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Guest editorial

Projectification and the impact on societies

The trend of the omnipresence of projects in all areas of professional and private life is ubiquitous and still going on. Projects have become a postmodern organisations' symbol of adaptability and contingency, considered to be a superior way of reacting to unanticipated and irregular situations (Lundin and Söderholm, 1995; Clegg and Courpasson, 2004; Sjöblom and Godenhjelm, 2009) and of creating major infrastructures for the future. With the creation of the term "projectification" in the mid-1990s, Midler defined a phenomenon that he observed at the car manufacturer Renault. Projectification, an amalgam of “project” and “organisational transformation”, describes the diffusion of projects as a form of business organisation (Midler, 1995). Projectification is not only taking place in typical project-oriented or project-based industries like construction, aeronautics or software industry, but also in the public sector, in policy implementation, in performing arts or scientific research. Jensen observes an expansion of the concept of projectification to all parts of private and societal life (Jensen et al., 2016). Consequently, Lundin et al. (2015) speak about the “Project Society”, which they perceive as the fourth industrial revolution or the next Kondratieff cycle (Händeler, 2011).

A projectified society consists of the majority of organisational members being project workers and project managers (Hodgson and Cicmil, 2006), which has an effect both on the identity of the individual, and also for the community. Projectification has an impact on all members of the society, leading from long-term stable and unlimited working contracts to temporary employment in temporary organisations, from a formerly retrospective control-based orientation towards a prospective perspective not only of the management but also of all people in the society (Gemünden, 2013; Maylor et al., 2006). Because of the fundamental changes on all parts of the society, the already apparent projectification of societies can be called a paradigm shift (Jensen et al., 2016).

Still we find ourselves in the early research stage of this broad phenomenon. A worldwide analysis of projects and societies has already been covered in a first Special Section by Jacobsson and Lundin (2019). The publication of two Special Sections within one year underlines the importance, and also the urgency of a deeper understanding of the phenomenon of projectification to all members of the society.

Special section focus

In the Call for Paper for this Special Section, which ended in September 2018 we defined the aim to analyse the implications of projectification to the various stakeholders in the societies. We asked for the consequences of this global trend not only for individuals, but also for organisations: “What is the impact of projectification on public administration or politics, areas that have not been a focal point of project management research so far? What is the status of the various national economies concerning their project maturity?”

We received 12 submissions from all parts of the world. At the end of an intense review process, we can present five stimulating articles in this Special Section.

Contents of the publications and their contributions

We assign the five articles of this Special Section to the concept of the levels of projectification presented by Beata Jalocha (2019) in her article in this Special Section. In here she presents a typology of five projectification research levels: micro (dealing with the individual),
meso (organisations), macro (industries and sectors), mega (societies, countries, supranational organisations) and finally meta (relations and trends transforming global social structures).

The first paper “The project managers’ challenges in a projectification environment” by Luis Ballesteros-Sánchez, Isabel Ortiz-Marcos and Rocio Rodriguez-Rivero covers the micro layer as it is treating the individual and will interest those who want to better understand the impacts of projectification for the individual in the project society. It is based on interviews with Spanish project managers and their project teams. The authors state that as organisations are getting more and more projectified, this leads to changes in the work environment, changed requirements and new challenges facing project personnel. The findings confirm earlier findings regarding the importance for technical managers to develop their communication skills – and regarding the difficulties of project managers to disconnect from their work. The authors point out that more support is needed for project managers to cope with stress and to manage their time better. It seems that they have discovered an important “dark side” of the projectification trend that more and more people are not able to make a separation between their work and their private life. A consequence of this is the rapid increase of burnout rates which is particularly high within the professional group of project managers. So far, the burnout phenomenon was diagnosed and treated on the individual level, but the qualitative study from Ballesteros-Sánchez et al. shows that new, effective measures are needed not only for the whole professional group but also for the entire projectified society.

On the meso level, we present two articles: the first is written by the creator of the buzzword projectification, Christophe Midler, who provides his reflections about “Projectification: the forgotten variable in the internationalisation of firms’ innovation processes?” In this paper, Midler brings together the two large transformative streams in large organisations within the last decades, project management and the internationalisation of the innovation processes. These two distinct organisational developments have co-existed largely in parallel without enquiring how can the projectification of the firm impacts the dynamics of its global innovation process pattern. In this article – which we recommend to read if you are interested in global innovation management – Midler builds a bridge between international innovation processes and project management. The results underline the importance of the organisation’s projectification capability for the success of global innovation processes. Midler states that global innovation process networks are no longer central, home-based models but subsidiary-relationship models, making multinational corporations ambidextrous organisations that need to be able to deal with the dual dynamic learning processes both in the mature and emerging markets. His case shows how the projectification of the organisation impacts its overall global innovation process pattern. He appeals for building bridges between the project management research and other management streams like international innovation strategy and linking the ambidexterity field with project management.

The third article is by Harvey Maylor and Virpi Turkulainen and is titled “The concept of organisational projectification: past, present and beyond?” The authors discuss the contexts in which projectification has taken place. The paper is focusing on the conceptualisation of the term projectification rather than an all-encompassing study of projectification. They reflect on the past 25 years of research on projectification and synthesise the discourse on organisational projectification in terms of content (or “what” can by “projectified”?) and process (or “how” this can happen?). The “what” can refer to the individual, project, functions, institutions, economy and society, while the “how” can refer to the structure, governance, capabilities, competences or language. They observe that many organisations have reached a point where the increased use of project structures and processes comes to their natural limits; in such organisations, increasing the project form has either become undesirable or resource limits have been reached. In their remarks, the authors point out that even though research indicates that projectification is on the rise, it cannot be assumed that it is spread deeply and evenly into management practices. Their reflections indicate
that the adoption of project management practices is more selective than generic and has not proven that the professionalisation of project management as a discipline leads to more competent project managers nor improved project management practices. Based on the discussion, the paper presents a synthesised view of organisational projectification as well as directions for future research to advance the understanding of projectification. The study has implications for policymakers in the design of the process of ongoing projectification and provides illustrations and also a warning concerning the assumptions that are made of different kinds of benefits as an organisation advances in its projectification.

The fourth article by Beata Jalocha represents the mega level analysing the social structures in a society. Her article is titled “The European Union’s multi-level impact on member state projectification in light of neoinstitutional theory” and analyses the role of the European Union in the projectification process of Poland. It is of interest for all those who deal with Public Management and supranational politics. The EU became within the last decades “the main catalyst of projectification through the use of projects in the implementation of the public policies […] and a strong driver of the expansion of a certain logic of project management in contemporary public affair”. However, little is known how this projectification process affects the individual member states. Poland represents the largest net recipient of EU funding since its entrance in the EU in 2004; therefore, the Polish projectification process can be seen as very dynamic. The author analyses three levels of projectification on the mega (state), macro (sector) and meso (organisation level), and the challenges and consequences “cascading” between the levels by using the neoinstitutional theory and the concept of Europeanisation. She separates between strategic changes, changes in organisational structures and changes in the work processes. On the strategic side, projects are perceived as a tool for implementing strategies. At all organisational levels, new special units were created to apply for, manage and coordinate the European funds. To realise the programs, a large group of highly specialized clerks were trained as project managers. At the beginning, there was a misfit between the projectified EU structures and the low project maturity level in the Polish public sector. Striving to achieve the competences needed they started imitating the actors. This transformation leads to a change in the organisational structures from functional to project oriented in Poland, and a fundamental shift to strategies based on projects. Today, project work is seen as the major method of activity implementation in the public institutions in Poland. Jalocha concludes that the European Union can be seen as a projectification agent, transferring its project practices in the member states by a top-down Europeanisation and organisational isomorphism. In the case of the Polish public sector, this transformation was universal, complete and fast and has enormous impacts on the social structures. She concludes that “the consequences of the changes that occurred in Poland under the influence of EU projects are not yet fully known and require further research”. However, there is also a dark side of these new project bodies, creating new bureaucratic rules, delaying the delivery of projects and costing money which should be analysed.

Finally, the fifth article “Projectification in Iceland measured – a comparison of two methods” by Helgi Thor Ingason, Thordur Fridgeirsson and Haukur Jonasson which presents the mega level, the national and supranational systems. This paper is about two methodologies for assessing projectification in a country. It is of interest for those who want to measure the size of projectification in a sector or in a whole regional or national economy. The authors tried to develop an easier, cheaper method to evaluate the size of projectification in an economy. In comparison to their previous gross value added study, a simpler “omnibus method” was developed, consisting of a questionnaire sent to organisations. Only two questions were asked: how common is the use of project management in your company? And: do you think the importance of project management will grow, decrease or remain unchanged in the next 12 months? The results show that the use of project management in organisations
increases with turnover and employees and that companies plan to use more project management in the future. The two methods yield a revealing picture of projectification of the Icelandic economy. The two methods complement each other and can be applied in a systematic way to give a longitudinal view of the evolution of projectification in a society.

Conclusion
The calling out of the various phenomena of projectification on all five levels and their implications for all stakeholder groups in the societies allows new conversations to be developed on the basis of this Special Section. The five articles show that in order to comprehensively understand the deeper effects of the ongoing projectification in the societies, a more holistic, systemic view on projectification covering all five levels is needed.

Projectification is a reality, taking place in all economies worldwide. However, there are new shadows emerging on the horizon of projectification. As researchers we should carefully analyse these shadows not only to understand their causes and effects, but also to find ways to deal with them. Referring to the Rethinking Project Management initiative of Svetlana Cicmil, Terry Williams, Janice Thomas and Damian Hodgson in 2006, we suggest that we should start an international Rethinking Projectification Network to analyse and reflect the current developments in the project societies worldwide.

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References


The project managers’ challenges in a projectification environment

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Abstract

Purpose – The purpose of this paper is to identify and investigate the main challenges that project managers (PMs) face in the current projectification environment.

Design/methodology/approach – This research was conducted by means of semi-structured interviews and questionnaires. The participants in the study were 15 PMs and 57 project team members. A content analysis of the data was conducted by an inductive approach to determine the strengths and weaknesses that the PMs and project team members perceived.

Findings – The research reveals interesting insights, such as the identification of emerging challenges for the PMs of today, which include dealing with communications issues, motivating project team members, providing leadership and increasing team members’ emotional management and confidence.

Research limitations/implications – The main limitation is the size and location of the sample, which represents the points of view of 15 Spanish PMs and the members of their work teams and sets aside the cultural aspects.

Originality/value – This new era is changing how organizations and managers must deal with people management, evolving toward more flexible and engaging leadership styles. This paper helps to provide new insights concerning the emerging challenges and needs of PMs, while integrating team member’s perceptions.

Keywords Project manager, Project challenges, Leadership and competencies

Paper type Research paper

1. Introduction

The trend to projectificate organizations and businesses is still a reality. At present, the management of organizations is assuming increasingly the form of management of projects, which are omnipresent and appear in all areas of society and life (Schoper et al., 2018) and represent more than 20 percent of global economic activity (McKevitt et al., 2017).

Consistent with the evidence of increasing reliance on projects is the growing number of persons whose working roles are being redefined as project workers and managers (Maylor et al., 2006). Both practitioner and scholarly communities are experiencing the impact of this shift on employees and organizations (Hodgson, 2002).

This trend is changing how organizations and managers deal with the management of people, toward more flexible and engaging leadership styles (Fisher, 2011; Jones et al., 2006; Müller and Turner, 2010; Thite, 2000).

In the current scenario, which is characterized by rapid change, uncertainty and complexity, the project manager (PM) becomes increasingly a key agent in the development of the business, growth and capabilities of organizations (PMI, 2017a, b; Thomas and Mengel, 2008). Some emerging challenges for PMs involve leadership style issues, stress, uncertainty, motivation, career development, learning, teamwork and the development of team culture (Berg and Karlson, 2007, 2016; McKevitt et al., 2017).

The profession of a PM differs from other roles, such as functional managers or technicians (El-Sabaa, 2001; Hodgson et al., 2011). A PM is normally required to have...
cross-functional experience, to understand a range of other functions’ paradigms and to possess versatility, flexibility and the ability to respond to rapidly changing circumstances (Dainty et al., 2005; El-Sabaa, 2001; Turner and Müller, 2003). Career motives of PMs include teamwork, creativity, people development, cross-training, mobility across projects (rather than in vertical movement), action-orientation, creating a dynamic work environment and self-governance (Arthur et al., 2001; Bredin and Söderlund, 2013; El-Sabaa, 2001; McKevitt et al., 2017; Peel and Inkson, 2004).

Becoming a PM is an important decision for individuals. For many people in a wide range of industries it is their first assignment in the role of a leader (Bredin and Söderlund, 2013). This could explain why they are normally younger than functional managers (El-Sabaa, 2001). The reality is that, for the majority of PMs, their training (if any) consists of experiential learning supported by attendance at short courses (Paton et al., 2010). If one also recognizes that being a PM can be stressful, overloading and challenging (Berg and Karlsen, 2007; Lindgren and Packendorff, 2009), it is easy to understand the important difficulties that can arise in a projectification context, where there are more and more PMs who have greater responsibility and demanding conditions, little management experience, relatively little authority, poor support and lack of recognition and opportunities for development (Bredin and Söderlund, 2013; De Cós Castillo, 1997; Hodgson et al., 2011; McKevitt et al., 2017; Palm and Lindahl, 2015; Paton et al., 2010). In fact, it has been reported that many PMs do not feel adequately respected and compensated for their work (McKevitt et al., 2017).

The importance that is attributed to the strategic role of PMs in organizations has led in recent decades to the growing development of frameworks of international competences and professional standards for project management (AIPM, 2008; IPMA, 2015; PMI, 2017a). This has been accompanied by wide recognition in research of the need for a greater understanding of PMs’ personal competences (Ballesteros-Sánchez et al., 2017, 2019; Clarke, 2010; Müller and Turner, 2010, Skulmoski and Hartman, 2010). Personal competencies within the project management field have been defined as those behaviors, attitudes and core personality characteristics that contribute to a person’s ability to manage projects (PMI, 2017a).

Projectified structures are especially likely to be operated in the fields of engineering and other technical domains. In that cases, organizations frequently rely on a set of professional PMs coming from technical positions, based on the assumption that a level of technical expertise is essential for the effective oversight of the technical aspects of the work process (Hodgson et al., 2011). There are frequent occasions in which PMs are selected based on criteria of technical, scientific and engineering competence, but with less expertise to manage interpersonal issues (Bauer et al., 2014). This has led to problems in planning, cost management and the inadequate use of the talent available within the project team, losing opportunities to meet stakeholder’s expectations.

The goal of this research is to identify the main strengths and challenges of today’s PMs in facing this new projectified context within technical and engineering domains in terms of personal competencies. A study of 15 Spanish PMs has been conducted, based on 30 semi-structured interviews and feedback from 57 project team members who work with them. The underlying goal was to establish a descriptive picture of these managers’ strengths and challenges in adapting to the projectification environment. The research question that was addressed is:

**RQ1.** In regard to personal competences, what are the main difficulties today for PMs with a technical and engineering background?

The research question is analyzed from the point of view of the PMs themselves and from the perspective of their team members.
The next section provides an overview of the relevant literature concerning projectification in organizations, the challenges that face a PM and project management competencies. This is followed by the methodology that this study employed. The fourth section presents the main results and describes the topics that arose most frequently in interviews and questionnaires. The fifth and last section of the paper provides a summary of the main insights that relate to the goal of the research.

2. Literature review

2.1 Projectification in the organizations

Organizations can be defined as groups of people who must coordinate their activities in order to meet organizational objectives. In recent years, organizations have had to cope with the digital era, increasing competition, a decrease in profit, the high cost of marketing and greater uncertainty linked to customer demands (Kerzner, 2017). Organizations have had to adapt to the new environment and new structures that appeared. There has been an evolution in the nature of organizations. They have changed from the functional organizations were almost universally adopted in the first half of the century to project-based organizations (Peters, 1992; Hastings, 1993; Turner, 1999).

Because of these reasons, the project-based organization has received increasing attention as an emerging organizational form to integrate diverse and specialized intellectual resources and expertise (DeFillippi and Arthur 1998; Hobday, 2000; Gann and Salter, 2000; Keegan and Turner, 2003; Söderlund and Bredin, 2006).

Larson and Gray (2011) defined project-based organizations as those that are focused on the creation of dedicated project teams. In this case, the PM is dedicated to full-time management of the project. These organizations highlight the following strengths: simplicity, speed, cohesiveness and cross-functional integration. However, they are also expensive, have internal strife and limited technological expertise and experience difficult post-project transition.

Of all of the foregoing, Kerzner (2017) affirms that the major advantage of this organizational flow is that one individual, the program manager, maintains complete line authority over the entire project, whereas the major disadvantage with the pure project form is the cost of maintaining the organization.

