 2012). According to Crawford and Bryce (2003) the problems with LFA stem from four main issues: (1) the absence of a time dimension; (2) the inappropriateness of

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assigning efficiency-level objectively verifiable indicators; (3) the inadequacy of the means of verification; and (4) the static nature of the logframe.

Poor performance has turned the international aid literature to focus on an aid effectiveness debate (Easterly, 2009). On the one hand, and from a macro-level perspective, most results have found zero effects of international aid on recipients' economic growth (Boone, 1996; Burnside and Dollar, 2000); or have linked international aid's effectiveness to the quality of the recipient institutions (Burnside and Dollar, 2000). On the other hand, from an emerging micro-level perspective some studies have found some ID projects to be cost-effective and to have positive effects for the recipients (Duflo and Hanna, 2005; Duflo and Kremer, 2003).

Surprisingly, PM literature has focused little attention on ID projects and consequently, it has not joined in the aid effectiveness debate (Ika et al., 2012). In particular, very little has been written on the way project managers should manage ID projects nor on ID projects success, and the critical factors for achieving that success<sup>1</sup> (Diallo and Thuillier, 2004, 2005; Ika et al., 2012; Khang and Moe, 2008).

Taking a wider perspective about how to manage ID projects, a possible solution to solve LFA limitations and improving ID projects performance can be the direct application of well-known PM standards such as the Project Management Body of Knowledge (PMBOK®) or the International Project Management Association Competence Baseline (ICB®). However, standardized PM tools and methods appear to be not suitable to manage ID projects due to the special features these projects have (Khang and Moe, 2008). Aid industry and ID projects in particular are recognized to be unique within PM environments (Crawford and Bryce, 2003). Firstly, project goals are complex and intangible since they are concerned with poverty alleviation or social transformation; therefore the usual profit motive is missing. Secondly, ID projects have a social and political nature which attracts a complex web of stakeholders. Thirdly, the operating environment is unique since it is surrounded by socio-political instability, geographic and cultural separation among actors, etc. Finally, knowledge transfer to beneficiaries is a priority during each and every phase of the project (Crawford and Bryce, 2003; Khang and Moe, 2008; PM4NGOs, 2010; Youker, 2003).

Keeping in mind the special features of ID projects, we identified three alternatives as plausible solutions to increase ID projects' poor performance. On the one hand, it looks pretty clear that traditional PM standards cannot be applied to ID projects without a proper adaptation (Khang and Moe, 2008). Therefore, one line of research could take care of that necessary and also very complicated adaptation. On the other hand, instead of trying to adapt to already existing bodies of knowledge, a completely new framework specifically created to manage ID projects could be developed (Landoni and Corti, 2011). Finally, a third solution

could be the modification of LFA in a way that solves the already mentioned drawbacks that this approach has.

Regarding the last alternative, international agencies have worked recently in possible improvements of the LFA (Landoni and Corti, 2011). The Australian Agency for International Development (AusAID) uses a modified version of the logframe with four columns and five rows. On the other hand, USAID has "abandoned" the LFA and nowadays its ID projects are managed through a results framework. However, the resultant framework essentially possesses the same scope as the LFA and so it shares the same drawbacks (Landoni and Corti, 2011).

Another alternative is represented by the Project Management for Development Professionals (PMD Pro1) that has been recently developed by the Project Management for Non-Governmental Organizations (PM4NGOs) international group. PMD Pro1 is an interesting initiative straddling between the first and second alternatives previously advanced because although based on the already developed PM standards, it constitutes a new specific framework for managing ID projects. This new body of knowledge provides main guidelines to project management within the context of the international development sector and is based on two main assumptions: (1) project managers in the international aid industry share many fundamental challenges; (2) project managers in the international aid industry can learn from their colleagues working on other sectors. The guide is organized in two parts. Section one talks about the roles, responsibilities, competencies and skills required for project managers, and also it explains the relationships between managing projects, programs and portfolios. Finally, this first section introduces the concept of project life cycle. On the other hand, section two discusses individually each of the six phases of project life cycle (identification and design; initiation; planning; implementation; monitoring, evaluation and control; end of project transition). This second section provides project managers with the main tools and methodologies for performing the activities associated to each phase.

This study aims to assess the most suitable alternative to manage ID projects successfully. To achieve this objective we first identify the critical success factors (CSFs) for ID projects and then, we evaluate two different PM standards (LFA and PMD Pro1) based on the way they deal with each of the previously advanced CSFs. Thus, this study provides a first evaluation of the young PMD Pro1 as the new framework to manage ID projects, appointing to the main differences this new framework has with the hitherto used LFA.

The remainder of the paper is structured as follows. Section 2 provides a literature review on CSFs both in broad terms and for the international aid sector, and concludes with an explanation of the ID projects CSF we selected. Then, Section 3 shows the methodology used both for identifying the CSFs specific to ID projects and for performing the comparison of the LFA against the PMD Pro1. Section 4 evaluates the two ID focused bodies of knowledge by assessing how each of them deals with the selected CSFs. Finally, the study concludes with a discussion on the study findings about the efficiency of PMD Pro1 as a new framework for managing ID projects and the implications for the international aid industry.

<sup>1</sup> We consider that *Critical Success Factors* are those aspects that must go well to ensure project success, and, therefore, they have to be given special and continual attention (Boynton and Zmud, 1984).

## 2. Literature review

Although project success is a widespread research topic in PM literature its definition remains elusive (Baccarini, 1999). Regarding the concept itself, several issues have been studied, but still are in debate. Some authors (Baccarini, 1999; Cooke-Davies, 2002) argue that the success of a project needs to be divided into two separate concepts: (1) project management success, which is related to the traditional concepts of cost, schedule and quality (the well-known iron triangle); and (2) project success, which is concerned on stakeholders' satisfaction and the achievement of company strategic goals.

Other authors claim that project success is not a simple unitary concept but it depends on the stakeholder who is assessing that success (Baccarini, 1999; Lim and Mohamed, 1999). In this sense, Freeman and Beale (1992, p. 8) provide an eloquent example of the different points of view of stakeholders about project success: "An architect may consider success in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollar spent under budget ...". From this point of view, we should be aware of the stakeholders whose perspective is going to be considered for assessing project success since we acknowledge that an objective measure of project success is somewhat an illusion (De Wit, 1988).

Another aspect of project success that has been studied is the dichotomy between a static view of project success versus a dynamic one. Khang and Moe (2008) designed a project success framework in which the critical factors to achieve project success vary depending on the phase of the life-cycle the project is evaluated. Similarly, Pinto and Slevin (1988) recognize the importance of knowing when to determine project success. At the early stages of the project, internal factors such as budget or cost are the most critical ones, but later after project delivery, external factors like clients could detract the actual consequences of project implementation.