Recent interest in the emerging knowledge economy has reinforced the view that project organizations in their many varieties provide a fast and flexible mode of organizing knowledge resources (Sydow and DeFillippi, 2004). These authors highlight the dilemmas that these companies face. On the one hand, there are the autonomy requirements of project participants and their embeddedness within organizational and inter-organizational settings that demand integration of project activities within the organization and/or inter-organizational coordination efforts. On the other hand, there are the immediate task and performance demands of the project at hand vs the opportunities for learning and disseminating project practices that can be employed in subsequent projects.

In the project-oriented organization, work is not carried out on the line, but in projects. So, for the sake of project team member motivation and cohesion, many human resources management (HRM) functions need to be conducted in the project (Huemann et al., 2007). Although most attention has been paid to the devolution of HRM roles to line managers (Whittaker and Marchington, 2003), some researchers have considered a devolution of HRM tasks to both line managers and PMs in project-oriented organizations (Turner et al., 2008).

These authors found that, in common with trends that are reported in the broader HRM literature, responsibility for implementing HRM practices in the project-oriented organization is devolved to the work interface, with HRM managers providing support by setting standards, providing guidelines and acting as arbiter.
2.2 Challenges of being a project manager

The need to focus on the challenges of an uncertain world has never been greater for PMs. The financial crisis of 2008, which was accompanied by political and social upheaval and environmental crisis, has profound implications for international business (Syrett and Devine, 2012). Moreover, since there is no precise solution for uncertainty, the challenge is to be always ready for change, working with a more flexible approach and more regular reviews (Syrett and Devine, 2012). Risk management could help in this challenging project management that is subject to uncertainty. Also, foresight methods have been developed to deal with this (Martin, 2010).

Geographical stability is also becoming increasingly less present in the project teams, because their members are not allocated to the same geographical location during the life of the project. Instead, they are geographically dispersed. Global expansion and mobility, along with technological developments have contributed to a rise of working in teams beyond the traditional collocated arrangements. These are known as virtual teams. Virtual teams were defined by Jarvenpaa and Leidner (1999) as “temporary, culturally diverse, geographically dispersed, and electronically communicating work groups.” They have been studied extensively in recent years (Axtell et al., 2004; Jimenez et al., 2017; Scott and Wildman, 2015).

Working with virtual teams means considering new ways of communication and providing feedback. The capacity to synchronize internal communication within the team with external actors (Alioua and Simon, 2017) poses another important challenge. Global markets and real-time global communication with all stakeholders have become the norm today (Bird and Mendenhall, 2016).

Virtual teams, together with the globalization of businesses, present one of today’s main challenges for PMs. It is to managing projects effectively in an international context. Also, the ability to communicate effectively in an international context means taking the advantage. International contexts are also multicultural contexts in which people from different cultures and with different perspectives must interact to achieve project success. This implies a need for PMs to adapt their leadership style to the specific project, or, in particular, to the area where it is being developed (Müller and Turner, 2007). A capacity to adapt should always be present in all competences of the PM in a multicultural context (Rodríguez-Rivero et al., 2018).

Project management is increasingly recognized as an important way to structure and manage work in this challenging environment, and its recognition as a discipline is increasing (Hodgson et al., 2011).

The discipline’s growing professionalism is indicated by the establishment of a proprietary body of knowledge, which has supported the shift toward credentialism in project management labor markets (Morris et al., 2006). It may be noted that The International Project Management Association (IPMA) has developed its standards (IPMA, 2015) and certification program. Also, the Project Management Professional, designation of the Project Management Institute (PMI) also receives widespread recognition. Many organizations use it as an entrance requirement when hiring PMs. Being certified is a need more than a challenge for PMs today. These processes of certification guarantee the professionalism of PMs throughout the world.

Although professionalism is present, it is always difficult for the PMs to accomplish what was planned, as they must deal frequently with impossible deadlines, insufficient resources and, sometimes, even the lack of stakeholders’ engagement. Expectations become, then, in the real challenge.

PMs who are involved in project-based management need to acquire various competencies, such as the ability to coordinate specialized skills and resources within the project team to complete the project task on time (Cattani et al., 2011). A PM’s role is more challenging than the role of a typical functional manager (Anantatmula, 2015).
Some of the most frequently reported challenges in the literature (previously mentioned) are summarized in Figure 1. The authors wish to highlight the interconnection between them.

2.3 Project manager competences

Competences for project management can be defined as a grouping of the knowledge, aptitudes, attitudes and behaviors that are required to carry out a piece of work (Boyatzis, 1982). Along these lines, Parry (1996) has defined competences as a set of related knowledge, skills and personal characteristics that have an influence on individual and group work in an organization, are related to job performance and can be improved through training and professional development.

In the context of project management competence, several academic have recognized the need to conduct research in this field, although previous research does not provide a basis for specific training needs (Nijhuis et al., 2018).

The PM’s role is changing and must be supplemented by other knowledge and skills, in addition to the traditional functions, to meet the changing needs of the modern projects that they are hired to manage (Edum-Fotwe and McCaffer, 2000; Russell et al., 1997).

Some researchers contend that competences can be separated into three categories. They are knowledge, performance and personal. All of them are necessary for one to be competent (Finn, 1993; Crawford, 1997).

Knowledge competence is important to the extent that it reflects the PM’s knowledge that is required to perform the task that must be successfully completed in the project. In some cases, it may be demonstrated through an appropriately credential assessment (Ahsan et al., 2013). Depending on the type and scope of the project, these competencies can vary significantly.

PM performance competence can be demonstrated by applying their knowledge to meet project outcomes (Ahsan et al., 2013). When considering project-based sectors, some authors have emphasized the need to link PMs’ performance to the organization’s performance (Gillard and Price, 2005; Mei et al., 2005). The link to project success has been studied extensively (Anbari et al., 2008; Crawford et al., 2008; Papke-Shields et al., 2010; Yang et al., 2011). Those authors maintain that the competence of the PM and the team is critical for project success, although the failure of a project does not depend only on this factor. In other words, the competence of the project leader and team is necessary for the project’s success but is not sufficient.

Among the most frequently cited team competences are effective control and information management, proper planning and scheduling, work-team coordination, leadership and conflict-solving (Pinto and Slevin, 1989; White and Fortune, 2002; Westerveld, 2003).
The PM’s personal competences include elements of the manager’s attitude and personality characteristics and are important in fulfilling the PM’s role (Clarke, 2010; Gehring, 2007; Thal and Bedingfield, 2010). Leadership is an area of personal competences that has received the most attention because of its link to project success (Bierhoff and Müller, 2005; Geoghegan and Dulewicz, 2008; Müller and Turner, 2010 Müller et al., 2012).

In the matter of project management, there are several international standards. The PMI standard (PMI, 2017a) establishes three competence areas for a PM. They are knowledge, performance and personal competences.

However, the IPMA defines a standard of competences (IPMA, 2015) that is based on a set of requirements and skills in the sphere of people (10 elements), in the sphere of practice (14 elements) and perspective one (5 elements).

On the other hand, the Australian Institute of Project Management has developed a competence standard (AIPM, 2008) for project management that was formulated in collaboration with the private sector under the supervision of the Australian National Training Authority. It is based on what the PMI proposed. It classifies competences into the same nine knowledge areas as that organization.

All of these standards use certification as proof of competence in project management.

Apart from international standards, many authors have proposed competence frameworks that are grouped by scope, sector or type of project. Published work has been classified by Ortiz-Marcos et al. (2013) considering: general competence frameworks for project management for project-oriented organizations, identification of organizational competences for successful management, identification of competences for human resources selection procedures and identification of competences by project type.

This research focuses on personal competencies of PMs working in projects with an important technical or engineering component.

In technology firms PMs frequently evolve from technical enclaves, especially engineering. However, the skills needed to be an excellent PM differ markedly from those desired and rewarded in an engineering role (Thornberry and Weintraub, 1983). Engineers are frequently assigned responsibility on projects, expecting them to learn by doing, which can be risky for new PMs and for organizations in terms of cost overruns, missed deadlines, substandard project performance, unnecessary stress, lowered employee morale and lack of alignment between their project plans and the overarching strategy of an organization (Baca, 2007; Thornberry and Weintraub, 1983). This can impact PMs’ career aspiration, confidence and self-esteem.

The move from engineering/technical positions to management involves a diversion and distraction from a strong technical vocation, reinforced by extended training and induction into their particular engineering culture (Hodgson et al., 2011). Practitioners are seen as trained technicians who can rigidly follow learned methodologies on well-defined projects but are neither adaptable nor reflective enough for ill-defined project demands (Crawford et al., 2006). Personal competencies are perhaps the most difficult area for technicians/engineers to improve as they move into project management positions. Team leaders with engineering backgrounds often focus on technical issues while giving management aspects little attention (Baca, 2007), since they generally prefer to concentrate on solving technical problems and find human relations a distraction that must be minimized (Moretti, 2002).

3. Methodology

3.1 Research design and sample

The purpose of the research that is reported in this paper is to understand how PMs with a technical and engineering background are adapting to the projectification context and the identification of emerging relevant challenges. It is an exploratory study that is based on a sample of PMs from ten different Spanish companies.
The research employed semi-structured interviews and questionnaires. The participants in the study were selected from a professional network on the basis of independence, representativeness and heterogeneous principles that enables them to participate voluntarily in the project. All of them have a technical and/or engineering education and work in projects with a technological component.

The PMs were contacted by e-mail and telephone to explaining the purpose of the research and to inviting them to complete a preliminary survey by indicating their age, sex, organization, academic background, position, years of experience in their current organization, number of members on their teams and their availability to participate in the research. The criteria used in selecting PMs for the sample were the following: the person should be currently working on a project-based context, with more than two years of experience in leading a project team, the sample profile should be representative of PM’s age and experience and cover different sectors and organizational contexts, the participants should be available for at least two personal interviews and should be able to recruit project team members from their own organizations for participation in the research. Initially, 32 candidates were contacted. This identified 15 PMs (8 females and 7 males) who fulfilled all sample criteria and participated actively in the research.

Additionally, the PMs were told to recruit project team members from their own organizations and to select persons who work relatively close to them, and whose performance is familiar to their own. A total of 90 team members were initially selected, of which 57 finally were able to participate. Table I shows the specific sample features including organizations, PMs and team members who participated in the research.

Two interviews were conducted with each PM.

In the first interview, the participants had an opportunity to introduce themselves and to state their professional background, interests, the company that employed them, their roles and responsibilities, main personal strengths and weaknesses and to identify the stakeholders. At the end of the first interview, feedback from project team members was provided in order to gather relevant information concerning the PM’s performance and the main difficulties and challenges of working by projects in the current context. For that purpose, the PMs were asked to recruit project team members and to provide them with a questionnaire to complete, while explaining the objectives of the research and guaranteeing the confidentiality of their input. A total of 90 team members were initially selected. The interviewer was responsible to send a second questionnaire to be completed to the selected team members and to explain the objectives of the research and that the information that individual respondents supplied would be held in confidence. The questionnaire was quite simple, gathering basic information and giving voice to the team members to individually provide their opinions of the PM’s main strengths and weaknesses. Replies from 57 participants were obtained.

The second interview of PMs, and all the information that the completed questionnaires had provided, made it possible to undertake a more extensive analysis and to consider the main issues and challenges that arise in the project environment. Each PM interview by the main authors was conducted in 70–90 min. They helped to ensure that no critical terms and important issues were missed. The interviewer consulted the participant before ending the interview to be certain that all critical issues had been addressed. The interview was based on a common guide and following an open-ended series of questions. The guide was based on the following questions:

- How is your work today? What are your main duties?
- What are the main skills needed in your work?
- Which aspects of your work satisfy you more and least? Why?
- What are your main strengths as PM that are linked to personal competences?
What are your main areas of improvement as PM that are linked to personal competences?

The semi-structured approach gave an opportunity to propose new topics and to change the order of questions depending on the flow of the conversation. It also enabled the researcher to gather further relevant information and to enrich the study’s conclusions. All interviews were transcribed with the respondent’s permission in order to prevent the loss of information.

### Project managers' challenges

<table>
<thead>
<tr>
<th>Organization</th>
<th>Project managers (sex, age)</th>
<th>Team members participating</th>
<th>Organizational context</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project Manager 1 (Male, 36 years)</td>
<td>2 team members (1 female, 1 male)</td>
<td>Sector: Transport; Size: Large (&gt; 250 employees); Scope: Multinational; Type: International Association</td>
</tr>
<tr>
<td>2</td>
<td>Project Manager 2 (Female, 32 years)</td>
<td>4 team members (4 males)</td>
<td>Sector: Defense; Size: Medium (&lt; 250 employees); Scope: Multinational; Type: Private Company</td>
</tr>
<tr>
<td>3</td>
<td>Project Manager 4 (Female, 38 years)</td>
<td>5 team members (5 females)</td>
<td>Sector: International development; Size: Small (&lt; 250 employees); Scope: Multinational; Type: NGO</td>
</tr>
<tr>
<td>4</td>
<td>Project Manager 8 (Male, 31 years)</td>
<td>3 team members (1 female, 2 males)</td>
<td>Sector: Education; Size: Micro (&lt; 250 employees); Scope: National; Type: Private Company</td>
</tr>
<tr>
<td>5</td>
<td>Project Manager 9 (Female, 32 years)</td>
<td>4 team members (4 females)</td>
<td>Sector: Education; Size: Large (&gt; 250 employees); Scope: National; Type: Private Company</td>
</tr>
<tr>
<td>6</td>
<td>Project Manager 10 (Male, 33 years)</td>
<td>5 team members (1 females, 4 males)</td>
<td>Sector: Engineering and Energy; Size: Large (&gt; 250 employees); Scope: Multinational; Type: Private Company (Joint Venture)</td>
</tr>
<tr>
<td>7</td>
<td>Project Manager 11 (Female, 42 years)</td>
<td>4 team members (2 females, 2 males)</td>
<td>Sector: Engineering and Energy; Size: Large (&gt; 250 employees); Scope: Multinational; Type: Private Company</td>
</tr>
<tr>
<td>8</td>
<td>Project Manager 13 (Male, 42 years)</td>
<td>2 team members (2 males)</td>
<td>Sector: Construction; Size: Micro (&lt; 10 employees); Scope: National; Type: Private Company</td>
</tr>
<tr>
<td>9</td>
<td>Project Manager 14 (Female, 38 years)</td>
<td>4 team members (1 female, 3 males)</td>
<td>Sector: Fashion; Size: Large (&gt; 250 employees); Scope: Multinational; Type: Private Company</td>
</tr>
<tr>
<td>10</td>
<td>Project Manager 15 (Male, 34 years)</td>
<td>2 team members (1 female, 1 male)</td>
<td>Sector: Agribusiness; Size: Small (&lt; 250 employees); Scope: Multinational; Type: Private Company</td>
</tr>
<tr>
<td>Mean profile</td>
<td>Sex: 8 females (53.3%); 7 males (46.7%)</td>
<td>Sex: 25 females (43.9%); 31 males (56.1%)</td>
<td>Sectors: Engineering and Energy (20%); Education (20%); Transport (10%); Defense (10%); International Development (10%); Construction (10%); Fashion (10%); Agribusiness (10%); Size: Large (50%); Small (20%); Micro (20%); Medium (10%)</td>
</tr>
<tr>
<td></td>
<td>Average age: 37 years old</td>
<td>Average age: 37 years old</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management experience: 5 years</td>
<td>Management experience: 5 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of projects leading: 5 projects</td>
<td>Number of projects leading: 5 projects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>People leading: 14</td>
<td>People leading: 14</td>
<td></td>
</tr>
</tbody>
</table>

Table I. Sample features: organizations, project managers and team members participating in the research

- What are your main areas of improvement as PM that are linked to personal competences?
3.2 Data analysis

A content analysis of the data was conducted using an inductive approach to determine the PM's self-perceived strengths and weaknesses, as well as those perceived by project team members. The transcripts were reviewed for each question and recurring themes were identified. An advantage of this qualitative and grounded research method is that it is not limited to one specific theoretical background and is flexible and open-ended in regard to different subjective viewpoints.

An analysis of more frequent words that were used during the interviews and on questionnaires was carried out, in order to present a summary of main topics arising, using online software at www.wordclouds.com. Previous to entering the words in the software, they were first filtered independently by each researcher. Second, the information extracted was crossed among the authors to verify that the words were faithful and representative of the interviews, providing the information required for their subsequent grouping. This helped to develop categories from author's interpretations and to identify a set of key challenges that are especially relevant to PMs today. Categories have been combined or linked to other categories when their meaning seemed similar. Finally, the researchers validated the preliminary findings by a parallel blind analysis, which provides an opportunity to review categories and descriptions. Wordlists appear in the Appendix.

4. Results and discussion

The most relevant results are presented in Table II. This table includes, first, the areas for improvement and strengths, as perceived by the PMs who participated in the research; second, how team members perceived these areas for improvement and strengths for those PMs.

PMs believe that they need to improve disconnection (five times repeated). They believe that they have difficulties in disconnecting with work and should improve in this aspect. This result is probably linked to their perceived high commitment. It agrees with the results of previous studies regarding the challenging and stressful role of the PM (Anantatmula, 2015; Baca, 2007; Berg and Karlsen, 2007; Lindgren and Packendorff, 2009; Thornberry and Weirtraub, 1983).

Pressing and strict deadlines, hardly achievable because of the shortness of resources, are a definitive factor in the increased stress levels and lack of down time. Expectations seem to be a real challenge for PMs. They feel overwhelmed. As one stated, “I get deep, and I'm very demanding with my team and with myself, and many times I feel that it is not enough” (Project Manager 13, PM-13).

<table>
<thead>
<tr>
<th>Needs to improve</th>
<th>Team members' assessment (57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnection (5)</td>
<td>Communication (44)</td>
</tr>
<tr>
<td>Communication (4)</td>
<td>Teamwork (37)</td>
</tr>
<tr>
<td>Insecurity/lack of confidence (4)</td>
<td>Commitment (29)</td>
</tr>
<tr>
<td>Management (4)</td>
<td>Work capacity (25)</td>
</tr>
<tr>
<td>Needs to improve</td>
<td>Needs to improve</td>
</tr>
<tr>
<td>Communication (5)</td>
<td>Work capacity (5)</td>
</tr>
<tr>
<td>Work capacity (5)</td>
<td>Communication (37)</td>
</tr>
<tr>
<td>Confidence (5)</td>
<td>Persons as a priority (21)</td>
</tr>
<tr>
<td>Empathy (5)</td>
<td></td>
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<tr>
<td>Transparency (4)</td>
<td></td>
</tr>
<tr>
<td>Commitment (4)</td>
<td></td>
</tr>
<tr>
<td>Vision (4)</td>
<td></td>
</tr>
</tbody>
</table>

Challenges
- Improving communication (listening and expressing)
- Team or people management (delegation, relationship and loyalty)
- Increasing emotional management (frustration, stress and disconnection)
- Increasing confidence
- Strengthening leadership skills (motivation and vision)
- Improving organizational and management competences

Table II. Summary: main results
After disconnection, the most frequently repeated words are communication skills (including listening and expressing), insecurity (they would like to feel more confident with their work or role) and management competence. All of these words were mentioned four times. Communication skills have been one of the most commonly studied and sought management in recent years (Alioua and Simon, 2017; Bird and Mendenhall, 2016; Müller and Turner, 2007). The lack of these communication skills causes insecurity. As one of the interviewed said, “Communication is difficult for me with large groups, due to certain fears and limitations” (PM-3).

The next words are teamwork (three times) and capacity (three times) to organize the project work. Teamwork includes delegate, relationship and loyalty, whereas capacity is linked to organizational competence. As previous works indicated previously, teamwork is linked to success of the project (Berg and Karlsen, 2007, 2016; Cattani et al., 2011; Yang et al., 2011). Some of the respondents realize this and stated that they want to improve their relationships with the team, even if it was temporary. Some also aspire to “better prioritize the tasks” (PM-4; PM-6; PM-11) and to “get more organized” (PM-3; PM-4; PM-6) in order to improve management of the project.

On the other hand, PMs perceive that their strengths are linked to communication skills, work capacity, confidence (includes security and robust behavior) and empathy. Each of these four words was repeated five times. It is interesting to note the importance of communication skills of PMs. Some of them perceive this as a strengthened competence, whereas others perceive a need for improvement. In regard to confidence, some PMs feel confident with their role, whereas others express their need to strengthen it.

Transparency, commitment and vision (linked to leadership skills) are the next most frequently repeated words (four times). These leadership skills were highlighted in previous studies (McKevitt et al., 2017; Müller and Turner, 2010). In addition, some of the interviewees consider having (Do you mean “considered acquiring”? or “considered developing”? or “thought that they have”) “an innate ability to lead” (PM-3).

As explained before, 57 team members also participated in the research. From this point on, the results that are presented refer to this sample, thereby increasing significantly the number of words repeated. When team members were asked about PMs’ needs to improve, they mentioned teamwork (repeated 44 times) and communication skills (repeated 37 times). Teamwork includes delegate, relationship and loyalty, whereas communication refers to listening and expressing.

Team members believe that their project leaders “should improve the management of their task forces, especially during high workload periods” (PM-3’s team member; PM-3’s TM). These demanding periods also require of PMs “better communication and information sharing to organize the team and to delegate” (PM-6’s TM).

The next most frequently repeated word (21 times) is persons. They are referring to consider persons as a priority, “value their work” (PM-8’s TM) and “include them in decision making” (PM-7’s TM; PM-15’s TM). One of the respondents summarized this by saying “For an organization to walk towards success, it is important to value the staff and the team with which it works, motivate it and above all, listen to it” (PM-11’s TM).

In regard to the PMs’ strengths, team members mentioned their high commitment (repeated 29 times) to the project and high work capacity (25 times).

This high commitment includes professionalism, ethics, involvement, generosity, persistence and honesty, which is in line with previous research (Ballesteros-Sánchez et al., 2019). It is demonstrated in affirmations like “total dedication to the work” (PM-11’s TM) or “incredible ability to work” (PM-10’s TM; PM-15’s TM).

The main challenges that PMs and team members perceive are summarized in Table II.
5. Conclusions

The trend to the projectification of organizations and businesses positions to the PMs in the main role needs to combine technical and managerial aspects. Handling this role in such a challenging environment (globalization, uncertainty, virtual teams, etc.), and especially for those managers with a technical background, it requires the development of some personal competences, such as communication. This competence is perceived as necessary in the self-evaluation of PMs and also in the opinion of team members. Although some PMs consider their communication skills to be a strength, their team members appreciate this ability only slightly, finding that it is a real area of needed improvement. In any event, the high frequency of appearance of this word (51 times makes it the word that is most repeated) confirms that communicating can be a real challenge that PMs should address, keeping in mind cultural aspects and the particularities of communicating to virtual teams. This is in line with previous literature, giving communication skill a relevant position for being a competent PM (Alioua and Simon, 2017; Bird and Mendenhall, 2016; Müller and Turner, 2007).

This study also revealed the importance of the teams working on projects, and that managing persons is critical, as both, the team performance and the team members’ cohesiveness are decisive in achieving the project’s goals. Attention to the persons and teamwork is highly sought by the team members, but curiously is barely mentioned by the PMs. Indeed, teamwork skill has already been emphasized by research (Berg and Karlsen, 2007, 2016; Cattani et al., 2011; Yang et al., 2011) in the project management field.

PMs apparently are more concerned about managing their stress, self-confidence and responding with a commitment to the project’s tasks. According to the results, commitment and responsibility, together with the capacity of work, are the main strengths of PMs that are emphasized, thereby proving their professionalism. The difficulties of PMs to disconnect from work and facing stressful situations, which is in line with previous studies (Anantatmula, 2015; Baca, 2007; Ballesteros-Sánchez et al., 2019; Berg and Karlsen, 2007; Lindgren and Packendorff, 2009; Thornberry and Weirtraub, 1983), claim for better supporting them to find useful strategies for coping stress and manage their time.

This paper has several managerial implications. First, a set of challenges is presented to address the areas in which improvement is needed. Between these needs, communication and team management stand out. Second, to transition from the functional organizations to project organizations, the organizations need to rely on the capability and leadership of their PMs and give them the authority to discharge their assigned role. Finally, the professionalization of project management should be accompanied not only by certifications, but also by specific training that is designed to respond to the needs that have been identified, such as for intra-personal and interpersonal skills.

This research is not free of limitations. The main limitation is related to the size and location of the sample, which provides the point of view of only 15 Spanish PMs and the members of their work teams, and disregards cultural aspects. Future research should include the opinions of PMs from other countries in order to compare the results. Due to the size, features of the sample (gender, organization, experience or sector) were not included in the analysis since linking results to these parameters provided results that were not very meaningful. It appears that increasing the number of PMs and their team members would be important in future work.

References


PMI (2017a), Project Manager Competency Development Framework, 3rd ed., Project Management Institute, Newtown Square, PA.


**Further reading**

Appendix. Wordlists

Wordlist 1. Project manager’s assessment: needs to improve
- 5 Disconnection
- 4 Communication
- 4 Insecurity
- 4 Management
- 3 Capacity
- 3 Teamwork
- 2 Flexibility
- 2 Organizational
- 2 Methodology
- 2 Analytical
- 1 Prioritization
- 1 Frustration
- 1 Adaptation
- 1 Tolerance
- 1 Results
- 1 Strategy
- 1 Balance
- 1 Leadership
- 1 Patience
- 1 Demanding
- 1 Guarantee
- 1 Tolerate
- 1 Brevity
- 1 Listening
- 1 Quality
- 1 Technical
- 1 Delegate
- 1 Encourage
- 1 Change
- 1 Active
- 1 Experience
- 1 Clear

Wordlist 2. Project manager’s assessment: strengths
- 5 Communication
- 5 Capacity
5 Confidence
5 Empathy
4 Transparency
4 Committed
4 Vision
3 Disciplined
3 Robust
3 Technical
2 Adaptable
2 Opening
1 Availability
1 Transformative
1 Representative
1 Responsible
1 Generosity
1 Enthusiasm
1 Motivation
1 Resolving
1 Relationship
1 Intuitive
1 Leadership
2 Analytical
1 Loyalty
1 Tenacious
1 Brave
1 Positive
1 Closeness
1 Persistent
1 Organized
1 Vocation
1 Creative
1 Management
1 Stress
1 Clear
1 Create
1 Agile
Wordlist 3. Team member’s assessment: needs to improve

- 44 Teamwork
- 37 Communication
- 21 Persons
- 20 Capacity
- 20 Tasks
- 18 Management
- 17 Adaptability
- 16 Overload
- 14 Performance
- 13 Confidence
- 13 Project
- 12 Time
- 11 Responsibility
- 10 Involvement
- 10 Motivation
- 10 Problem
- 10 Express
- 10 Cost
- 9 Differences
- 9 Demanding
- 9 Conflict
- 9 Stress
- 8 Promotion
- 8 Workmate
- 8 Members
- 7 Perfectionism
- 7 Uncertainty
- 7 Difficulty
- 7 Resolution
- 7 Discussion
- 7 Delegate
- 7 Decision
- 6 Relationship
- 6 Hierarchical
- 6 Information
- 6 Proactivity
- 6 Perception
- 6 Determined
- 6 Controlling
- 6 Response
- 6 Opening
- 6 Listening
- 6 Assessing
- 6 Direct
- 6 Share
- 6 Assume
- 6 Organization
- 5 Understanding
- 5 Professionality
- 5 Flexibility
- 5 Environment
- 5 Corporative
- 5 Leadership
- 5 Potential
- 5 Impatience
- 5 Proposal
- 5 Unclear
- 5 Mistake
- 5 Closing
- 5 Learning
- 5 Fast
- 4 Prioritize
- 4 Protective
- 4 Guarantee
- 4 Emotional
- 4 Positive
- 4 Planning
- 4 Approach
- 4 Weakness
- 4 Global
- 4 Goals
- 4 Help
- 4 Self
• 3 Methodological
• 3 Assertiveness
• 3 Demonstrate
• 3 Stakeholder
• 3 Importance
• 3 Conceptual
• 3 Argumentative
• 3 Analytical
• 3 Authority
• 3 Strategic
• 3 Reinforce
• 3 Recognize
• 3 Challenge
• 3 Constant
• 3 Interactive
• 3 Critical
• 3 External
• 3 Security
• 3 Informal
• 3 Feedback
• 3 Realist
• 3 Support
• 3 Notice
• 3 Accept
• 3 Impose
• 3 Vital
• 3 Idea
• 2 Availability
• 2 Hard-working
• 2 Adjustment
• 2 Expertise
• 2 Excellent
• 2 Rational
• 2 Concerned
• 2 Quality
• 2 Precise
• 2 Network

Project managers’ challenges
Wordlist 4. Team member’s assessment: strengths

- 29 Commitment
- 25 Capacity
- 13 Knowledge
- 13 Persons
- 13 Technical
- 12 Interpersonal
- 11 Negotiating
- 11 Teamwork
- 9 Analysis
- 9 Professionalism
- 8 Vision
- 8 Positive
- 8 Honest
- 7 Organized
- 7 Leadership
- 7 Confidence
- 7 Responsible
- 6 Creative
- 6 Demanding
- 5 Communication
- 5 Resolution
Project managers’ challenges

- 5 Management
- 4 Flexible
- 4 Listening
- 3 Deciding
- 3 Empathy
- 3 Ethics
- 3 Enthusiast
- 3 Persistent
- 2 Formal
- 2 Efficiency
- 2 Transparency
- 2 Generosity
- 2 Passion
- 2 Integrating
- 2 Curiosity
- 2 Tenacity
- 2 Loyalty
- 2 Coherence
- 2 Constancy
- 2 Disposition
- 2 Vocation?
- 2 Rigor
- 2 Spirit
- 2 Promptness
- 2 Opening
- 2 Closeness
- 2 Improvement
- 2 Cooperation
- 2 Coordination
- 1 Spontaneity
- 1 Planning
- 1 Calm
- 1 Mediator
- 1 Understanding
- 1 Involvement
- 1 Assertiveness
- 1 Practicality
• 1 Discipline
• 1 Initiative
• 1 Observer
• 1 Competence
• 1 Authority
• 1 Accessibility
• 1 Reasonability
• 1 Certainty
• 1 Proactivity
• 1 Humility
• 1 Equity
• 1 Accuracy
• 1 Attitude
• 1 Harmony
• 1 Kindness
• 1 Attentiveness
• 1 Tenacity

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Projectification
The forgotten variable in the internationalization of firms’ innovation processes?

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Abstract

Purpose – The last few decades have seen the rapid emergence of two transformative streams in large firms. The first is the development of project management, aimed at improving the performance of innovation management, while the second, the internationalization of innovation organizations and processes in response to strategies of redeployment toward emerging countries. Both streams have been closely analyzed in the fields of project management and international management, respectively. However, the links between the two have been less studied. The purpose of this paper is to consider the hypothesis that a firm’s projectification might have an important impact on its pattern of internationalization in innovation.

Design/methodology/approach – First, we present the models of internationalization of innovation processes used in the multinational corporation literature. This field essentially focuses on the components of permanent organizations: global internationalization strategy and legacy, R&D footprint, characterization of local subsidiaries and the role of central head offices. Projects figure only as a context in which those elements operate, not as a structuring variable of the global innovation process pattern. The authors challenge this view by exploring whether the specificities of the firm’s projectification pattern can influence how it builds its global innovation process. The paper is based on a longitudinal case where the authors analyze the organizational transition within the Renault group, an emblematic case of a multinational that implemented a spectacular internationalization transition in the 2000s.

Findings – Our results demonstrate project organizing’s major impact on the internationalization patterns of innovation processes within the firm. They show how the deployment of a polycentric innovation footprint has been the consequence of a specific projectification transition, giving the project and program functions the autonomy to transgress centralized product development norms to adapt their project to the local environment; use the initial breakthrough project as the foundation for a new and specific global product development network through a lineage logic; and sustain this innovation global network as a permanent process of the firm.

Research limitations/implications – The paper demonstrates the importance of the organization’s projectification characteristics as an important vector for successfully implementing the most advanced internationalization strategies (i.e. reverse innovation) and innovation processes models (i.e. integrated networks).

Practical implications – The paper characterizes project management related conditions that can govern the success of innovation strategies in high-growth emerging countries: the autonomy and empowerment of project functions; colocation and integration of teams; existence of a program function; and HR policies capable of supporting lineage management and project-to-project learning processes.

Originality/value – Bridging project management literature with multinational management literature. Demonstrate the key impact of projectification on internationalization pattern of the firm. Longitudinal analysis of a firm internationalization transition on a ten-year period.

Keywords Global project management, Innovation management, Organizational project management, International development

Paper type Research paper

Introduction

The last few decades have seen the rapid emergence of two transformative streams in large firms. The first is the development of project management and the projectification of firms’ organizations (Lundin et al., 2015; Midler, 1995; Gemünden et al., 2018; Schoper et al., 2018),
aimed at improving the performance of product and service innovation development. This has affected the structure and innovation processes of firms: the empowerment of project (Clark and Wheelwright, 1992; Clark and Fujimoto, 1991; Midler, 1995) and program functions (Maylor et al., 2006); the colocating of cross-disciplinary project teams (Edmondson and Nembhard, 2009); the involvement of internal expertise according to concurrent engineering processes (Sobek et al., 1999); and co-innovation strategies with external partners (Bossink, 2002; Lee et al., 2012; Maniak and Midler, 2008).