If we change the focus to the critical factors<sup>2</sup> for achieving projects' success (CSFs) we see that the project management literature although profuse, is not without controversy (Khang and Moe, 2008). Traditionally, the concept and measurement of project success was linked to cost, time, and quality – the iron triangle – probably because the own definition of project management includes them (Atkinson, 1999). Despite the fact that CSFs were supposed to be known and managed, projects still perform badly. Therefore, PM literature assumed that the iron triangle was not enough and asked itself about the possibility of discovering new factors also affecting project success.

One of the first issues appearing on the scene was the client perspective. In their (1988) paper, Pinto and Slevin claim that issues like client satisfaction or use have much more to deal with perceived project success or failure than the iron triangle. Along with this idea, the client role is being acknowledged as a more and

more important factor, and aspects such as client consultation has been included as a CSF being lately extended to stakeholders' issues (Baccarini, 1999; Pinto and Covin, 1989).

External environment has also been recognized as an influencing issue over project success and environmental factors such as cultural, political, legal, economic or social have been included in papers researching the true critical success factors (Belassi and Tukel, 1996; Kwak, 2002).

Therefore, and as we can see in Table 1 the PM literature has acknowledged more and more issues as potential CSFs. In order to shed light over this issue, we could group the critical success factors into four different areas that cover almost all possible aspects affecting a project performance (Belassi and Tukel, 1996).

- Factors related to the project.
- Factors related to the team (including the project manager).
- Factors related to the organization.
- Factors related to the external environment.

In order to accomplish an extensive review of CSFs, we have also analyzed the traditional management literature. We have selected five well-known management journals,<sup>3</sup> three of which are in the top five of Thomson Reuters Journal Citation Report, and we have searched for articles focusing on project success and CSFs. Surprisingly, keeping aside some scarce exception (Bryson and Bromiley, 1993; Dvir et al., 2003), management literature has obviated the project success research topic. Most of the articles focused on success and CSFs are based on a strategic level rather than on a micro-project view. Therefore, it is easy to find articles focused on how to turn a strategic decision such as a merge (Homburg and Bucerius, 2006), a technology venture (Zhu and Allee, 2008), or the organizational learning strategy (Madsen and Desai, 2010) into a successful one. However, none of the articles studies specific projects' success.

Regarding the CSFs in ID projects, we have first reviewed the specific ID journals and then the PM ones. Analyzing the ID literature we have realized that articles assess the organizations (NGOs, World Bank, International Agencies, etc.) and their strategic decisions' success rather than the success of the projects that those organizations delivered (Bagnoli and Megali, 2011; Gazley, 2010; Woller and Parsons, 2002). If we look for articles that focused on a micro-view, we realize that researches evaluate the success of specific ID projects (Duflo and Hanna, 2005; Duflo and Kremer, 2003), but there is no article assessing the success nor its antecedents for the ID projects in general.

Focusing on the PM literature, we have already highlighted the little attention that PM literature has focused on ID projects. However, there are a few studies that have attempted to address the specific CSFs for ID projects. On the one hand, and because of the special features that ID projects have, the four areas identified in (Belassi and Tukel, 1996) as causes of CSFs, could not be directly applied. In this sense, (Diallo and Thuillier,

<sup>2</sup> We are aware of the great number of articles analyzing project success. However, in order to get an accurate review, we obviate papers focusing on general success, or success indicators and measures. Consequently, we have limited our literature review to those articles focusing strictly on critical success factors (CSFs).

<sup>3</sup> The journals reviewed have been the Strategic Management Journal, The Academy of Management Review, The Academy of Management Journal, Management Decision, and Journal of Organizational Change.

Table 1  
Summary of the research on CSFs.

Cooke-Davies (2002)	Pinto and Slevin (1987)	Kerzner (1995)	Lim and Mohamed (1999)	Baccarini (1999)	Van Der Westhuizen et al. (2005)
Time (6 factors)	Project mission	Corporate understanding PM	Macro (users satisfaction)	PM success Time	Quality of PM process
Cost (2 factors)	Top management			Cost Quality	Within time
Effective benefits delivery and management process	Schedule	Commitment to PM	Micro Time Cost	PM process Stakeholders	Within budget
	Client consultation		Quality		Specified system quality
Portfolio and Programme management	Personnel	Organizational adaptability	Performance Safety	Product success User needs Stakeholders' needs (related to product)	Specified information quality Stakeholders' satisfaction
	Technical tasks			Project owners	
A line of sight feedback	Client acceptance	PM selection criteria		strategic objectives	Specified service quality
Learning from experience	Monitoring and feedback	PM leadership style			Use
	Communication	Planning and control			User satisfaction
	Trouble-shooting				Net benefits

Source: Developed for this study.

2004) propose three “macro-dimensions” as the origin of the CSFs.

- Macro-dimension 1 – Profile: It is related to the political value of the ID project and of its management.
- Macro-dimension 2 – Management: It is related with the well-known iron triangle.
- Macro-dimension 3 – Impact: It is related with the outcomes of the ID project.

In a subsequent paper, a dimension related to trust and communication between donor, recipient, project designers and implementers is added (Diallo and Thuillier, 2005).

On the other hand, we can use the life-cycle approach to assess CSFs of ID projects. In fact, (Khang and Moe, 2008) develop a list of 16 CSFs linked to the different phases of the life-cycle.

Therefore, there is no consensus about the CSFs for ID projects, nor even about the graduation (general factors as those in (Khang and Moe, 2008; Kwak, 2002) of the lenses used for their analysis. This situation concurs with the existing debate on ID literature over the scale that has to be used in ID project performance evaluation (Easterly, 2009). On the one hand, some researchers evaluate ID projects' performance by studying their impact over recipient country's macro indicators (GDP or life-expectancy) (Boone, 1996). On the other hand, a micro-view asserts that ID projects' performance has to be assessed over the impact a project has on its beneficiaries (Duflo and Kremer, 2003).

### 3. Methodology and specific CSFs for ID projects

For the purpose of this research we identify the CSFs for ID projects and then, we evaluate the LFA and the PMD Pro1 by assessing how these bodies of knowledge deal with those CSFs. In order to identify the CSFs for ID projects we have searched in PM

literature, ID literature and also strategic management literature for papers focusing on the CSFs for ID projects. For performing this literature review we have introduced the keywords critical success factors in two full-text scientific databases ScienceDirect and John Wiley and Sons. Then, we have refined our search by considering only those papers referring to ID projects. From the literature research we have obtained a list of 25 CSFs specific to ID projects. Finally, we have made our own list by grouping those CSFs that although named differently, were referred to the same concept, and we have used the criteria of the number of citations,<sup>4</sup> selecting those CSFs cited at least in two papers. The final list of seven CSFs for ID projects and the papers they are cited in are presented in Table 2.