The second stream is the internationalization of innovation processes. Of course, internationalization per se is nothing new. However, the reorienting of development strategies from the triad of mature markets (Europe, USA and Japan) toward high-growth emerging countries (the “BRICs”: Brazil, Russia, India, and China) called for new innovation strategies and processes to serve those markets with relevant products (Prahalad, 2005, 2012; Govindarajan and Trimble, 2012).

A recent special issue of the International Management (Management International) journal on Global Organization of Innovation Processes presented an overview of the historical evolution of global innovation processes in multinational firms (Ben Mahmoud-Jouini, Burger-Helmchen, Charue-Duboc and Doz, 2015). Originally, in the “home-centric” model, innovation was essentially developed for the home market, and deployed elsewhere later on. Bartlett and Ghoshal (1989), Gerybadze and Reger (1999), and others analyzed how new global innovation processes appeared in multinational corporations (MNCs), with more innovation responsibilities distributed more evenly between the home base and the local subsidiaries, and more interactive relations in a polycentric innovation global network.

Two distinct issues addressed by the global innovation management literature are: what are the challenges in the management of such polycentric organization models to achieve efficient innovation performance? and beyond the identification of static global innovation models, what are the drivers of organizational transition to more distributed and interactive global innovation models? The fields of project management and internationalization of innovation management have developed largely in parallel, without enquiring into how these two structural transformations might be linked. We argue that bridging this gap would be a productive way to address both issues. More specifically, we ask: How can projectification of the firm impact the dynamics of its global innovation process pattern?

We explore this question in the empirical context of the automotive industry, and specifically within Renault. This choice is motivated as follows. First, the auto industry has a long history of MNCs with global innovation strategies – and Renault, over the last two decades, has succeeded spectacularly in developing its activities outside Europe. Second, this stellar international growth was mainly due to the success of a new “Affordable” product line, designed through a global innovation network that included key design and development centers in Romania and India. Renault, therefore, stands as an emblematic case of the “polycentric global innovation network” model, as described in the global innovation management literature. This pattern is novel in the auto industry, where most groups adopt the home-centric model. Third, Renault has been a pioneer in the development of project and program functions since the early 1990s. So this is a particularly interesting case to explore whether this existing project capability is related to the creation and implementation of the new global polycentric innovation network.

In the first part of the paper we define our theoretical framework. We characterize the different models of internationalization of innovation processes in multinational firms – a particularly active field in the contemporary international management literature (Gammeltoft, 2006). We show that, in this literature, project management is conspicuous by its absence as a structuring variable of the internationalization of innovation processes. Challenging this omission with our research question, we dive into the project management field to assess whether such a question might already have been tackled, and why it is worth considering it further.
In the second part, we present the methodology mobilized for this research. The case analysis is based on a longitudinal analysis of Renault projectification, and a sequence of three studies from 2005 to 2018 that examined the deployment of a range of “Affordable” products designed to support Renault’s international growth. Each study lasted around three years. In each one, we analyzed in real time the genesis and deployment of two new platforms (Logan in Romania 2005–2012, Kwid in India 2010–2015 and electric vehicles derivated from Kwid in China 2014–2018).

In the third part, we analyze our longitudinal case. We characterize the projectification characteristics of the firm, the deployment of its internalization strategy on the period, the key contribution of the studied projects in the implementation of this strategy, the transformation of the global innovation process model on the period.

Coming back to our research question in the discussion section, we demonstrate how the specific project and program management of the “Affordable” range has been the basis for the success of Renault’s internationalization strategy in emerging countries during the period studied and has profoundly altered Renault’s organization and processes for the international deployment of innovation, transforming a home-centric innovation network into an integrated global network model as described by the literature.

On the theoretical level, those results demonstrate the importance of the organization’s projectification characteristics on the dynamics of global innovation processes. Strong and mature project management capability appears as an important vector for successfully implementing the most advanced internationalization strategies (i.e. reverse innovation) and innovation processes models (i.e. integrated networks). Such results show how the lessons of project management in the field can pose fruitful questions for other areas of organization theory.

In terms of more operational contribution, the paper clarifies project management related conditions that can govern the success of innovation strategies in high-growth emerging countries: the autonomy and empowerment of project functions; project team collocation and opening to local environment; existence of a program function; and human resource management supporting lineage management and project-to-project learning processes.

Literature review: innovation management and projectification in multinational corporations

The motivation of this paper results from a surprise when contemplating contemporary organizational transitions alongside the trajectories of the global innovation and project management fields. Empirically, the dynamics of these two fields have been important in recent decades, while on a theoretical level, both have seen major but essentially parallel developments. Did the development of project management within multinational organizations have no significant effect on the way global innovation is organized and managed? Or is this an effect of academic structuration, with each field looking at these transitions through different conceptual lenses? In this section, we seek to answer these questions by looking at the literature on global innovation management on one side, and that on project internationalization on the other.

Innovation management in multinational corporations: projects as the missing variable

For many years, a large body of research has been developing on the theme of globalization in firms (Vernon, 1966; Bartlett and Ghoshal, 1989). Within this broad theme, an emerging stream has focused on the topic of internationalization of innovation management. A recent special issue of the International Management Journal (Ben Mahmoud-Jouini, Burger-Helmchen, Charue-Duboc and Doz, 2015) presents an overview of research on global innovation evolution in MNCs, proposing drivers and challenges that multinationals encounter along their journey to a more globalized pattern of innovation management. We divide this literature into two different focusses.
The first addresses high-level strategic issues involved in the orientation of the innovation processes within MNCs, defined as the sequence from innovation emergence to its deployment on internationalized markets. Innovation processes combine market insight (light grey bubbles in Figure 1) with technology competencies (in dark grey bubbles in the figure) to design innovative offers (middle grey bubbles). The arrows in the graphs represent the flows of different innovation input and output between the home base of the firm and the local units.

Historically, innovation was once intensely local. Hence, the traditional pattern of global innovation process – the “home-centric model” – is the international “projection” of innovations developed for home market through exports and/or licensing (see the first pattern in Figure 1). In this pattern, the knowledge that sustains the innovation effort flows outward from the historical home base in developed countries to the rest of the world. Bartlett and Ghoshal (1989) proposed an extension of this pattern in a multi-home-based (or “transnational,” in their terminology) model, in which multiple subsidiaries (“lead subsidiaries”) take responsibility for different product lines, because of the serendipitous deployment of MNCs’ activities through local acquisitions (see, for example, ITT in Bartlett and Ghoshal, 1989 or the Xerox Group).

With the race to the fast-growing markets of the BRICs, another pattern emerged: the “reverse innovation” model (Govindarajan and Trimble, 2012). The need to adapt innovation to the specific requirements of “bottom-of-the-pyramid” customers (Prabhalad, 2005) reinforced the necessity to create frugal innovations (Zeschky et al., 2011) that home-based departments have neither the knowledge nor the incentive to design. In this pattern, innovations (in the form of knowledge about innovative functional and technical specifications) flow inward from peripheral subsidiaries to home-base centers. A typical example, the Renault Dacia Logan case, has been studied by Julien et al. (2012). In fact, reverse innovation very often requires hybridization between home-based R&D competences and local units in emerging subsidiaries (Midler et al., 2017), as shown in the central pattern in Figure 1.

The final stage in the global organization of innovation processes appears in the literature as a “polycentric networked model,” as schematized on the right-hand side of Figure 1. Here, market and innovation competencies interact in a fluid way to leverage local opportunities for innovation emergence, globally mobilize the various competences to build up integrated and relevant innovative solutions, and rapidly scale up their deployment on a global scale.

This high-level strategic stream mainly focuses on characterizing static ideal types for differentiating internationalized innovation process patterns. When analyzing the historical dynamics that lead to such global innovation processes, it emphasizes the role of key strategic decisions. One is the legacy of acquisition and alliance decisions made during internationalization;

![Figure 1. Global innovation process patterns](image)

Source: Jouini et al. (2015, p. 113)
another is the strategic decision to allocate a “world mandate” for specific products and businesses among subsidiaries worldwide (Doz et al., 2001; Doz and Wilson, 2012; Ben Mahmoud-Jouini, Burger-Helmchen, Charue-Duboc and Doz, 2015, p. 114).

The second focus of this literature is more micro-oriented. It addresses the knowledge creation, mobilization and transfer that form a key component of innovation processes. Studies characterize the variables and organizational configurations that can help or hinder the creation and mobilization of innovation knowledge within the multinational firm: its R&D footprint, the capabilities and power of local subsidiaries, the role of the central headquarters, the development of network or communities of practices, and the human resource function.

Taking into account the importance of high-caliber technological resources in the emergence of innovation, authors emphasize the role of R&D footprint configurations. Gerybadze and Reger (1999) analyze the trend of allocating more to oversees R&D within MNCs’ global budgets. Here, a structuring variable appears to be the orientation of the innovation strategy – that is, whether it is science- and research-based or more marketing-oriented. Ethnocentric centralized R&D, polycentric decentralized R&D, or integrated R&D networks have differentiated performances in term of absorbing and efficiently integrating valuable local knowledge when open innovation is implemented (Gassmann and von Zedtwitz, 2009).

Acknowledging the tacit and “sticky” nature (Brown and Duguid, 1998) of the technology and market knowledge integrated in collocated innovation activity, many authors (Cantwell and Mudambi, 2005; Guerineau et al., 2015; Monteiro, 2015) focus on the role of local subsidiaries as contributors to innovation processes. Different organizational types are characterized, from historically major subsidiaries, with innovation capabilities and important market potential, to implementor subsidiaries, which play a follower role in the innovation deployment process.

This literature on knowledge integration emphasizes the role of “communities of practice” (Wenger, 1998) and proposes an “internal network of practice” as an efficient (but not perfect) mechanism for knowledge sharing and integration in geographically dispersed networks (Tallman and Chacar, 2011; Paavola et al., 2004). Such an organizational setting favors formal and informal relations through regular face-to-face meetings, rotating assignments and expatriate assignments.

To develop and support such processes, scholars emphasize the specific role of central headquarters. A relevant incentivization system for local subsidiaries can help to align local innovative effort and global innovation strategy (Guerineau et al., 2015). The tension between locally tailored and globally deployable innovations can be eased through central design architecture decisions that clearly differentiate the stable core of the technology from its adaptable periphery (Ben Mahmoud-Jouini, Burger-Helmchen, Charue-Duboc and Doz, 2015). Central human resource management also appears to be an important variable that contributes to knowledge sharing and the global deployment of local innovations through the medium of innovation champions (Munoz Zarate, 2002).

Moving beyond the structural patterns of the macro stream, this micro-level stream highlights certain key phenomena (knowledge creation and transfer) within the way innovation emerges and is deployed within globalized innovation processes. However, it does not tackle the issue of the transition from traditional home-centric pattern to the others.

The concept of project management does not appear as an explicit variable in either the global or micro literatures on the globalization of innovation processes. Chiesa (2000, p. 342) notes that in the international management literature, “much attention has been paid to how to manage a foreign R&D unit, especially how to balance central control and autonomy […]. However, the management and the organization of global R&D projects have been rather neglected.” When projects do appear in case-based studies on international management, it is more as a scope for empirical investigation than as a specific organizational variable that might have a significant impact on international structuration of the firm. However, as we will see in the next section, the project literature has tackled many similar issues, specifically
knowledge integration and learning – not only within projects, but also from project to project, and from projects to the permanent organization. Our hypothesis is that this relative absence of project theory in international management literature is more an effect of the structuration of the international management field than the result of empirical evidence.

Projectification: a good candidate to illuminate the globalization of innovation processes

In this section, we will analyze how the project management stream could throw new light on this specific issue. First, we will briefly underline the importance of firm projectification, which cannot be ignored as a significant factor in contemporary firm dynamics. Second, we will review the existing project management literature on global innovation processes. We will show that an important research stream in the innovation and project management literature, while it does not explicitly deal with the theme of globalization of innovation processes, does tackle the same key issues of knowledge creation, integration and deployment within global innovation processes, paving the way for a fruitful bridging between the two literature streams.

The projectified society. Many authors in the project management field have attested to, and analyzed, the historical trend toward projectification around the world. Initially, the project management field emerged to discover how projects are managed “from the inside.” However, the field has long emphasized that “no project is an island” (Engwall, 2003): the management of a project is in many ways dependent on the permanent organizational setting or context in which it unfolds. Parallel with this “inside-project” approach, the projectification research stream analyzes how permanent organizations of many types have been increasingly incorporating project management as a way to organize their exploratory development and business activities. Many studies have analyzed how this projectification process enlarged its scope in industrial society, from old project-based businesses such as construction to other types of industry and services (Hobday, 2000; Maylor et al., 2006; Godenhjelm et al., 2015; Lundin et al., 2015; Schaper et al., 2018). We are concerned with how such projectification transformed existing so-called “permanent organizations” (Aubry and Lenfle, 2012; Packendorff and Lindgren, 2014). The result of the rise of project management “within” permanent organizations represents the addition and juxtaposition of new roles (typically project managers, Clark and Wheelwright, 1992; Clark and Fujimoto, 1991; Midler, 1993/2012, 1995), processes (such as stage gates, Cooper et al., 1999; project governance, Müller et al., 2016; and new structures, typically project offices, Hobbs et al., 2008). However, it also profoundly alters the structure and permanent roles of employees through forms such as the matrix organization (Whitley, 2006; Sydow et al., 2004); P-form organization (Söderlund and Tell, 2009, 2011); project-based organizations, FSO, and project-network organizations (Lundin et al., 2015); colocation in project “war rooms” (Clark and Wheelwright, 1992; Schilling and Hill, 1998); new forms of working contracts and carrier management (Bredin and Söderlund, 2011; Lundin et al., 2015); and the relations between permanent organizations involved in projects (Sydow and Windeler, 1998; Hagedoorn, 2002; Maniak and Midler, 2008).

From this brief overview we draw the following conclusion. As more and more organizations are projectified, we can reasonably hypothesize that such a characteristic could have a significant impact on the way innovation processes are organized on an international scale. Then arises the following question. If this is so, has the variety of projectified organizational patterns had an impact on the transition through which firms converge on a specific international pattern of innovation processes – a dynamic aspect that has been relatively neglected in the international management literature?

Project management and global innovation processes: from explicit to implicit bridges. A bibliographic analysis of the words “project management” and “international” or “global” in the three main journals of the project field (IPM, PMJ and IJMPB), as well as other reviews and edited books, gives the following results.
In most papers that cite those concepts explicitly, the core focus is the “inside view,” looking at challenges on projects that have international components or scope, how to manage them, and the analysis of their resulting performance. This “inside view” addresses various issues: managing the complexity of a global project (Aarseth et al., 2013; Yang et al., 2015); the impact of multicultural dimensions in project teams (Henderson et al., 2018); and the case of multinational consortium-based projects (Egginton, 1996) or joint ventures (Konieczny and Petrick, 1994). Some studies focus on virtual project coordination (Reed and Knight, 2010; Hosseini and Chileshe, 2013), while others examine specific dimensions of global project management such as purchasing (Tracey and Neuhaus, 2013), risk management (Kardes et al., 2013), stakeholder management (Aaltonen et al., 2008; Aaltonen and Sivonen, 2009) or explore global project management in more specific sectors such as pharmaceuticals (Balthasar and Roetheli, 1986) or software (Niazi et al., 2016). In terms of project management deployment, Bredillet et al. (2010) study the relationship between the cultural characteristics of countries – analyzed with the Hofstede (2001) framework – and the diffusion of project management.

Other contributions adopt a more global view of managing a global project portfolio at the firm scale (Cleland and Gareis, 2006; Binder, 2016; Chiesa, 2000). All propose guidelines to manage the portfolio, and emphasize that the efficiency of global projects demands coherence between the multinational setting of the permanent organization (i.e. R&D footprint; roles of local subsidiaries and central headquarters; and human resources policy, Bredin and Söderlund, 2011) and the cultural identity of the local subsidiaries (Bredillet et al., 2010). In this sense, they reinforce our hypothesis of a strong link between the project management setting within multinational firms and their permanent organizational patterns.