For performing the comparison of the LFA against the PMD Pro1 we have evaluated how each of those bodies of knowledge deal with the previously identified CSFs. We consider that a body of knowledge deals with a CSF if there is a part of it dedicated to the management of that CSF. However, we haven't considered the depth of treatment in our analysis. For the purpose of this research the bodies of knowledge under study are considered to deal with a CSF whether they dedicate a whole section to its management, or just a paragraph. We also consider that the bodies of knowledge under study are considered to deal with a CSF if they claim that the management of the specific CSF is an important issue to take into account when managing ID projects whether they propose tools and methods for that task or not.

Taking into account the results of Table 2 and the criteria of the number of citations, seven CSFs are selected for evaluating both the LFA and PMD Pro1. In the following, we briefly evaluate the importance of each of the selected CSFs in the international aid industry.

<sup>4</sup> We consider that the most cited a CSF is, the most relevant it is.

Table 2  
CSFs in ID projects and articles they are cited in.

Team building	Khan et al. (2000); Vickland and Nieuwenhuijs (2005); Struyk (2007); Khang and Moe (2008)
Local environment	Struyk (2007); Khang and Moe (2008)
Implementation approach	Khan et al. (2000); Vickland and Nieuwenhuijs (2005)
Learning opportunities	Khan et al. (2000); Struyk (2007)
Policy characteristics	Struyk (2007); Khang and Moe (2008)
Availability of resources	Struyk (2007); Khang and Moe (2008)
Stakeholders/beneficiaries satisfaction	Diallo and Thuillier (2004); Khang and Moe (2008)

Source: Developed for this study.

- Project team characteristics: Effective delivery of ID projects occurs when the right implementing team is selected and when its personnels are sufficiently motivated (Khan et al., 2000; Struyk, 2007).
- Local environment: ID projects are developed in a unique operating environment surrounded by socio-political instability or cultural separation among actors (Crawford and Bryce, 2003). Therefore, local environment characteristics directly affect project success (Struyk, 2007).
- Implementation approach: ID projects' operating environment is recognized as an uncertain one (Youker, 2003). Thus, the use of "what if" scenarios and different ways to deal with them seem to be necessary.
- Learning opportunities: Knowledge transfer to beneficiaries is viewed as one of the most important goals for ID projects' performance (Youker, 2003).
- Policy characteristics: When implementing an ID project one must take into account that ID projects belong to country level master-plans, so ID project objectives must serve agency or even country level goals (Rosenberg and Posner, 1979). Furthermore, it has to be acknowledged that some ID projects are technically simple and politically innocuous and so, they are easier to implement than others (Struyk, 2007).
- Availability of resources: In the recipient countries all resources are in short supply. Besides, local implementers may have a different sense of time and work (Youker, 2003).
- Stakeholders' acknowledgment/treatment: ID projects possess a wide variety of stakeholders (Youker, 2003). This complex net of stakeholders is one of the most challenging issues when managing an ID project (Khang and Moe, 2008).

#### 4. Comparative review of PM standards for managing ID projects

Table 3 lists, both for the LFA and the PMD Pro1, the chapter, section or page where each of them deals with each of our seven CSFs for ID projects. The two PM standards selected are the LFA and PMD Pro1 as the main frameworks in ID projects management. In the following, we offer a brief explanation of both standards.

Table 3  
Review of LFA and PMD Pro1.

Critical success factor	LFA (LogFrame Matrix)	PM4NGOs
Team building	n.a.	Section 1; leadership/ interpersonal characteristics – facilitate team building. Section 4; Managing the project human resources. Section 1; International development specific competency area. Section 2; Environmental impact assessments.
Local environment	3. Assumptions covering all factors beyond project manager's control could be related to local environment characteristics (briefly explained with an example).	Page 44: "the intention of project implementation plan is to provide a model of the project ... (it) identify(ies) "what if" scenarios and consider(s) alternative approaches". It also gives information of some tools and techniques suitable to be used for managing the project. Introduction; Knowledge transfer is considered as a priority (but is not plausible how to get it). Section 2, chapter 6; After action review ... record lessons and knowledge arising Section 2, chapter 1; External program consideration (not discussed, just mentioned). Section 2, chapter 1; Interpreting the LF Matrix
Implementation approach	n.a.	Section 2, chapter 1; Section 2, chapter 6; After action review ... record lessons and knowledge arising
Learning opportunities	4. Objectively verifiable indicators: one should not be reluctant to change LFA during design ... (organizational). There is no beneficiaries learning	Section 2, chapter 1; Section 2, chapter 6; After action review ... record lessons and knowledge arising
Policy characteristics	1. Hierarchy of project objectives; Goal level of objectives could be situated at an Agency level or even at the country strategic level. Project is just one of the necessary conditions to achieve policy goals.	Section 2, chapter 1; External program consideration (not discussed, just mentioned). Section 2, chapter 1; Interpreting the LF Matrix
Availability of resources	3. Assumptions covering all factors beyond project manager's control could be related to resources availability (briefly explained with an example).	Introduction; special characteristics of ID projects. Section 2, chapters 1 and 3; Resource availability
Stakeholders/beneficiaries satisfaction	n.a.	Section 2, chapter 1; Project identification and design; Definitions of needs (Identifying project ideas). It exists a section named "stakeholders analysis" but it forgets beneficiaries (Venn diagrams, stakeholders' analysis matrix). Section 2, chapter 4; Project implementation; managing communications

Source: Developed for this study.

Note: n.a. not available.

- LFA: Developed at the end of the 1960's for the USAID, the LFA follows a project life-cycle approach that helps project managers to assess whether the ID project profile is logically conceived.
- PMD Pro1: Developed in April of 2010 by the PM4NGOs, this guide provides a project management framework within the context of ID sector. This recent PM body of knowledge aims to mix the LFA main guidelines with the ideas, tools and techniques exposed in the general PM bodies of knowledge (PMBOK® or ICB®).

As we have already mentioned, the LFA is a methodology designed to ease and guide ID projects design and evaluation (Rosenberg and Posner, 1979). Therefore, this methodology deals with the selected CSFs whose influence could be managed during the design phase of ID projects, forgetting all problems that may arise during project implementation. Consequently, some of the identified CSFs are not even mentioned in LFA. On the other hand, the CSFs being treated by the LFA could be extensively explained, or just mentioned in an example.

One of the most useful practices that LFA forces to apply to ID projects managers is the recognition of factors beyond the project managers' control whose influence could be vital to project success. In this sense, LFA warns ID project managers to evaluate *local environment* characteristics by giving an example where local climate was relevant to ID project performance. In another example, the LFA shows that ID project managers should acknowledge *resource availability* in recipient countries before implementing any actions of the project. Thus, we can consider that LFA deals, at least briefly, with two of our CSFs.

Another CSF mentioned in the LFA is that referred to *learning opportunities*. LFA urges project managers to learn during project life and to change those aspects of project design that are not adapted to project reality. However, the *learning opportunities* CSF does not mean just the organizational learning, but also the beneficiaries learning. LFA has a huge liability since it does not recognize beneficiaries' importance over project performance nor the importance of beneficiaries' satisfaction as the main goal of ID project.

The main strength of LFA related to our ID projects' CSF is the clear hierarchy of project objectives it establishes. LFA depicts four levels of objectives in any ID project. The higher of these levels is called the *goal level* and it is located above project purpose, linking project aspirations to those of the international agency or even the donor country. Thus, LFA urges project managers to think that ID projects are always located inside a wider *policy*. Consequently, ID project goals have to serve to a higher level (international agency or donor country) of goals.

Finally, we have to list the three CSFs (*project team characteristics*, *stakeholders' satisfactions*, and *implementation approach*), that LFA does not manage. (1) LFA does not give any guidance about the steps or considerations a project manager has to follow for building the project team. (2) As we have already mentioned, LFA does not acknowledge beneficiaries' nor any other stakeholder's importance over project performance. (3) LFA does not propose alternative tools or techniques for managing ID projects different from the log-frame matrix.

Before analyzing how the PMD Pro1 deals with our seven CSFs there is an important consideration that has to be made. PMD Pro1 is a recent tool, created by the PM4NGOs, aiming to "provide an introductory, platform-independent exploration of the principles and terminology of project management within the context of the international development sector" (PM4NGOs, 2010, p.3). This new framework has been created by mixing the LFA main guidelines with the most recognized tools contained in the PM bodies of knowledge. In fact, the PMD Pro1 has a headland named "interpreting the logical framework matrix" which tries to familiarize the reader with the LFA logic and techniques. Therefore, the PMD Pro1 represents a good body of knowledge for managing ID projects and improves their performance since it shares all benefits provided by the LFA, but also extends LFA methodology by including the philosophy, tools and techniques that have been developed in the PM discipline over the last 20 years. In this sense, the PMD Pro1 starts with a clear definition of the roles and responsibilities of a project manager stressing the managerial part of project managers and thus, highlighting the idea of project managers as managers instead of technicians. Moreover, PMD Pro1 gives an exhaustive list of the competencies and skills that project managers should possess and the benefits of each of the competencies when managing ID projects. Finally, the PMD Pro1 provides project managers with the tools and techniques that could be used for performing the required activities in each of the phases of project life cycle.

If we look at the results shown in Table 3, we see that the PMD Pro1 deals with all our seven CSFs. PMD Pro1 has a section dedicated to managing the project human resources (*project team characteristics*); has a section treating environmental impact assessment (*local environment*); urges project managers to use "what if" scenarios and consider different approaches to deal with them (*implementation approach*); urges project managers to record lessons after each action review (*learning opportunities*); deals with the *policy characteristics* both because it recognizes the LFA hierarchy of project objectives and because it has its own chapter treating external project considerations such as the objectives beyond project scope; has two chapters dealing with the *resource availability*; and has a section dealing with stakeholders' analysis (*stakeholders' satisfaction*). The one and only liability of PMD Pro1 related to our seven CSFs is that although knowledge transfer (*learning opportunities*) is considered a priority of ID projects, nothing is said about the way for transferring knowledge to local beneficiaries.

## 5. Discussion and conclusions

In spite of its big size, international aid industry and ID projects in particular have turned poor performance into a rule rather than an exception (Ika et al., 2012). Therefore, the purpose of this study, as indicated in its title, was to discover the way for managing ID projects and get them successfully. In order to do that, we first identify the CSFs for ID projects and then we evaluate the two bodies of knowledge specific to the international aid field, the hitherto used LFA and the newly created PMD Pro1.

In order to identify the CSFs specific to ID projects we have done a literature review searching for papers talking specifically about critical success factors in an international aid context. After reviewing PM literature, ID literature and strategic management literature we have obtained a list of 25 CSFs. Finally, and using the criteria of the number of citations, we have built a list of seven CSFs specific for ID projects – team building, local environment, implementation approach, learning opportunities, policy characteristics, availability of resources, and stakeholders/beneficiaries satisfaction. The main characteristic of these CSFs is that almost all of them are mainly related to the especial characteristics of ID projects, such as the complex web of stakeholders, the unique operational environment, or the necessity of knowledge transfer (Crawford and Bryce, 2003; Khang and Moe, 2008; Youker, 2003).

Although the LFA is widely used in the international aid field, PM literature has proved that it has important drawbacks, especially in project monitoring and evaluation. Thus, we can assert that the LFA is an inefficient and very limited body of knowledge for managing ID projects (Crawford and Bryce, 2003). Our results corroborate this negative vision of the LFA. The results in Table 3 show that the LFA has liabilities not only in project monitoring and evaluation, but also when managing team building, different implementation approaches, or a complex web of stakeholders. Therefore, although very useful at the time that it was designed, LFA shows itself as an inefficient body of knowledge for successfully managing ID projects.

One of the possible solutions to revert the poor performance of ID projects is to develop a new framework covering those methodologies and techniques already explained in general bodies of knowledge such as PMBOK® or ICB®, but also, taking into account the peculiarities of international aid industry. This idea has been developed by the PM4NGOs international group resulting in the PMD Pro1 guide. As expected, this new body of knowledge surpasses LFA and so it is proved in the results of Table 3. PMD Pro1 has a wider coverage than the LFA. In fact, PMD Pro1 gathers all the benefits of LFA, but also extends its benefits by providing project managers in the international aid sector with the tools and methods for dealing with the main CSFs. We could assert that PMD Pro1 represents a good framework for managing ID projects since it gathers the benefits that LFA provided to project managers, but also, it incorporates the tools and methodologies that have been developed in PM discipline over the last 20 years, adapting them to the specific features of the international aid industry. Thus, the use of the PMD Pro1 may improve ID projects' performance levels.

However, before concluding the evaluation of PMD Pro1 there is one last debate that has to be discussed. PM literature is engaged in a dilemma about the generalization of the same CSFs for all type of projects (Pinto and Covin, 1989). On the one hand, theoretical literature asserts that all projects share the same CSFs. On the other hand, management practitioners assert that each project has its own unique problems. Closing this debate is beyond the aspirations and objectives of this article, notwithstanding, we adopt the conclusions by Pinto and Covin

Table 4

General CSFs in PM literature and articles they are cited in.