Another interesting project management stream for our research question addresses knowledge integration and learning issues. Such literature generally does not mention the global innovation theme explicitly, but it tackles the same themes as what we term the “micro view” of global innovation processes. Söderlund and Tell (2011) analyzed how the P-form organization of Asea/ABB managed its transition when international development created more complex situations in terms of the variety of technical and market knowledge the firm had to handle. The project-based organization featured as a decentralizing principle, used to open up local knowledge integration to innovation. On the other side, recentralization is required to realize value from these local opportunities through project-to-project learning. In their successive studies, Davies and Brady (2000) and Brady and Davies (2004) present an organizational learning pattern that articulates a “project-led” learning process (from vanguard project, Frederiksen and Davies, 2008, to project-to-project and then project-to-organization) as well as a “business-led” process, originating with the permanent components of the organization, that deploys and transforms new knowledge into exploitation routines. These papers do not explicitly refer to global innovation in multinational organization challenges, but the learning and innovation processes they cover are clearly highly relevant to understanding contemporary global innovation processes.

This literature review reveals a close link – sometimes explicit, sometimes tacit – between the issues addressed by the project community and those faced by the international management community with global innovation processes. The studies mentioned address similar challenges of knowledge creation, adoption, integration and deployment to enhance the innovation capability of the firm. They explore how permanent organizational settings and project management can play a part. But they do not address the issue of the possible interactions between those two institutionalizing processes. Could the projectification characteristics of the firm have an impact on the dynamics of its global innovation process pattern – and, if so, how? That is the still-open question that we address in this paper.
Research design

We explore this question through an in-depth, longitudinal single case study (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Ridder et al., 2014) of a global car manufacturer, Renault – a typical case of the PSO pattern (Lundin et al., 2015).

This paper results from a research program that analyzed the organizational transitions in innovation and project management within the firm since the 1990s.

Researches in the 1990s and early 2000s characterized the projectification process within Renault in the period (Midler, 1995; Midler and Navarre, 2007; Lundin et al., 2015).

The more recent analysis of Renault global innovation projects is based on a sequence of three field studies that took place from 2005 to the present. Each study is targeted at analyzing a specific project (A, B and C) and its derivatives in term of its performances as its project organization and management. In this paper, we mobilize and articulate the results of these project analyses in a longitudinal way to understand the internationalization process of Renault in the period from 2000 to 2018 and its links with the firm projectification.

These field researches involved the author, two doctoral students under his supervision, and two other senior professors from other institutions. Table I details the different empirical studies that were implemented on the three cases.

Interviews were conducted by at least two researchers in a semi-structured way. Notes were cross-checked by the research team, and systematic feedback was implemented with project executives. Two of these three cases have already been extensively presented in books and articles; Jullien et al. (2012), Midler (2013) for Project A, Midler et al. (2017), and Midler and Maniak for project B. The premises of project C have been analyzed in Bo Chen’s (2018) doctoral thesis.

Case study

The Renault group has been part of the Renault–Nissan alliance since 1998, and Renault–Nissan–Mitsubishi since 2018.

During the period under study, the group developed three different brands: the historical Renault brand; the Dacia brand, acquired in 1999 and commercially developed from the launch of the Logan in 2005; and the Russian Lada brand, which was only consolidated in 2017.

<table>
<thead>
<tr>
<th>Location</th>
<th>Project A</th>
<th>Project B</th>
<th>Project C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romania</td>
<td>Romania</td>
<td>India</td>
<td>China</td>
</tr>
<tr>
<td>Launch date of first product</td>
<td>2004</td>
<td>2015</td>
<td>2019 (expected)</td>
</tr>
</tbody>
</table>

| Research | 2006: Analysis on the first Logan project 2010–2011: interviews with the Entry team, industrial and sales managers, suppliers and key stakeholders at Renault Head Office | 2013–2015: three annual week-long studies at Chennai project office and plant (India) with interviews of the team members, production and sales managers, and suppliers. Complementary interviews with key stakeholders at Renault Head Office | 2013–2017: doctoral study on the emergence of Renault’s electric-vehicle strategy for China March 2018: Field study in Chinese project C office at Wuhan and plant in Shiyan |
| Interviews | 42: core project team members, senior executives of the Renault Group (CEO, executive VP design, product planning, Entry division) | 40: core project team members, senior executives of the Renault Group (CEO, executive VP design, product planning, Entry division) | 20: project team, VP at Chinese partner firm, Electric Platform VP at Renault |

Table I. Field studies carried out at Renault
We will analyze our case through three longitudinal lenses. First, its projectification trajectory; second, its internationalization growth; and third, the transformation of its global innovation network. The discussion will return to our research question by articulating these three dimensions.

Projectification of Renault: from heavy weight project management in the early 1990’s to empowered program management in the early 2000s.

Renault’s projectification from the 1970s to the early 2000s has previously been characterized in Midler (1995) and Midler and Navarre (2007). Automobile firms’ projectification more generally has been typified by Lundin et al. (2015) as a transition from functional organization to a FSO context[1].

From the starting point of a traditional functional organization, lightweight project management emerged during the 1970s to manage the new product development phase (extending from the initial “go” development decision to commercial scale up). This was succeeded by a heavyweight (Clark and Fujimoto, 1991) project management structure (involving project directors) in 1989. This crucial organizational move prompted a transition during the 1990s within development engineering departments to cope with the new concurrent engineering logic and project colocation promoted by project directors. In parallel to this within-firm transition, new co-development processes were deployed in response to a similar logic of global project optimization, in which suppliers played a major role.

The mid-1990s saw a new organizational transition with the creation of the program director role. The program director took on a wider scope of responsibility, encompassing product decisions concerning all the vehicles derived from the same platform. Such a platform strategy was becoming dominant in the automotive sector at that period, as a way of handling the growing diversity of product ranges while maintaining scope economies across various similar products (Nobeoka and Cusumano, 1997). Program directors are the hierarchical superiors of the project managers of any new vehicle projects derived from their own platforms, and also control the technical product/process evolutions of products already on the market. The program director’s function was empowered still further in the early 2000s, when their responsibility was enlarged to include commercialization decisions on products attached to the same platform – a decision field that had, until then, been the hunting ground of the commercial division.

As we shall see, such enlarged and empowered project/program roles had a decisive impact on the success of the original projects that Renault developed in emerging countries in the 2000s and 2010s – projects that accounted for the bulk of the firm’s international growth.

Internationalization at Renault: international sales skyrocket thanks to the “Affordable” product line

During the 2000s and 2010s, Renault achieved spectacular sales growth outside Western Europe (from 250,000 to over 2m vehicles; a rise of 300 percent). During the same period, European and French sales were almost stable (about 750,000 vehicles for the French market and 1m for the rest of Europe) (see Figure 2). Since 2010, half of global group sales have been in Western Europe and the other half in the rest of the world, any fluctuation being due to macro contingences in those two markets (crisis in European markets in 2008/2009; crisis in the Russian and Brazilian markets in 2014/2015). Future plans, as recently presented by the commercial VP of the firm, will only increase the predominance of international sales over traditional markets with the development of the Chinese market initiated in 2017[2] (Figure 2).

Such figures clearly show that 2000–2018 was a time of major internationalization at Renault. It is important to note that this was mainly due to the deployment of products in the “Affordable” product line, as Renault calls it: the Logan, launched in Romania in 2004, Logan derivatives marketed around the world, and the Kwid in India (see Figure 3). These products became the vectors of Renault’s international deployment in countries where it was almost or completely absent (such as India), and in those where other products were already
produced and sold (such as Brazil). Within the total growth in international sales volume during 2000–2017, the direct contribution of the “Affordable” product line was about 57 percent – without even considering that these massive sales helped to develop new retail networks that also augmented the sales of other products.

Where did such a success come from? It should be noted that Renault had a longstanding internationalization strategy (dating from the 1970s), and that it was already present in most of the regions shown in Figure 4 in the 1990s. However, this presence had not, as yet, realized a high volume of sales. This was because the products on sale were derivatives adapted from vehicles designed for the European market, making them both unaffordable and ill suited to the...
specific mobility needs and use cases of emerging countries. In addition, Renault's range was focused on the middle and lower end of the European market. It could not, therefore, claim to have a luxury-product image that could seduce the richest segments of emerging countries, as strong German brands such as Mercedes or BMW did. For these brands, the fact that their products are adapted to mature markets rather than local conditions is not a disadvantage – on the contrary, it is a commercial plus.

Renault's successful conquest of emerging markets was due to three main factors (Jullien and Pardi, 2013; Midler et al., 2017).

First of all, a major change in product strategy driven by Renault's CEO in the 1990s, continued and accentuated by his successor in the years 2010. Rather than marketing products adapted to the margin from vehicles designed for the European market, the aim is to base the conquest of these markets on products specifically designed for local customers and uses. It is the Logan, launched in Romania at the end of 2004 and the Kwid, launched in India at the end of 2015. These projects are characterized by a particularly attractive price positioning and functionalities for the targeted customers: the Logan offers the Romanian market a modern car at a price of €5,000, the Kwid competes with small Indian cars by a "mini SUV" sold for €3,500.

The second factor was Renault's ability to implement this strategy, which was based on the management of the project teams involved. Turning a profit at such price points implies some stretching targets for reducing investment and production cost. The Logan's target cost price was half that of Renault's cheapest car at the time (a small model produced in Turkey). Ten years later, the cost objective of the Kwid was to halve the cost of the Logan again. Such challenges would have been insurmountable for Renault's central engineering function, constrained by design rules reflecting the standards of mature markets. However, they could be met by the teams of the projects concerned. Taking advantage of the autonomy conferred by the heavyweight program management structure, and relying on the strong sponsorship of the company's CEO, they implemented original design-to-cost approaches and mobilized local resources – without hesitating to transgress the standards of central services on product specification as well as technical solutions.

The final factor, over and above the success of the two initial projects, was the ability to develop and deploy a global product line beyond the initial target market. Logan derivatives have been sold almost worldwide, and the Kwid is currently marketed in Indonesia and Brazil, while a fully electric derivative is to be launched in China in 2020 (Chen, 2018). This lineage management (Midler, 2013; Maniak and Midler, 2014) is based on the program management structure described above, which makes it possible to capitalize on the initial project with successive derivatives. Internationalizing R&D: deploying the RTCx network and redefining global innovation processes.

The turn of the century marked a pivot point in the geography of R&D activities within Renault. On one side, 1998 saw the inauguration of the Renault Technocentre, which gathered together for the first time all the firm's activities in research, advanced marketing, project management, and commercial development on a single huge site in Guyancourt, near Paris. On the other side, 1999 marked the start of Renault's international expansion, with the creation of the Renault–Nissan Alliance in 1998 and the takeovers of the Dacia plant and brand in Romania in 1999 and of Samsung Motors in Korea in 2000.

During the 2000s, the group's R&D footprint was gradually deployed worldwide. The French Technocentre is the central corporate core of international engineering. It defines the standards that make up the Renault Design System, and ensures that they are followed all over the world. It issues guidelines, decides on new platforms and engines, and designs car bodies chiefly for Europe.

Complementing this corporate hub, local development units were created or acquired by buying local firms throughout the 1990s, in line with the classic internationalization process (Doz and Wilson, 2012). Their role is to adapt products initially developed in the
Technocentre to local market and industry specificities. Here, then, we are in a typical home-centric hub model, as defined by Gassmann and von Zedtwitz (2009) (see Figure 4). From 2009 to 2011, this international footprint underwent two different transitions. First, new advanced engineering and design activities were delegated to regional engineering development centers. These were designated “RTCx” (“Renault Technical Center x”), thereby explicitly becoming centers of expertise in specific areas (Du Besset et al., 2015). Some centers are represented in several countries: Renault Technology Americas has offices in Brazil, Argentina, Mexico, Chile, and Colombia; Renault Technology Romania has offices in Romania, Turkey, Russia, Slovenia, and Morocco; and Renault Technology Spain has offices in Spain and Portugal. Alongside them are the Renault Samsung Technical Centre in South Korea; the Renault Nissan Technical Business Center India in Chennai; the JV Renault Dong Feng Technology Center in Wuhan (China); and the Join Venture Renault Avtovaz technical center in Togliatti (Russia).

Table II shows the new R&D resources distribution within Renault footprint in 2013.

Second, parallel to this evolution, an important transition occurred in core product engineering development on the “Affordable” product line. Traditionally, the design of a new

Table II.
The global footprint of R&D Renault activities in 2013 (The Avtovas was not yet consolidated in Renault in 2013 and new R&D center was established in Wuhan, China, in 2015).

<table>
<thead>
<tr>
<th>Location of Renault Technocenter (RTCx) outside Europe</th>
<th>Number of advanced engineering employees</th>
<th>Number of development engineering employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>680</td>
<td>8,300</td>
</tr>
<tr>
<td>Romania</td>
<td>17</td>
<td>2,900</td>
</tr>
<tr>
<td>South Korea</td>
<td>23</td>
<td>1,100</td>
</tr>
<tr>
<td>India</td>
<td>19</td>
<td>415</td>
</tr>
<tr>
<td>Americas (Brazil, etc.)</td>
<td>2</td>
<td>830</td>
</tr>
<tr>
<td>USA</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Ben Mahmoud-Jouini, Charue-Duboc and Midler (2015)
platform, plus all its derivative products, was the responsibility of RTCx France. But Renault’s first low-cost product, the Logan, launched in Romania in 2005, was developed outside this central unit, and all the various product designs based on the Logan platform were developed under the responsibility of RTCx Romania. On the same theme, RTCx Romania became the central point of reference for the local technical centers (Brazil and India) that adapted Logan-derived products to local subsidiaries around the world (Jullien et al., 2012; Midler, 2013). As for the Kwid, it was developed at RTCx India, with this unit becoming the reference point for further adaptation and development, most recently in Brazil (Midler et al., 2017), and in China for a fully electric version (Chen and Midler, 2016).

In contrast, for other platforms that are mainly devoted to the traditional European market, the Guyancourt Technocentre remains the central actor, the other RTCxs’ contributions being confined to adapting the design to local specifications. Renault’s global innovation process therefore takes the form of a tricentric network model (the centers being France, Romania and India), as shown in Figure 5.

Discussion: the structuring power of projectification on innovation processes internationalization

How did this transition in Renault’s global innovation process occur?

First, we see the effects of traditional variables in the development of the local RTxs (Doz et al., 2001): the legacy of local acquisitions and the strategic decision to expand local subsidiaries’ role into advanced engineering.

However, concerning the role played by RTCxs as new hubs for the “Affordable” product lines, our case shows how the dynamic of the firm’s R&D footprint has been deeply impacted by the nature of its projectification pattern. This proposition is supported by three arguments.

First, the use of “heavyweight” project management structures (Clark and Fujimoto, 1991) was a necessary condition to initiate all the technical and functional breakthroughs that happened in the Logan and Kwid projects. The existing local development capacities in Romania and India had neither the knowledge capacity nor the legitimacy to develop an original innovative product that challenged home-based best practices. Such local R&D resources were only suited to adapting centrally designed products to local conditions. Such transgressions of typical central design rules could not have been implemented without the combined autonomy and competence of the project leader and team, along with the specific direct CEO governance that distinguishes the heavyweight approach (Jullien et al., 2012; Midler et al., 2017). The capability to integrate local market, technical, and industrial knowledge – a key purpose of a distributed development network (Cantwell and Mudambi, 2005) – was a direct consequence of the autonomy and collocation of the project team in the Romanian and Indian contexts. In the international management literature, the relation between central offices and local subsidiaries plays a key role (Cantwell and Mudambi, 2005;
Guerineau et al., 2015). Here, Jullien et al. (2012) and Midler et al. (2017) showed that such deviations from “head office” practices are not driven by the local subsidiary (which is focused on short-term commercial targets), but rather by the project structure, which acts independently of both head office and the local subsidiary.

Second, beyond the initial breakthrough, Renault’s structuration with heavyweight program management in the early 2000s seems crucial in explaining its capacity to deploy the “Affordable” lineages (Midler, 2013) from the initial Logan project as the Kwid one. Those program functions organize project-to-project learning in a typical sequence from vanguard projects to others, as proposed by Brady and Davies (2004). Such project-to-project learning is implemented through specific development processes: the key decisions on platform evolutions and derivated product stands in program management hands, with design capability in the “parent” RTCx in Romania and India. Adaptation to local markets from other RTCx has to be reported and validated by “parent” RTCx. Learning is also implemented through carrier management, with engineers from the initial project being given more significant roles in the development of the lineage (such as responsibility for derivative product development, or adaptation to new markets in other RTCxs).

As we saw in the previous section, the international management literature argues that variables such as communities of practices or central headquarters coordination are crucial for deploying knowledge within MNCs. Our case demonstrates the power of project and program variables for local integration of “sticky” market and technology knowledge and deployment of such integrated knowledge at a global scale through innovation lineages.