Schedule management	Pinto and Slevin (1987); Baccharini (1999); Lim and Mohamed (1999); Cooke-Davies (2002); Van Der Westhuizen et al. (2005)
Budget management	Baccharini (1999); Lim and Mohamed (1999); Cooke-Davies (2002); Van Der Westhuizen et al. (2005)
Stakeholders/clients satisfaction	Pinto and Slevin (1987); Baccharini (1999); Lim and Mohamed (1999); Van Der Westhuizen et al. (2005)
Quality of PM process	Kerzner (1995); Baccharini (1999); Van Der Westhuizen et al. (2005)
Feedback/monitoring	Pinto and Slevin (1987); Kerzner (1995); Cooke-Davies (2002)
Top management support	Pinto and Slevin (1987); Kerzner (1995); Baccharini (1999)
Quality management	Baccharini (1999); Lim and Mohamed (1999); Van Der Westhuizen et al. (2005)

Source: Developed for this study.

(1989) and we believe that although adopting a project-specific approach is necessary, there are fundamental similarities in CSFs within different types of projects.

The evaluation of PMD Pro1 in Section 3 has been made based on the CSF specific to ID projects. In order to follow the findings by Pinto and Covin (1989) a deep evaluation of PMD Pro1 requires to assess how this new framework deals with general CSFs. In Table 4, there is a summary of the general CSFs identified following a similar methodology than the one used in Section 2.<sup>5</sup>

General CSFs (Table 4) are very different to those specific for ID projects with the exception of *stakeholders' acknowledgement*, which is common to both lists. Within the list in Table 4, we see that some of the CSFs identified match the liabilities identified for the LFA, e.g., the absence of a time dimension (Crawford and Bryce, 2003), and could be considered an explanation of the poor performance of ID projects managed through LFA.

Finally, we evaluate the LFA and PMD Pro1 (Table 5) based on how each of them deals with each of our seven general CSFs. Furthermore, we add the PMBOK® and ICB® as the most recognized general bodies of knowledge in PM literature and industry.

Results in Table 5 show that the LFA has problems dealing with *schedule* and *budget*, two of the most important CSFs in classic PM literature and part of the well-known iron triangle. Besides, the *quality of project management process* and the *top management support* are also ignored by LFA. Regarding the PMD Pro1, we see that with the exception of the *top management support*, all of our general CSFs are managed. However, some of the CSFs are just mentioned or barely explained. If we compare

<sup>5</sup> We have searched in the main PM journals (i.e. International Journal of Project Management, and Project Management Journal) for papers including the keyword critical success factors. From the literature review we have obtained a list of 43 CSFs gathered from 25 different papers. Finally, we have made our own list of general CSFs by considering the criteria of the number of citations, and selecting those CSFs cited at least in the three papers.

Table 5  
PM standards review.

Critical success factor	LFA (LogFrame Matrix)	PMI (PMBOK®)	IPMA (NCB)	PM4NGOs
Schedule management	n.a.	Chapter 6: project time management	Technical competences: 1.11 time and project phases	Technical competency: manage the schedule to ensure that work is assigned and completed on time and within budget 2.3 Project Planning; Schedule development
Budget management	n.a.	Chapter 7: project cost management	Technical competence: 1.13 cost and finance	Technical competency: ensure that deliverables are of acceptable quality.
Quality management	Activities, outputs, outcomes and goals are defined and so are the indicators and sources of verification.	Chapter 5: project scope management; Chapter 8: project quality management	Technical competence: 1.5 quality; 1.10 scope and deliverables	2.3 Project Planning; using the WBS to define Project Scope
Quality of project management process	n.a.	8.1.3.4 Process Improvement Plan	Technical competence: 1.5 quality	Page 5: high-quality comprehensive PM practices are indispensable.
Feedback and monitoring	4. Objectively verifiable indicators (signal successful achievement). 5. Means of verification	3.6 Monitoring and controlling process group (this processes are developed in several chapters).	Technical competence: 1.16 Control and reports	2.5 Project monitoring, evaluation and control
Stakeholders/clients satisfaction	n.a.	10.1: Identify stakeholders; 10.4 manage stakeholders expectations	Technical competence: 1.02 Interested parties	2.1 Project identification and design; Definitions of needs (Identifying project ideas). It exists a section named "stakeholders analysis" but it forgets beneficiaries (Venn diagrams, stakeholders' analysis matrix). 2.4. Project implementation; managing communications
Top management support	Goal level of objectives takes care of the strategic view of the top management.	n.a.	Contextual competence: 3.05 Permanent Organization	n.a.

Source: Developed for this study.

Notes: n.a. not available.

Original spelling of PM standards has been respected.

the PMD Pro1 with the two general bodies of knowledge we see that either the PMBOK® or the ICB® has specific chapters or sections dedicated to each of our seven general CSFs. In fact, the extension of PMD Pro1 (90 pages) is significantly smaller than the PMBOK® (459 pages) or the ICB® (236 pages). Nevertheless, we consider that the PMS Pro1 represents a big progress in the ID projects' management.

In conclusion, after evaluating both the LFA and the PMD Pro1 based on specific ID CSFs and on the general ones, we can assert that LFA is an inefficient and very limited framework for managing ID projects. On the other hand, the PMD Pro1 represents the right path for improving ID projects' performance, surpassing all LFA limitations, but also with a considerable room for improvement. As the guide exposes in its introductory section the PMD Pro1 provides an introductory, platform-independent exploration of the principles and terminology of project management within the context of the international development sector. Thus, this guide is just a first effort for developing a body of knowledge specific to manage ID projects. In order to improve the guide ID project managers should apply its principles, tools, and techniques to real projects so they can assess its validity and

propose changes and improvements based on their experienced and projects learned lessons. Besides, some of the sections of the guide (e.g. stakeholders' management, lessons learned, etc.) have an informative purpose and need to be developed. In the same line that other PM bodies of knowledge such as the PMBOK® or the ICB®, the PMD Pro1 cannot stay static and we hope that some improved versions acknowledging both academic and practitioner debates will come to light in the next years.

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### Scientific diffusion of the studies of this dissertation

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Study	Version	Forum	Status
Conceptual Study	Project Management and Dynamic Capabilities: establishing the foundations of an integrative theoretical framework	3rd International Construction and Engineering Project Management Workshop (CEPMAW). Valladolid (Spain), October 2012.	Presented
	Towards strategic project management	7th International Conference on Industrial Engineering and Industrial Management (CIO), and the XIX International Conference on Industrial Engineering and Operations Management,( ICIEOM). Valladolid (Spain), July 2013	Presented Best paper Award
Study II	How to Manage International Development Projects Successfully? Is the PMD Pro 1 Guide going to the right direction?	International Network of Business and Management Journals (INBAM). Valencia (Spain), March 2012	Presented

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# **Universidad de Valladolid**

FACULTAD DE CIENCIAS ECONÓMICAS Y EMPRESARIALES

DEPARTAMENTO DE ORGANIZACIÓN DE EMPRESAS Y  
COMERCIALIZACIÓN E INVESTIGACIÓN DE MERCADOS

**LA EMPRESA BASADA EN PROYECTOS COMO NUEVA FORMA  
ORGANIZATIVA: UN ESTUDIO DESDE LA PERSPECTIVA DE LAS  
CAPACIDADES DINÁMICAS**

Valladolid, 2013



## Agradecimientos

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Durante el tercer año del doctorado, escuché en la radio algo como lo siguiente: *todo buen viaje comienza como un sueño y termina con un libro*. Bien, aquí tenemos el libro. Espero que a través de sus páginas pueda entenderse el viaje que empezamos hace ya cuatro años. Sirvan estas palabras para introducir las siguientes.

En primer lugar, quiero expresar mi más sincero agradecimiento a mi directora de tesis, la doctora Natalia Martín Cruz. Querida Natalia, muchas gracias por tus consejos, por enseñarme lo que significa trabajar con pasión, y sobre todo, gracias por pedirme siempre un poquito más y conseguir sacar lo mejor de mí.

En segundo lugar, quiero agradecer el apoyo (cafés incluidos, por supuesto) de todos los miembros del antiguo Departamento de Economía de la Empresa. Una mención especial para el doctor Hernangómez Barahona por sus consejos sobre cómo impartir las clases de dirección estratégica, para el doctor de la Fuente Herrero por su tiempo y experiencia en el manejo de *la Thomson*, y al doctor Rodríguez Pinto por sus seminarios personalizados sobre ecuaciones estructurales y PLS.

Es de ley mostrar mi agradecimiento a todos los miembros del grupo de investigación INSISOC, especialmente a los doctores López Paredes y Pajares Gutiérrez. Me invitasteis al máster en dirección de proyectos y por tanto, me abristeis las puertas hacia ese nuevo mundo.

Por supuesto, les dedico unas palabras a mis compañeros en el tercer módulo, tanto a los que permanecen, Víctor, Pablo y Javi; como a los que se fueron, Isa y Celia. Gracias por todos los buenos momentos, por las risas y por el apoyo moral. También le agradezco a mis compañeros de despacho, Pablo, Ismael y Pilar por su compañía y por todas esas tardes de catarsis.

Las palabras más emotivas van dirigidas a mi familia y mi pareja. Gracias por vuestro cariño, sabiduría y comprensión. Gracias mamá por convencerme para que empezara este viaje. Finalmente, gracias Sara por aguantarme, por animarme cuando las cosas no salían del todo bien, por ... En definitiva, gracias por esto dos años y por todos los que vendrán.

Como no podría ser de otra manera, termino asumiendo la responsabilidad única y total de todos los errores que pudieran contener las páginas que siguen.



## RESUMEN EN CASTELLANO

### Motivación y objetivos de la tesis

En un entorno actual caracterizado por elevado dinamismo y cambio constante, los proyectos han pasado de ser esfuerzos temporales mediante los cuales se hacía frente a problemas muy específicos, a ser parte de las actividades diarias que realiza cualquier organización para lograr sus objetivos estratégicos (Irja, 2006; Whittington et al., 1999). Así, los académicos reclaman que tanto los proyectos como las empresas que se organizan en torno a ellos (empresas basadas en proyectos) deben ser estudiados desde la óptica de la dirección estratégica (Reich et al., 2013; Sydow et al., 2004; Thiry y Deguire, 2007). Sin embargo, pese a que la unión de las disciplinas de la dirección estratégica y la dirección de proyectos es vista como una opción muy prometedora, los beneficios de la misma están aún por explotar (Grundy, 1998). La revisión de la literatura en dirección estratégica muestra claramente que, salvo en contadas excepciones (Henisz et al., 2012; Moeen et al., 2013; van Oorschot et al., 2013), ni los proyectos ni las empresas basadas en proyectos, son el objeto de estudio en artículos o conferencias (Thiry y Deguire, 2007).

Si nos centramos en la literatura de proyectos, las empresas basadas en proyectos están recibiendo cada vez mayor atención, ya que son una estructura organizativa que empieza a poblar todo tipo de industrias (Hobday, 2000; Lindkvist, 2004, sydow et al., 2004; Turner y Keegan, 1999). Estas organizaciones son vistas como estructuras extremadamente flexibles, y por tanto, capaces de superar las barreras al cambio, hecho que las convierte en las estructuras ideales para competir en entornos turbulentos y dinámicos (Boh, 2007; Hobday, 2000; Söderlund y Tell, 2009).

Pese a todo, el concepto de empresa basada en proyectos, también denominada organización dirigida por proyectos, u organización p., no está exento de controversia. Pese a ser comúnmente definida *como aquella organización en la que los proyectos son el principal elemento en sus negocios* (Hobday, 2000 : 874), la realidad nos muestra que no existe consenso sobre qué es exactamente una empresa basada en proyectos. En concreto, existen 3 grandes cuestiones sobre este tipo de empresas: (1)son una nueva forma organizativa con estructura propia; (2)deben organizar todas sus actividades en modo proyecto; (3)deben desarrollar proyectos para fines comerciales. Estos debates sugieren abandonar las definiciones centradas en los proyectos que desarrolla la empresa y optar por otra de índole estratégica, centrada en la manera de conseguir ventajas competitivas sostenibles.