Third, the decision to retain the RTCx of the vanguard project (Frederiksen and Davies, 2008) as the “parent” of the entire Logan and Kwid lineage was the key decision that crystallized the permanent multi-centric global innovation process. Standard practice would have been to close the project at its end and mandate the French Technocentre to organize the rest of the story. Instead, the decision to empower the initial project unit on this enlarged scope transformed a formerly “one project, one country” engineering unit into a global multi-project and multimarket platform hub (Dalmasso and Maniak, 2015). Organizational, this development unit under the program management leadership was still subject to centralized governance – directly from the Renault–Nissan–Mitsubishi Alliance, in the case of Kwid.

In fact, we can no longer analyze innovation process global networks in terms of central, home-based models vs geographically defined subsidiary-relationship models. Instead, we must see them more in terms of “ambidextrous” organizations and management (O’Reilly and Tushman, 2004). Here, we encounter a different model from the Brady and Davies dual dynamic learning processes: bottom-up from vanguard project-to-project to permanent organization on one side, and top-down from permanent organization units to projects on the other. Our case illustrates the difficulty of incorporating breakthrough learnings back into the general home base technical center, and the progressive creation of differentiated design rules and best practices embedded in different technical centers tailored to contrasting exploitation regimes (mature vs emerging markets).

Thus, our case demonstrates the powerful influence of Renault’s projectification trajectory on the dynamics of its global innovation process and network. The dynamics described above would have been very different if the previous steps of Renault’s projectification had not occurred, specifically: the adoption and legitimation of a “heavyweight” project management structure in the early 1990s (Midler, 1993/2012, 1995); the adoption of program management in the mid-1990s to manage multiple vehicle projects designed simultaneously on the same platform (Midler and Navarre, 2007); the extension, around 2005, of the scope of program management to encompass platforms’ entire life cycle, and the deployment of lineage management to control subsequent strategic decisions on platform scope and product and market planning (Midler, 2013).
Renault’s success story, of an affordable innovation strategy for emerging markets, remains exceptional within the automobile industry. While competitors attempted many similar strategic moves, they failed in implementation (Jullien and Pardi, 2013). The tradition of centralizing global innovation processes – which promoted the “transplant” strategy that Japanese firms systematized in the 1990s to conquer western markets (Kenney and Florida, 1993) – is still largely dominant. On the organizational level, the idea of a diversified global innovation process is still novel in global OEMs today. Firms such as VW or Mercedes-Benz in Europe, or the Nissan or Toyota in Japan, have retained the central R&D hub model. Our case shows how innovation capability based on a specific PSO can help firms break free from the “one best way” of a sector.

In conclusion, our case demonstrates how the projectification of the firm impacts the dynamics of its global innovation process pattern. More precisely, we can now clarify how our results might serve to confirm, complement or challenge those obtained in the fields we analyzed in our literature review.

For the strategic-level literature on global innovation processes, our case contributes by empirically confirming the dynamics of global innovation patterns: from home-centric to reverse innovation, and then on to a polycentric global network. It also confirms the role of acquisitions and legacy alliances in developing the local R&D footprints that proved to be useful resources in the stories of both the Logan and the Kwid. However, the case also shows that these resources did not play a decisive role in the dynamics we observe – unlike project/program structures, a variable that does not appear in this theoretical framework. It also shows how the polycentric structure was more the result of a lineage management learning process than a top-down reallocation of mandate among local subsidiaries. Last but not least, the new global engineering cores are not under the authority of the local Romanian and Indian subsidiaries, but have a global authority directly under corporate product strategy planning.

For the micro-oriented international management stream, the case confirms the importance of absorptive capacities in gathering “sticky” technology and market knowledge from the localized team. It outlines how the project management described here can effectively implement such capacities. The case also shows how the possibility of integrating these local competences goes hand in hand with the permission to transgress norms created in traditionally central services. Therefore, it shows how the cognitivist approach that inspires the academic stream on communities of practice must also take account of power and autonomy dimensions. This articulation lies at the heart of classic project management theories on “lightweight” vs “heavyweight” project forms. Last but not least, contrary to the international management stream, which emphasizes the importance of the relations between the local subsidiary’s strategy and the central corporate, in our case the local subsidiary authorities appear to be less involved in the breakthrough product strategy, the main debates being between the project and central offices. For the projectification stream, our case provides an emblematic example of structuring a permanent organization (here, the international innovation process pattern) through a project-based learning process. It confirms the key role of vanguard projects in such transitions, as well as the importance of integrating both existing knowledge from the firm and new knowledge created in the particular situation. Furthermore, it illustrates the importance of specific autonomous structure, leadership and governance to implement such vanguard projects. It confirms the importance of project-to-project lineage management through a specific longitudinal program management structure. Last but not least, the case shows that project-to-project learning can develop over time, creating a parallel new permanent structuration – although it is still particularly difficult to incorporate the new learnings generated in projects into existing permanent organizations.
Contributions and limitations

The case illustrates how the projectification identity of the firm is crucial in shaping its global innovation strategy and innovation network or process.

On the practitioner side, our findings affirm the importance of including the project management variable as a key capability to implement the firm’s internationalization strategy. More specifically, they demonstrate that innovation strategies, whether targeting emerging markets or reverse innovation, must combine traditional international management moves—such as the development of local subsidiaries—with specific project and program management structuration.

On the theoretical side, our findings suggest that we should build bridges more systematically between the project management research field and other management streams. Of course, this has already taken place for themes such as innovation or organizational learning. This paper helps to strengthen links to the domains of international innovation strategy and management. Another bridge which has been envisaged, but not yet built, is that linking the ambidexterity field and project management (Turner et al., 2013), especially through the concept of exploration projects (Lenfle, 2008, 2016).

A main limitation of this paper is its single and specific case approach. We studied an automobile firm that is typical of the FSO model as defined by Lundin et al. (2015). Söderlund and Tell (2011), in their longitudinal analysis of the development of ASEA/ABB, explore the case of a project-based organization (or “P-Form,” in the authors’ terms). Case studies on different sectors (typically digital equipment) and comparative studies would help us better understand the relations between the international development and projectification of the firm.

The specificity of the case is not only sectorial, but also historical. In brief, the dominant trend of globalization was oriented from the mature markets of the US–Europe–Japan triad to the new, fast-developing markets of the BRICs (Brasil, Russia, India, China). We now see the development of other streams of fast-track globalization processes—for example, from China or India to Europe and/or Africa. Insights into such newer but still major trends will certainly flow from new research efforts undertaken by both the project and the international management communities.

Notes

1. Lundin et al. (2015, pp. 25-35) identify three different projectified contexts: the project-based organization, the project-supported organization and project networks.

2. Before 2017, the Chinese market was covered, as the US, by the Nissan side of the Renault–Nissan Alliance.

References


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The concept of organisational projectification: past, present and beyond?

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Abstract

Purpose – The purpose of this paper is to reflect on the past 25 years of the research on projectification, focusing especially on organisational aspects of projectification, as well as to discuss recent developments and potential future research directions.

Design/methodology/approach – This is a discussion paper, which draws on previously published research and data.

Findings – The first section identifies contexts in which projectification has taken place (projectification of) and the organisational process by which this has taken place (projectification through). Using an illustrative example based on publicly available data, the second section shows an extension of the organisational phenomenon, referred to as advanced organisational projectification. The paper concludes with a synthesised framework of organisational projectification.

Research limitations/implications – The paper provides a personal reflection and commentary and is focused on the conceptualisation of the term rather than an all-encompassing study of projectification. Based on the discussion, the paper presents a synthesised view of organisational projectification as well as directions for future research to advance the understanding of projectification.

Practical implications – The study has implications for policy-makers in the design of the process of ongoing projectification and provides illustrations and a warning concerning the assumptions that are made as an organisation advances in its projectification.

Originality/value – This paper provides an elaboration of one of the focal concepts of project studies, extending some of the key elements of project management research.

Keywords Organizational strategy, Organizational structure, Temporary organizations, Organizational project management, Project organization structures, Projectification

Paper type Research paper

Introduction

As in many fields of study, project studies has its own language, mainly adopted from the practice of project management. Whilst project managers and project management practitioner associations have their own concepts and language, there are very few terms that are specific to the field of project studies. One example, however, is “projectification”. Research points to a reform of management systems, emphasising a global trend towards projectification in organisations and society in general (Midler, 1995; Schoper and Ingason, 2018); “[w]e live in a projectified world, where change, revenue earning and many other activities take place through project-based processes […] this gives legitimacy, structure and, for most organisations, a recognisable business process for anything termed ‘a project’” (Geraldi et al., 2011, p. 966).

One of the first authors to use the term “projectification” was Midler in his work on the projectification at Renault (Aubry and Lenfle, 2012; Midler, 1995). Projectification has served the field of project studies well for over 25 years and spawned a raft of studies into different approaches, contexts and associated organisational, societal and professional developments, developing into one of the buzzwords of today (Schoper et al., 2018). Despite introducing the
concept and laying out the ground for further work on it, Midler (1995), however, does not provide a singular definition of projectification but points us to the phenomenon – the increased orientation towards projects and use of the project form of organising (Lundin and Söderholm, 1995). However, the novelty of the idea of projectification was not in the trend of organising work through projects but, rather, in the organisational changes that accompanied this trend (Maylor et al., 2006).

This paper is a part of the current discussion and elaboration of projectification in order to shed light on the phenomenon in the contemporary organisational context as well as to present a more structured view on what constitutes projectification. Following the line of thought of Maylor et al. (2006) about the novelty of the idea of projectification, our focus is on the organisational aspects of projectification. The starting point for this is the observation that many organisations are at a point where the increased use of project structures and processes has reached its natural limits (Maylor et al., 2006); in such organisations, increasing the use of the project form has either become undesirable or resource limits have been reached.

With an emancipatory research interest (“Type 3”; Geraldi and Söderlund, 2018), the primary purpose of this paper is to present a critical discussion on how projectification has manifested, based on developments in both research and practice. This paper is a discussion paper and is deliberately selective rather than attempting to present a comprehensive description of the landscape of research on projectification. It is not to be considered as a chronological all-encompassing literature review on projectification and is not intended to stand alone, but as a part of the wider discussion in this Special Issue on the current state of this important concept for project studies (Schoper and Ingason, 2018). Therefore, the secondary purpose of this paper is to discuss aspects of what we call advanced organisational projectification – the process that follows from an increased use of projects and the project form to ensure that at all levels through the institution, projects can deliver more effectively. This way, we extend Midler’s (1995, p. 363) work, which suggests that the third and fourth phase of projectification includes advanced project management. In common with the rising systemic level of projectification, we identify significant institutional efforts to increase project success. This essentially means a shift from “do more projects” to “get more from projects” and it is illustrated by an empirical example of the UK Government’s approach to managing its major projects portfolio.

The paper draws from published works on projectification as well as academic research conducted during 2004–2005 on projectification and programmification as a part of the Rethinking Project Management network (Maylor et al., 2006). The paper makes general observations that are intended as commentary on what has happened since this “line in the sand” was drawn. The paper is based on the literature, personal research, conversations with taught groups and extensive experience of working with governments, corporations and charities. Finally, the intention is to elaborate on the understanding of projectification as a phenomenon – we want to emphasise that no value judgement is placed on projectification as a desirable, beneficial or detrimental phenomenon (Besner and Hobbs, 2006, 2012)[1].

Projectification

Projectification can take many forms and can also be considered at different levels of analysis. As originally described, projectification is a process; it is a path taken towards increased orientation to and use of projects and towards formalisation of project management and the project form of organising, rather than a one-time event (Midler, 1995; Muller et al., 2016; Schoper et al., 2018). As a part of this process, it is not uncommon for organisations to begin greater recognition or formal use of project management practices and project organisational forms or structures. This is then followed by increases in project governance practices (e.g. Muller et al., 2016), programme and portfolio management
activities (e.g. Maylor et al., 2006), and development of various types of PMO or other support structures (e.g. Aubry et al., 2008). Typically, it will be accompanied by individual competence development (e.g. Crawford and Turner, 2007) and an increase in considering project management as a professional discipline and an organisationally important role (e.g. Hodgson, 2002). This focus on “organisational projectification” is, therefore, more focused than a general consideration of the increased use of projects or the project form.

Midler (1995) discussed how Renault changed its organisational design in several phases over a period of 30 years, to provide stronger organisational emphasis on its projects; it first introduced lightweight project matrix structures, and then more powerful project structures between the 1960s and 1990s. Midler’s discussion illustrates how the organisation developed its activities and re-organised them into projects, which were then handled outside the permanent organisation, as well as how the permanent organisation changed to better accommodate projects. Lundin (2016) as well as Söderlund and Tell (2009) similarly note that as a result of projectification, a firm may fundamentally change its orientation and organisation design; for instance, a previously functionally organised firm may change to a project-based organisation, a project-supported organisation or project network. These are not only different organisation designs but also require a different mindset from the organisational members. In addition, this process is likely to be dynamic in nature, meaning that both the intended end-state and the means to achieve it are likely to change over time. For instance, Wilson et al. (2018) consider the impact of crowdsourcing for project operations, where organisational strategy is being supported by portfolios of projects that include some of high intensity but short duration. While relatively mainstream now, a great example of projectification as a process is the increased adoption of agile methods we have witnessed over the past 20 years; the adoption of agile has meant a whole new set of structures (e.g. scrum master, lead users), processes (e.g. sprints), language (e.g. scrum, burn-down), acronyms (e.g. SAFE), rituals (e.g. daily stand-up meetings) and symbols (e.g. burn down charts, high tables for scrum meetings) typically adopted in phases over the course of time. In the interests of bringing this discussion up to date, a search for “projectification” in Business Source Complete showed 33 papers using the term in their abstracts, whilst ABI INFORM showed 108 (search conducted in November 2018). The phenomenon has clearly sparked some interest amongst scholars over the intervening years (Schoper et al., 2018). However, as with any such long-standing phenomenon, it is worth re-examining it to have a more nuanced understanding of the usage of the term to facilitate more meaningful discussions. Based on a review of these papers, we identify two dimensions of projectification: projectification can be seen to exist in extensive number of contexts (“what”, projectification “of”) and to have extensive organisational and operational implications (“how”, projectification “through”). We discuss these two dimensions below.

Projectification “of”… (what?)
Studies addressing “projectification of” focus either on the impact of projects and projectification on a particular empirical context or on how a particular organisational activity is changing over time by having more aspects of and orientation towards projects and project management. Some examples of these studies are given in Table I. It is notable that extant research is neither limited to organisational projectification, nor to a single organisational unit or systemic level. Therefore, the systemic level of analysis the selected studies have focused on is shown in the last column on the right.

Whilst not intended as a comprehensive list, Table I does indicate that the reach of projectification as a phenomenon and research on projectification has not been restricted to large firms and new product development (cf. Midler, 1995). Rather, projectification has been empirically assessed at almost every potential systemic level from the individual through to society, including project, functional, institutional and sectoral levels.
The early research here is also demonstrating its quality; using a single case to illustrate what later we find is a much broader phenomenon. It also demonstrates the importance of calling out such phenomena to allow conversations to be developed around them, and for their broader implications to be considered (as in this Special Issue).

We now focus on our main area of interest – organisational projectification. The consideration of what is projectified then provides a basis for discussion of how projectification is achieved in organisations.

**Projectification “through” (how?)**

Table II provides a summary of the organisational aspects associated with projectification, as presented by Midler (1995) and later elaborated by Maylor et al. (2006).

The process of professionalisation in project management is a key for our consideration here. As an organisation projectifies, project leadership should develop from the “well-intentioned amateur” to a suitably qualified, experienced individual or team and thereby provide an institutional capability. The professional status of project managers and leaders is now similarly well-established (Hodgson, 2002; Muller et al., 2016) and is a critical feature of this process. For instance, the awarding of chartered status to the UK’s Association of Project Management (APM) is placing PM on a par with the other chartered professions (including engineers, architects, accountants, human resource management, procurement and marketing, as well as various medical-related professions). Institutional capability development as a result of projectification is well studied (e.g. Davies and Brady, 2016; Davies and Hobday, 2005; Maylor et al., 2015). Capability development has progressed in parallel with the studies of projectification.

Other themes associated with the process of projectification are evident from both research and practice, including language, symbols and rituals (see, e.g. Cicmil et al., 2006). An example of language (and acronyms) is as follows: “We have our WBS, carried out a CPA, run some Monte Carlo on the risks for the next phase, but our current EV shows a CPI of 0.54 and an SPI of 0.78, so we are way behind our p50 commitments. The last PAR showed that the SRO hadn’t considered the impact of the new configuration management process despite this being a red issue from the PMO”. The language of the project professional, as for so many other professions, is a common occurrence in projectified organisations. It simultaneously provides a means for communication between project management professionals, and a barrier to those who have not “done the training”, as illustrated by the above quotation. This feature was a part of the consideration of the Rethinking PM Network (Cicmil et al., 2006).