De hecho, estudios recientes han colocado el nivel de análisis no en los proyectos, si no en las carteras de proyectos e incluso en el nivel organizativo, así, el objeto de estudio no es conseguir el éxito en un proyecto, si no conseguir el éxito de la organización a través de la ejecución simultánea de varios proyectos (Voss, 2012). Sin embargo, la consecución de objetivos estratégicos mediante la ejecución de proyectos no es tarea fácil. Estudios recientes han demostrado que las empresas basadas en proyectos sufren una tensión interna que dificulta su desempeño, i.e. la naturaleza cortoplacista de los proyectos frente a la visión estratégica de la propia organización (Grabher, 2004; Melkonian y Picq, 2011). Asimismo, recientes estudios se han centrado en los nexos de unión entre proyectos y organización como posible solución a la tensión interna anteriormente comentada. En este sentido, el papel de los proyectos en el desarrollo de modelos de negocio es visto como un posible nexo de unión (Artto et al., 2008; Patanakul y Shenhar, 2012). Esta visión de los proyectos como participantes activos e incluso generadores de modelos de negocio y por tanto, de objetivos estratégicos no es compartida por toda la academia. La llamada “visión tradicional” postula que los proyectos no son nada más que meros sirvientes mediante los cuales puede ponerse en marcha parte de la estrategia ya definida, pero que en ningún caso deben considerarse parte integrante en el proceso de elección y definición estratégico (Hobday, 2000; Shenhar et al., 2007). Además, esta visión tradicional de los proyectos enfatiza el hecho de que debido a su visión cortoplacista y su naturaleza temporal, resulta extremadamente difícil generar conocimiento organizativo de las experiencias y lecciones aprendidas durante la ejecución de los proyectos, hecho que refuerza su visión de los proyectos como instrumento para la resolución de problemas puntuales, pero no como elemento principal en los modelos de negocio.

Así, con el objetivo de arrojar luz sobre la controversia existente en el papel que los proyectos cumplen en el seno de la organización, esta tesis propone un modelo que evalúa las empresas basadas en proyectos desde la óptica de la teoría de las capacidades dinámicas. Frecuentemente concebida como una extensión de la teoría basada en los recursos (Barney, 1991; Peteraf, 1993), la teoría de las capacidades dinámicas trata de explicar por qué unas organizaciones obtienen mejores resultados que otras bajo condiciones de cambio continuo e incertidumbre (Eisenhardt y Martin, 2000; Teece et al., 1997; Zollo y Winter, 2002). Por tanto, esta tesis abunda en la corriente que reclama el estudio de los proyectos, y las organizaciones en ellos basadas desde la óptica de la dirección estratégica.

Dados estos antecedentes, la presente tesis tiene como objetivo **profundizar en el estudio de la empresa basada en proyectos como nueva forma organizativa aclarando además las razones que llevan a éste tipo de organizaciones a posicionarse como la configuración**

**organizativa óptima para competir en entornos dinámicos y turbulentos.** Para cumplir con el citado objetivo primero se construye un modelo que permite explicar la generación de capacidades dinámicas y la transferencia de conocimiento en el seno de las empresas basadas en proyectos. Posteriormente, dos estudios empíricos nos permiten comprobar la validez del modelo en dos marcos muy diferentes, i.e. (1) una muestra internacional de empresas basadas en proyectos; (2) el campo de la cooperación internacional al desarrollo. Por tanto, podemos subdividir el objetivo general de la tesis en tres objetivos de segundo nivel:

1. Construir un modelo de dos niveles (proyecto y organización) sobre la generación de capacidades dinámicas en el seno de las empresas basadas en proyectos que nos ayude a explicar la transferencia de conocimiento y por tanto la consecución de objetivos estratégicos en el largo plazo.
2. Incrementar el conocimiento actual sobre el papel que los altos directivos juegan en el éxito de proyectos, programas y carteras mediante la aplicación del modelo construido previamente a una muestra internacional de empresas basadas en proyectos.
3. Evaluar la importancia del uso de los estándares sobre dirección de proyectos y su influencia en el éxito de los proyectos de cooperación internacional.

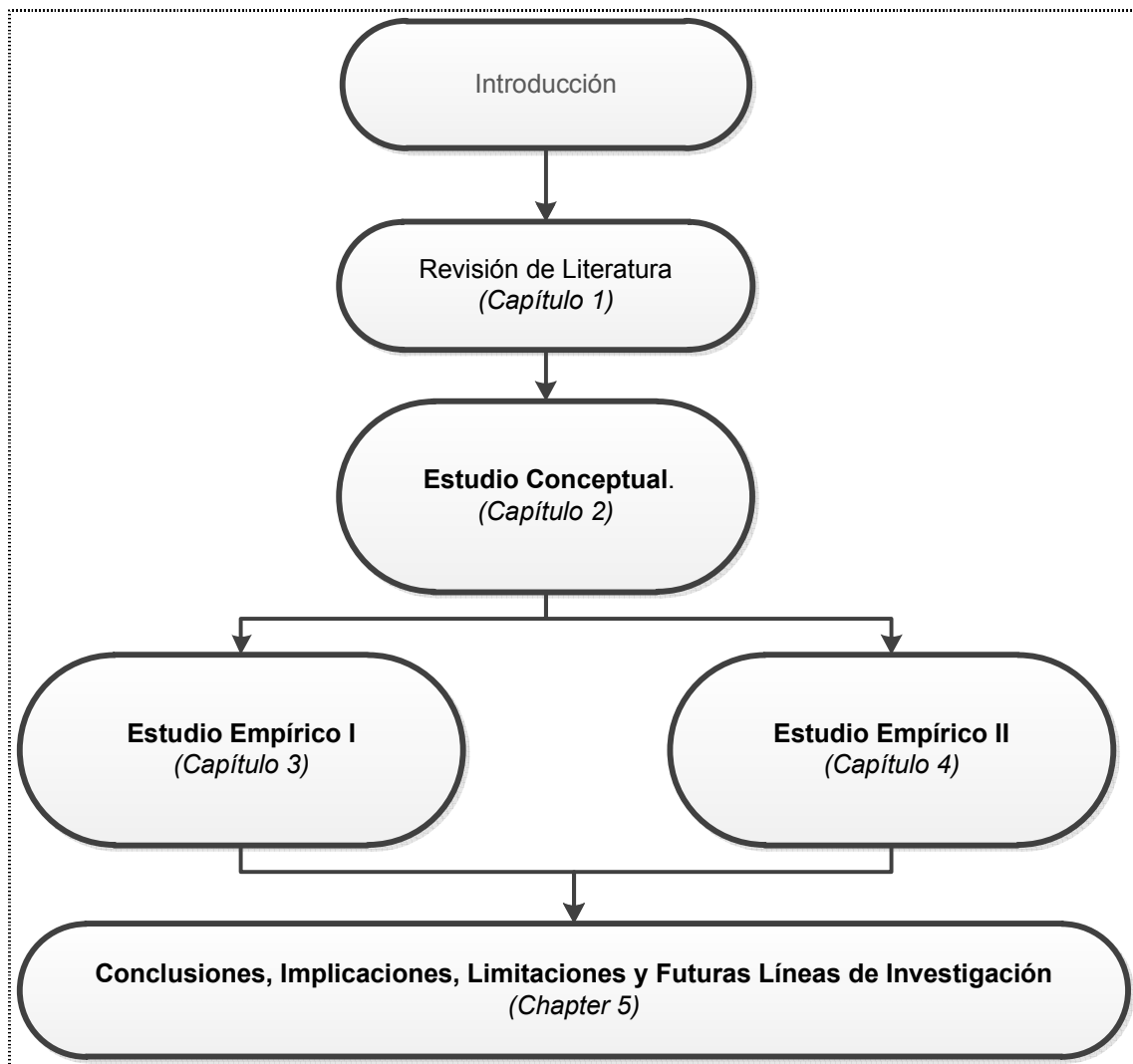
### **Estructura y metodología de la tesis**

Tal y como muestra la Figura I, el presente trabajo de tesis consta de cinco capítulos. **El primero** de ellos presenta una revisión de la literatura referente a las dos disciplinas que se combinan en este trabajo, i.e. la dirección de proyectos y la teoría de las capacidades dinámicas. El **capítulo 2** se corresponde con un estudio conceptual dedicado a la construcción de un modelo de que explica la formación de capacidades dinámicas en el seno de las empresas basadas en proyectos. El **capítulo 3**, se constituye como el primero de los estudios empíricos mediante los cuales se testa la validez del modelo desarrollado en el capítulo 2. En concreto, este primer estudio empírico se basa en una muestra internacional de 62 empresas basadas en proyectos obtenida mediante el envío de cuestionarios por vía tanto electrónica como ordinaria que contienen preguntas medidas mediante escalas Likert de 5 puntos. Los principales resultados de este estudio se obtienen mediante la aplicación de técnicas de ecuaciones estructurales. En concreto, los análisis se ejecutan según el procedimiento de mínimos cuadrados parciales, técnica que resulta especialmente útil bajo situaciones de muestras relativamente pequeñas, y fundamentos teóricos aún por desarrollar. El **capítulo 4**



presenta el segundo de los estudios empíricos. En este caso, el modelo de capacidades dinámicas es aplicado en el ámbito de la cooperación internacional al desarrollo con la intención de averiguar la importancia del uso de los estándares sobre dirección de proyectos y su influencia en el éxito de los proyectos de cooperación internacional. La metodología empleada a tal fin se centra en la aplicación de técnicas bibliométricas tales como la utilización de palabras clave en los motores de búsqueda de los principales repositorios de revistas científicas (i.e. ScienceDirect, John Willey and Sons), y la aplicación del heurístico “mayor relevancia cuanto mayor sea el número de apariciones o citas”. Por último, el **capítulo 5** presenta las principales conclusiones obtenidas, así como las implicaciones que se derivan tanto para los altos directivos como para los directores de proyecto, además de enunciar las limitaciones del trabajo y las futuras líneas de investigación.

**Figura I. Estructura de la Tesis**



## **Conclusiones y principales resultados obtenidos**

Con el objeto de mostrar las principales contribuciones aportadas por el presente trabajo se procederá primero a enumerar las conclusiones parciales de cada uno de los tres estudios (conceptual y dos empíricos) para generar posteriormente unas conclusiones generales.

### **Estudio Conceptual: Un modelo de capacidades dinámicas**

Por un lado, nuestro modelo sugiere que los directores de proyecto que desarrollen rutinas de detección, de adopción, y de transformación incrementarán las posibilidades de éxito de sus proyectos. Así, en el nivel de los proyectos, nuestro modelo pone de manifiesto una serie de rutinas necesarias para detectar cambios importantes, y reconfigurar los planes de proyecto para que se adapten a los cambios ya detectados. Por otro lado, en el nivel organizativo, nuestro modelo explica como consolidar el conocimiento generado durante los proyectos de tal forma que éste se distribuya por toda la empresa y quede grabado en la memoria organizativa. Por tanto, este estudio conceptual proporciona una explicación teórica sobre cómo se generan capacidades dinámicas en las empresas basadas en proyectos, y cómo esas capacidades ayudan a conseguir el éxito en el largo plazo.

### **Estudio Empírico I: Involucración de la Alta Dirección en las Empresas Basadas en Proyectos**

Los resultados de este primer estudio empírico sugieren que tanto las capacidades dinámicas de proyecto, como las capacidades dinámicas de cartera median la relación entre los altos directivos y el desempeño de proyectos y carteras. Por tanto, las capacidades dinámicas se presentan como el mecanismo que promueve la influencia de los altos directivos en el éxito de proyectos, programas y carteras, así como de la propia organización. Profundizando un poco más en esta reflexión, los altos directivos que establezcan patrones de trabajo, rutinas organizativas y reglas de decisión estarán contribuyendo en la construcción de capacidades dinámicas, las cuales tienen incidencia directa sobre el éxito de los proyectos, programas y carteras desarrollados por la empresa.

### **Estudio Empírico II: Determinando la importancia de los Estándares en Dirección de Proyectos**

Los resultados del segundo estudio empírico muestran que la aproximación del marco lógico no es adecuada para la dirección de proyectos de cooperación al desarrollo puesto que no proporciona ningún tipo de información sobre aspectos tan relevantes como la formación del equipo de proyecto, la monitorización de los resultados del proyecto, o la relación con los

principales interesados del proyecto. Por otro lado, se destaca la idoneidad del recientemente creado estándar para la dirección de proyectos de cooperación al desarrollo (PMD Pro1). Por último, este segundo estudio empírico revela que la utilización de estándares en dirección de proyecto es conveniente no sólo por las técnicas y herramientas que proporcionan, sino porque a través de la puesta en marcha de los procesos que contienen, pueden generarse capacidades dinámicas en la organización.

### **Conclusiones Generales**

Tomando la teoría de las capacidades dinámicas como principal punto de apoyo, los conceptos de aprendizaje entre proyectos, involucración de la alta dirección, y capacidades de proyecto y organización se muestran como los principales vértices a partir de los cuales se pueden construir las siguientes tres conclusiones: (1) mediante el desarrollo de capacidades dinámicas a nivel proyecto y a nivel organización, las empresas basadas en proyectos son capaces de hacer frente a los cambios en el entorno de los proyectos y las exigencias de clientes y principales interesados, y por tanto, son capaces de lograr el éxito de sus proyectos bajo condiciones de cambio e incertidumbre; (2) mediante el desarrollo de capacidades dinámicas a nivel proyecto y a nivel organización, las empresas basadas en proyectos son capaces de consolidar el conocimiento obtenido durante la ejecución de los proyectos así como de modificar y construir nuevas capacidades a partir de las ya existentes; (3) tanto los proyectos como las carteras de proyectos han de ser considerados como herramientas estratégicas capaces de generar nuevos modelos de negocio y por tanto, capaces de modificar la estrategia de toda la empresa.

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