Symbols and rituals are also a part of the process of projectification. The most common symbol, the Gantt chart, is heavily associated with project management and is still used as a

<table>
<thead>
<tr>
<th>Example references</th>
<th>Systemic level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business in general</td>
<td>Davies and Hobday (2005), Schoper et al. (2018), Whittington et al. (1999)</td>
</tr>
<tr>
<td>Public sector</td>
<td>Godenhjelm et al. (2015), Jensen et al. (2013, 2017)</td>
</tr>
<tr>
<td>University research</td>
<td>Fowler et al. (2015)</td>
</tr>
<tr>
<td>The human condition</td>
<td>Castells (2011), Jensen et al. (2016)</td>
</tr>
</tbody>
</table>

Table I. Examples of projectification “of”
means of communication of project plans (Geraldi and Lechler, 2012). Network analysis, with its characteristic diagrams, was once a key symbol of the adoption of project management tools and techniques (Hartley and Wotham, 1996) and the network diagram became the symbol of the precursor of the UK’s APM (the organisation was known as internet). In considering some of the rituals that can emerge with projectification, Hodgson (2002), for instance, notes the adoption of the structures of project management as a form of social defence. In this, there are rituals of self-denial, where the expectations of the organisation in terms of delivery of projects, are not matched by the confidence of individual professionals to be able to meet them.

From an overall institutional process perspective, Lundin (2016) notes that projectification is achieved through the following sequential steps:

1. increased use of the project structures, processes and project form of organising;
2. the organisational context adapting to project work;
3. the mandating of the use of projects in order for certain work to be carried out and the adoption of particular knowledge and/or processes;
4. the output or outcome—the level of benefits needs to be assessed for each project; level of benefits expected to rise following projectification

<table>
<thead>
<tr>
<th>Organisational aspect</th>
<th>Description</th>
<th>Example references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Increasing use of project structures</td>
<td>Hobday (2000), Lundin (2016)</td>
</tr>
<tr>
<td>Governance</td>
<td>Move of power away from line managers to project managers/directors</td>
<td>Midler (1995), Muller et al. (2016)</td>
</tr>
<tr>
<td>Relative status</td>
<td>Projects granted official status and legitimacy by the organisation; functional demarcations eroded; in heavyweight project organisations, project managers have direct authority over resources</td>
<td>Clark and Wheelwright (1992), Lundin (2016), Midler (1995)</td>
</tr>
<tr>
<td>Communication</td>
<td>Predominant mode in project team will shift from vertical to horizontal, between people at lower levels in the organisation</td>
<td>Maylor et al. (2006)</td>
</tr>
<tr>
<td>Level of entrepreneurialism</td>
<td>Expected to be enhanced by reduced bureaucracy and functional controls, but managed through process controls; “controllability and adventure”</td>
<td>Kuura et al. (2014)</td>
</tr>
<tr>
<td>Importance of project processes/methodologies</td>
<td>Importance increased – often codified in bodies of knowledge and represented in artefacts (e.g. project manuals, standardised process models)</td>
<td>Besner and Hobbs (2006, 2012), Geraldi and Lechler (2012), Lundin (2016)</td>
</tr>
<tr>
<td>Process of learning</td>
<td>Intention to move from little learning due to dispersed knowledge, to single loop learning</td>
<td>Davies and Brady (2000), Maylor et al. (2006)</td>
</tr>
<tr>
<td>The output or</td>
<td>Level of benefits needs to be assessed for each project; level of benefits expected to rise following projectification</td>
<td></td>
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<tr>
<td>outcome—the level of benefits</td>
<td></td>
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<tr>
<td>Career management and permanent structures; professionalisation of project management discipline</td>
<td>Project managers will develop a permanent organisational home—the project office; they will gain legitimacy by professionalisation of the project management discipline and formal role in the organisation</td>
<td>Cicmil et al. (2006), Hodgson (2002), Muller et al. (2016)</td>
</tr>
<tr>
<td>Supply networks and buyer–supplier relationships (BSR)</td>
<td>Cheapest supplier to best partner in the project</td>
<td>Midler (1995)</td>
</tr>
<tr>
<td>The number of projects that are/can be managed</td>
<td>The number of projects and the relative proportion of organisational resources that they consume, will increase in the organisation</td>
<td>Lundin (2016), Lundin and Soderholm (1995)</td>
</tr>
<tr>
<td>Competencies required</td>
<td>Planning, resourcing and executing projects</td>
<td>Lundin (2016)</td>
</tr>
</tbody>
</table>

Source: Adapted from Maylor et al. (2006)
it becomes understood that the use of projects leads to results; and
strategy is enacted through the deployment of a portfolio of projects.

The landscape of the literature of “projectification through”, therefore, demonstrates both high-level framing of the process (e.g. Lundin, 2016), as well as a more detailed consideration of individual organisational implications (e.g. Cicmil et al., 2006; Hodgson, 2002; Muller et al., 2016).

Synthesis
We summarise the above discussion of the nature of projectification into an explicit definition of organisational projectification as follows:

Organisational projectification is the process of adoption or adaptation of project structures, processes, language, rituals and symbols, and the professionalisation of project practices at multiple levels.

Such an attempt to arrive at a definition can give the impression that projectification of a firm (for instance) is a pre-determined journey to a given end-state and something with a positive connotation. However, we want to emphasise that in practice, neither the journey nor the end-state is pre-set, with firms taking considerably different routes and achieving a high variety of end-states. In addition, there are also disruptors in the world of project work, such as the widespread adoption of agile philosophies, systems and toolsets, introducing changes to the project management landscape, organisational structures and processes, thereby changing the nature of projectification.

The discussion above, addressing aspects of organisational projectification in terms of “what” and “how” can be synthesised as follows (Figure 1).

Empirical example: organisational projectification and the UK Government Major Projects Portfolio (GMPP)
The purpose of this paper as explained above is to discuss how organisational projectification has manifested, based on the developments in both research and practice. The “increased use of the project form” is not the main feature for many organisations today but, in addition, there is significant emphasis on ensuring that projects can deliver more effectively. In the
following, we use the UK Government as an empirical example and present what it has done to its major projects portfolio over the past five years (IPA, 2017, 2018). The purpose is to illustrate with this example what we here call “advanced projectification”. It is important to note that the discussion below should not be considered a traditional case study with new and unique data to develop a theory; instead, it serves as a practical example.

The UK GMPP comprises over 130 projects, with budgets greater than £100m, where they are high risk or seen to be strategically important for government. Within this are key welfare projects (e.g. Universal Credit), defence projects (e.g. two new aircraft carriers, F35 fighter aircraft and army basing programme), nuclear decommissioning, digital government projects, infrastructure development (rail, road and energy), providing additional support to staff at the country’s borders and managing patient data in the health service. More recently, there is of course also “Brexit” as a portfolio of projects in its own right. The performance of these projects has been scrutinised by various parliamentary committees and has improved over the period although recent data (IPA, 2018) does show that improvement has levelled off (longer and more challenging projects left in the portfolio are one reason – many have been delivered and dropped off the list).

The UK Government’s projectification can be considered as an example of advanced organisational projectification – moving beyond the traditional forms of projectification in existing research as explained above. As is explained below, the scale of the ambition, the importance, the level of complexity of the undertakings and the size of the budgets involved dwarf anything Renault was attempting up to the early 1990s. It is a more developed use of the project form of organising, project structures and practices, language and symbols as well as the professionalisation of the project management discipline. Further, it encompasses project, programme and portfolio levels of consideration, as well as the institutional requirements for projects to be successful.

Table III shows examples of developments of projectification in the UK Government. These empirical examples of “advanced organisational projectification” include six major factors. Overall, these add up to an institutional effort to make projectification more effective.

It is clear that there is an evolutionary (rather than revolutionary) process at work here. Markers in this evolution include the establishment of project management qualifications (PRINCE in 1989 and Managing Successful Programmes in 1999), the enforcement of gated processes (initially termed “OGC Gateway Reviews”) and founding the Prime Minister’s Delivery Unit in 2001. This last initiative gave recognition to the particular challenges of delivering policy (specifically election manifesto promises on education, health, crime and transport) in an environment where policy delivery was widely considered as secondary to policy creation. Indeed, senior government officials still refer to the gulf between policy creation and delivery as a “valley of death”. Whilst the delivery unit was disbanded in 2010 following a change of government, and its functions dispersed around government, the evolution gathered pace. Highly publicised successes (e.g. London Olympics and Paralympics 2012) and disasters (e.g. writing off tens of millions of pounds of unusable software in the Universal Credit programme; televised scrapping of £4.7bn of new military aircraft after a failed 15-year development programme), and a continued drive for greater austerity in government spending, kept the performance of the portfolio on the political agenda. Increased scrutiny of departments’ projects by parliamentary committees and a press enabled by freedom of information legislation (since 2000) to obtain data on project performance, and the drivers for continuing to advance the process and improve performance are clear. And whilst the case is UK-specific, the challenges of the delivery of public policy are not geographically limited.

The case indicates a new level of commitment to projects; government is not just adopting organising by projects and project orientation but extending the emphasis to the success of projects in the organisation too. This example thus provides an illustration of practical advances in projectification.
Conclusions

Implications for research and practice

The language of the project, its structures, processes, rituals and symbols describe the landscape of the “what” of projectification as well as the “how”. As a concept, this has advanced in many regards, and the discussion above indicates how the boundaries of projectification have been shifted by the continual development of individual and institutional practices. The discussion illustrates an extension of the concept of organisational projectification suggesting a new level of commitment beyond the adoption of project structures, processes, the project form of organising, language and symbols as well as professionalisation of project management practice. This advanced organisational projectification, as we have termed it, focuses on achievement of project success, encompassing project, programme and portfolio levels of consideration, as well as the institutional requirements for projects to be successful; in short, developing improved project capability.
Whilst there have been advances at the institutional level, the pattern of the extent of the process of projectification is heterogeneous. For instance, does projectification spread deeply and evenly into management practices? It might reasonably be expected that with long-standing projectification, and accompanying professionalisation, widely held “best practices” have a significant uptake. Prior research provides evidence of the opposite too; Besner and Hobbs (2006, 2012) investigated the uptake of tools and techniques and report a self-assessment from 740 project leaders of the extent of their use of particular practices. The level of use of 17 toolsets across the projects was assessed, indicating, for example, that the average level of risk management practices, network planning (including critical path analysis) and Gantt charts are rather low. This demonstrates that the assumption of the adoption of these practices to accompany projectification can be flawed and the adoption at the practice level is clearly more selective than generic. Hence, any assumption that all organisations are in reality projectified – not to mention moving towards advanced projectification – is not justified.

In addition, it has not been proven empirically that the professionalisation of project management discipline would necessarily lead to more competent project managers, nor improved project management practices. Conversely, it can, simply lead to bureaucratisation of project work, masking project problems and unable to justify the additional overhead cost burden of this bureaucracy.

The discussion has implications for practitioners and institutions. The analysis of the concept of projectification and especially the more contemporary forms of projectification provide a framework for the design of the process of ongoing projectification in practice. Moreover, the paper also provides an empirical example of advanced organisational projectification, as a highly effective example for managers and policy makers of the opportunities presented by the process of projectification.

Future research directions

The discussion above also lays out a platform to discuss avenues and opportunities for future research to develop more in-depth understanding of projectification in the contemporary project management context in the following areas.

First, the consideration of “organisational design” was evident in the discussion of the advanced case (see Table III). As a topic and an activity, it has received little attention in project studies. Future research could take an organisational design approach to develop further understanding of advanced organisational projectification to facilitate the success of projects. This means going beyond the project form of organising to look at the organisational design challenges from the perspectives of, for example, development of knowledge and capabilities, implementation of integration and socialisation mechanisms, leadership issues, etc. This would provide a way to complement existing understanding of projectification at the different levels (project, programme and portfolio) as well as the design challenges related to the interactions of these levels. Moreover, research could build on the contingency theory of organisations (Donaldson, 2001) as well as project studies following contingency theory (e.g. Engwall, 2003) and assess the potential contextual factors affecting the performance implications and advantages of advanced organisational projectification. This would not only add to understanding of projectification, contributing to project studies, but also provide more in-depth understanding of functionality of contemporary organisations in general.

Further, a particularly fruitful arena to study projectification and broader institutional issues associated with it is the context of major projects, such as the UK Government projects discussed above. By major projects we refer to “a set of interrelated operations uniquely and temporarily established to achieve a significant purpose and on a significant scale” (Holweg and Maylor, 2018). They are highly prevalent in today’s business context to
deliver complex functional and infrastructural systems, such as high-cost capital goods (Aaltonen and Turkulainen, 2018; Gil and Tether, 2011). Major projects provide a fruitful arena for studying institutional aspects related to advanced organisational projectification for several reasons. First, major projects are often formed as a network of multiple firms and other organisations for the purpose of the project (Burke and Morley, 2016; Lundin and Söderholm, 1995), providing a new organisational setting for projectification. Second, major projects also require design at multiple levels (i.e. operational, system and macro levels), all of which need to be aligned (Holweg and Maylor, 2018). And finally, unlike in more classic project contexts, the organisational design aspects of many major projects are impacted by their scale. This results in complexity due to the interaction of multiple independent parts, but also by emergent and socio-political complexity (Maylor and Turner, 2017). Studying projectification in the context of major projects would be critical also from the point of view of the institutional requirements for success; major projects are reported to face a performance paradox (Flyvberg et al., 2003) and the performance of these projects is reported to be highly inconsistent (Davies et al., 2017). Last, studying projectification in the context of major projects would also provide an opportunity to engage in research with different research interests and at multiple levels (Geraldi and Söderlund, 2018).

And finally

Over the past decades, projectification has inveigled its way into many parts of working life and society in general. Whether this is universally beneficial remains to be seen. However, it presents an identifiable development in human activity on a significant scale. Its meaning and means of promotion are both diverse and these have been considered at least in part here. Further discussion in the organisational context proposes that the concept of projectification can be extended into what we here frame as advanced organisational projectification – moving from emphasis on “more projects and more project form” into “more from projects”. Last, the discussion here indicates that Midler (1995) pointed us to a concept that is still recognisable today, and continues to evolve, providing a rich heterogeneity for further exploration by scholars in the field of project studies.

Note

1. For a critical narrative on the march of the phenomenon see, for example, Hodgson and Cicmil (2006) and Packendorff and Lindgren (2014).

References


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The European Union’s multi-level impact on member state projectification in light of neoinstitutional theory

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Abstract

Purpose – The purpose of this paper is to understand how has the European Union (EU) funding influenced projectification of the Polish public sector. The projectification of the public sector is analysed in relation to three levels: mega (state level), macro (sector level) and mezo (organisation level). Hence, it is understood as a multidimensional phenomenon that permeates different social structures. The study also applies elements of neoinstitutional theory and Europeanisation concept to the research on projectification.

Design/methodology/approach – The research is based on the mixed methods approach. The adopted methods (document analysis, quantitative analysis and in-depth interviews) are both qualitative and quantitative in nature and were used sequentially to address the research question, while securing the triangulation of the data.

Findings – The Polish public sector was projectified as a result of the implementation of hundreds of thousands of projects co-financed by the EU, which among other things, effected in legal regulations that support the project implementation of public tasks and changes in organisational structures towards a project-oriented direction. At public organisation level, it causes changes in the scope of organisational structures, strategic management processes and methods of work. On the basis of the assumptions that explain the mechanism of organisational isomorphism and Europeanisation, the paper may conclude that the public sector projectification process was triggered by a misfit between the projectified EU structures and the low degree of projectification in the Polish public sector.

Originality/value – The study is the first step to try to understand how the massification of project activities can affect the activities of the public sector of the particular country and the shaping of public policies at home. Because Poland has been the largest beneficiary of EU funds in Europe for over ten years, it can be assumed that these processes in this country are particularly intense. An attempt was also made to identify the scale of the public sector projectification process in Poland by not only describing, but also quantifying the phenomenon.

Keywords European Union, Public management, Project management

Paper type Research paper

Introduction

The distribution of the hundreds of billions of euros that the European Union (EU) invests in the development of member countries in successive programming periods is a powerful task organisation wise. Metaphorically, the distribution system of EU funds may be compared to the reverse current of a great river basin. In the “basin”, the money flowing like a mighty stream from Brussels is divided into hundreds of thousands of swift rivers and streams with which they return to the most distant areas of the community, to irrigate and fertilise the local “ground”. In order for this process to proceed smoothly and effectively, both the EU and the Member States have created a complex system of institutions, which deal with granting...
subsidiaries for projects and verify the correctness of spending money. Thus, a complex ecosystem consisting of various coordinating, managing and controlling organisations has been established. Büttner and Leopold (2016) call this system “the project world of EU funding”.

All funds intended for implementing EU public policies are granted in the form of subsidies for specific, defined projects – having their precisely defined scope, time for completion, and budget. The omnipresence of projects, and thus the adoption of project work as the main form of implementing activities by the EU, makes it possible to describe the Union a projectified organisation (Godenhjelm et al., 2015). Projectification as a phenomenon is a result of multiplication of projects in all spheres of life and can be also defined as “the institutionalisation of projects in society” (Jacobsson and Jalocha, 2018). Indeed, the EU is indicated as the main catalyst of projectification processes, through the use of projects in the implementation of local public policies (Godenhjelm et al., 2015; Munck af Rosenschöld, 2017). As Büttner and Leopold (2016, p. 42) claim, “the European Union is a strong generator of project-based activities in its own right and a strong driver of the expansion of a certain logic of project management (PM) in contemporary public affairs”. Not only local actors, such as intermediary institutions in Member States or EU agencies, are involved in the implementation of EU projects. The world of EU projects is a large ecosystem, in which many organisations, units and agents operate, and whole “project classes” are created (Kovách and Kučerová, 2006; Mukhtar-Landgren and Fred, 2018). Therefore, it can be said that the entire EU funding system permeates the idea of task implementation through projects.

Although the scale of the EU’s project activities is widely known, little is known how the project implementation method affects individual Member States, except for a purely economic dimension, reflected, for example, by the growth of the GDP. There are few studies dealing with specific changes, which take place in the Member States under the influence of the project-based fund distribution system (e.g. Mukhtar-Landgren and Fred, 2018). At the same time, the projectification of member state governance is also necessary if Member States are to live up to EU programme objectives and expectations and benefit from EU funding (Godenhjelm et al., 2015, p. 334). Therefore, this article attempts to explain how the EU, through projectification, contributes to changes in the Polish public sector, composed of state and local government-owned organisations. To that end, the following research question is addressed:

**RQ1.** How the projectification of the Polish public sector proceeded under the influence of EU projects and what are its results?

The public sector, which is the subject of this analysis, not only benefits the most from EU support but also distributes funds to other sectors – private and non-governmental. Investigating and understanding the changes taking place in the Member States under the influence of project work can be of great importance in the context of programming interventions in the form of projects. The choice of Poland, as an example, is also justified research wise – since over ten years Poland has been the biggest net recipient of the EU budget (getting more back than it contributed in the first place) (European Union, 2019), which is why the projectification process can be extremely dynamic in this country.

The article discusses three levels, on which it is possible to study projectification induced by the EU’s actions: state level, sector level and organisation level. They correspond to the following projectification research levels processes: mega, macro and meso (Jacobsson and Jalocha, 2018). The reason for this approach is that the projectification of the Polish public sector may be a consequence of overlapping project-related practices on all of these levels. Moreover, with the multi-level approach, it may be possible to address and understand the challenges and consequences of projectification “cascading” between the different levels. It can be assumed that this phenomenon permeates all the studied levels. Therefore, it seems justified to undertake research that goes beyond a single level.
The scientific debate on the processes of projectification of the public sector in general and public policies, also in the context of the EU, is currently expanding in many European countries (Sjöblom et al., 2013; Godenhjelm et al., 2015; Büttner and Leopold, 2016; Jalocha and Prawelska-Skrzypek, 2017; Jensen et al., 2017). However, these studies usually have a qualitative character and focus merely on selected organisations. There are few studies, which develop a measurement for public sector projectification in processes in general: for example, projectification is quantified in Wald et al. (2015) and Schoper et al. (2018). That is why, this article aims to show the process of projectification of a key sector in one of the EU Member States, combining both a numerical and a qualitative description. In order to answer the research question, the article presents a document analysis, results of a quantitative study on a sample of over 100,000 projects implemented in Poland between 2007 and 2013, and results of a qualitative study – in-depth interviews with managers of 11 public organisations.

In order to provide a better understanding of this complex system of interrelated institutions and development mechanisms of projectification in the EU and Poland, the presented analysis relies on elements of the neoinstitutional theory. The choice of this theory is motivated by the fact that it sees organisations as driven by global ideas developed on a macro level through social and cultural processes and diffused rapidly around the world, having a major impact on nation states; on organisational fields, sectors, or policies; and on single institutions (Christensen, 2012). The analysis also employs the concept of Europeanisation (Radaelli, 2006) understood as a concept that refers to different types of interactions between the EU and its Member States: the domestic impact of the Union on its Member States; the role of member states in EU level policy-making and institutional development and the interactive influence of the EU and its Member States on each other (Börzel and Panke, 2019).

The article is organised in the following way. After a short introduction, which outlines the research and theoretical background, the phenomenon of projectification and its study in the context of the public sector are discussed. This part also explains the concepts of neoinstitutional theory and Europeanisation. The next part provides a description of the process of distribution of funds by projects in the EU. Further, the employed methodology is outlined. In the next part, data analysis is presented. The article ends with a concluding discussion, which summarises the key conclusions of the study.

**Projectification and its study in the context of the public sector**

Projectification is a process of transformation and adaptation. It may refer to different social structures. Initially, its presence was noticed at the level of individual organisations, where an increasing part of the operation was carried out in the form of one-off, unique activities, often of an innovative nature. Midler (1995) made such observations with regard to Renault. It was believed that projectification consists to a large extent in replacing repeatable activities with projects, and promoting a project approach to solving organisational problems. Midler describes projectification as the “establishment of project management as an engine of renewal within the permanent organisation”, not only as a simple increase in the number of projects (Aubry and Lenfe, 2012). Maylor et al. (2006) defines projectification as “a change in organisational and governance structure to increase the primacy of the processes of projects within a central organization and its supply networks”, and Bredin and Söderlund (2011, p. 9), as “a move from repetitive production to nonroutine work processes and the use of temporary projects”.

So far researchers have analysed the phenomenon of projectification in reference to three different levels of analysis; the individual (or micro) level, the organisation (or meso) level, and the societal (or macro) level (Jacobsson and Jalocha, 2018). However, along with the development of research on projectification, it is not hard to see that this phenomenon is definitely much more complicated than it was originally assumed, and it can be studied on a greater number of interconnected levels (see Table I).
The most complex level of research on projectification is the meta level. At this level, one can observe relations and trends that transform global social structures. Given the universality of projectification trends, one may assume that they are observable at this level. However, there are no studies that address this issue yet. Moreover, these changes may occur gradually and thus become observable only in a long-term perspective. At the mega level, the phenomena of the projectification of entire societies (Jensen et al., 2016; Lundin et al., 2015), countries and regions (Fred, 2018), or supranational organisations (Büttner and Leopold, 2016; Godenhjelm et al., 2015; Jalocha et al., 2019) are observed. These studies emphasise that the process of projectification has largely exceeded its original, organisational understanding and acquired a wider social dimension. The macro level corresponds to the level of sectors or industries. Research describing projectification processes at this level often refers to the public sector (Hodgson et al., 2019) or to the projectified sectors such as, for example, the automotive sector (Mie, 2018). Indeed, researchers show that projectification affects whole sectors. In the context of the public sector, they often focus on what unique attributes, causes and effects it has compared to other sectors. The meso level concerns projectification, as previously indicated, and represents an interest in organisational restructuring initiatives, which increase the prevalence of projects in organisations, where, for example, the consequences of processes, governance structures and the institutionalisation of project operations are of interest (Jacobsson and Jalocha, 2018). The meso level is where the interest in projectification originally started; but it has diffused to other levels over time. Examples of research that touch upon this level are Bergman et al. (2013), Fred and Hall (2017) and Wenell et al. (2017). At the micro level, most studies focus on projectification consequences for individuals found, among others, in the changes how people work, the precarisation of work, but also the upsetting of work-life balance. In essence, the micro level centres around the role of the individual in the project or (projectified) society (Cicmil et al., 2016; Szreder, 2015; Ekstedt, 2009).

However, referring to the area of this research, the public sector, one should invoke Stefan Sjöblom, who already in 2006 noted that changes in the public sector mean that it is more accurate to speak about a “projectified public sector”. The reasons for the intense projectification of the public sector are complex. Schuster (2015) identifies three key factors that provoke certain types of public organisations to adopt the project-based model of organisation and by the same token, to support projectification processes: quick mobilisation, a strategic approach to managing change and accountability and transparency to stakeholders. Certainly, the reasons for the increasingly frequent selection of projects should be seen, among others, in the ongoing social and economic changes on a global scale, an increase in the requirements of public sector stakeholders, and also a belief that projects are an emanation of innovation and entrepreneurship, increasingly desirable in the public sector. At the same time, it is worth examining the impact of external supranational organisations on the projectification of the public sector in interaction with the EU.

<table>
<thead>
<tr>
<th>Projectification research level</th>
<th>Research area</th>
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<tbody>
<tr>
<td>Meta</td>
<td>Relations and trends transforming global social structures</td>
</tr>
<tr>
<td>Mega</td>
<td>Societies, countries, supranational organisations</td>
</tr>
<tr>
<td>Macro</td>
<td>Industries, sectors</td>
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<tr>
<td>Meso</td>
<td>Organisations</td>
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<tr>
<td>Micro</td>
<td>Individuals</td>
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**Sources:** Jalocha (2018), Jacobsson and Jalocha (2018)
Neoinstitutional theory and concept of Europeanisation as a theoretical background for projectification research

Neoinstitutional theory may be regarded as “a set of diverse but interrelated approaches that seek to understand how formal organizations are shaped by institutional forces embedded in the wider socio-economic and political environment” (Pinch and Sunley, 2015, p. 303). In this context, an institution can be understood as a “form of rules or codified social arrangements, norms of conduct, or cognitive structures that provide understanding and give meaning to social arrangements” (Suddaby and Greenwood, 2009, p. 176; qtd. after Munck af Rosenschöld, 2017, p. 24). Institutions can be therefore systems of rules that structure social interactions, including both formal rules and informal conventions and norms (Pinch and Sunley, 2015, p. 304). Neoinstitutional theory accommodates a broad range of theoretical, methodological and substantive interests, which is why it is difficult to precisely define the scope of its applicability. As Alvesson and Spicer (2019, p. 200) write, neoinstitutional theory was born in 1977 by the publication of papers written by Meyer and Rowan (1977) and Zucker (1977), which in 1983 were supplemented by Dimaggio and Powell’s (1983) analysis of isomorphism. In the last decades, institutional theories have emerged also as a powerful framework for understanding policy choice and public policy as well as political and social behaviour in a broader sense (Peters and Pierre, 1998).

In order to explain why the formal organisational representations of institutions come to resemble each other above mentioned DiMaggio and Powell (1983) built the concept of the organisational field. Organisational fields are considered to emerge around problem domains or issues often too complex to be dealt with by any single organisation, but they require collective engagement (Zapp and Powell, 2016). As DiMaggio and Powell (1983) observe, institutions in the organisational field are subject to mechanisms of organisational isomorphism, i.e. a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions. There are three mechanisms of isomorphic change: coercive, mimetic and normative isomorphism (Mizruchi and Fein, 1999; Ashworth et al., 2007). Coercive isomorphism results from formal and informal pressures of other organisations. Mimetic isomorphism is a result of uncertainty that encourages organisations to model themselves intentionally or unintentionally on more legitimate or successful peers. Normative isomorphism is driven by a similar education of professionals and strengthened by their interactions within growing professional networks, across which new models diffuse rapidly (Roszkowska-Menkes and Aluchna, 2017; Slack and Hinings, 1994).

This article analyses the problem of projectification in a given organisational field of interrelations between various institutions, which operate within this field. To that end, it is important to distinguish between the organisational field with public organisations directly conducting EU funded projects in Poland and diverse organisational actors surrounding this population that provide the financial, regulative and normative frames. In addition, the projectification of the Polish public sector is examined through the prism of isomorphic mechanisms to find out what is their role in the projectification of a Member State.

Europeanisation can be explained as a process by which the EU members and non-members adapt and change domestic institutions in response to EU rules and regulations (Börzel and Risse, 2012). It is also defined as the “development and sustaining of systematic European arrangements to manage cross-border connections, such that a European dimension becomes an embedded feature which frames politics and policy within the European states” (Wallace, 2000, p. 370). Central to the understanding of the concept of Europeanisation is the “goodness of fit” argument, which posits that the degree of compatibility of the EU and a Member State’s arrangements is a central factor that determines changes in domestic policies (Müller and Flers, 2009). A misfit between European demands for change and domestic policies, institutions, and political processes is therefore a necessary condition for domestic change (Börzel and Risse, 2012). The EU uses both positive and negative incentives to induce
institutional change in member countries and accession candidates. As Börzel and Risse (2012, p. 7) suggest, “the EU can be understood as a gigantic socialisation agency which actively tries to promote rules, norms, practices, and structures of meaning to which Member States are exposed and which they have to incorporate into their domestic structures”. However, the concept of Europeanisation assumes that the Member States are not merely passive recipients of the conditions dictated by the EU. For the adoption of EU mechanisms usually implies an active process of interpretation and implementation of the new regulations and policies. The “goodness of fit” argument, which will be further explained in the discussion of research findings, makes it possible to explain changes that occur in Member States in response to the EU’s pressure and in compliance with the EU’s requirements (Müller and Flers, 2009).

To sum up, the elements of neoinstitutional theory and the concept of Europeanisation make it possible to set an interpretative framework for the projectification processes in an EU Member State based on the example of Poland, whose public sector is the subject of this study. These two theoretical concepts provide an interesting background for discussion on projectification processes for several reasons. First of all, they help to look at projectification in a supra-organisational dimension and embed it in a wider, social context. In addition, by looking through the prism of Europeanisation, we can understand projectification as an ongoing activity, not just as a static result of certain organisational changes.

**Distribution of funds in the EU through projects**

The EU is composed of a set of individual Member States, which remain the key actors in making EU policy. At the same time, the process of European integration, through Europeanisation, has a supreme impact upon the Member States (Bulmer and Lequesne, 2012). Europeanisation processes are related primarily to the design and implementation of public policies, and indirectly also to project management processes. For the EU project funding is a type of policy instrument that uses a range of tools and techniques to achieve goals set on the public policy level (Mukhtar-Landgren and Fred, 2018). However, the EU did not base its activities on projects from the very beginning. The first experiments with the project-based distribution of funds started in the late 1970s– their distribution was based on the annual reimbursement of expenses incurred by individual countries within the funds available to the EU (Büttner and Leopold, 2016). In the 1980s, through the implementation in various Member States of programs supporting local development and thanks to the reform of the EU budget system, the foundations were prepared for the distribution of budget funds and introduction of project-based public policies. This system is based, in simplified terms, on multiannual financial frameworks that reflect programming periods of specific goals that the EU wants to achieve over several years of time intervals. The key moments in the development of the project approach in the EU are presented in Table II.

Along with the project approach implementation, the process of professionalisation of project management has also taken place. For many years, the EU had recommended a standard for project management called “Project Cycle Management”, which was adopted by the European Commission as its primary set of project design and management tools (European Commission, 2004). Recently, the first tailored methodology of the European Commission was created, which is currently recommended as a model methodology for conducting projects co-financed by the EU. PM² was created based on the specific EU needs and taking into account the specificity of the project implementation environment. It contains classic elements of project cycle management, while also referring to the “relevant European Commission communications and operational experience from various internal and external projects” (European Commission, 2016).

Assuming that projectification is a process that consists in professionalisation of project activities within the organisation and remains, as some researchers point out, inextricably linked to the systematic development of project management methods and practices
Since 1958 A system of re-funding projects which were selected and introduced by the Member States
The end of the 1970s and the beginning of the 1980s First experiments with project-based funding: the European Commission started to finance its first pilot projects supporting local development initiatives via structural funds
1980s Launching of programmes (Integrated Development Operations (IDO)s) and Integrated Mediterranean Programmes (IMPs) introducing development projects in many EU states
1988/1989 Annual budgeting of EU replaced by the Multiannual Financial Frameworks – possibility to plan multi-annual programmes and projects
1989 Establishment of the Cohesion Policy, the first EU’s project-based policy
1992 Adaptation of “Project Cycle Management” (PCM) as a primary set of project design and management tools
2004 The biggest ever enlargement of the EU, with 10 new Member States joining. Multiple new programmes established
2016 “PM² Project Management Methodology” – developed by the European Commission – first tailored project management methodology of the EU

Sources: Matthijs (2010), Büttner and Leopold (2016), European Commission (2016)
Next, using the databases administered by the Ministry of Investment and Development[1], a group of projects implemented in Poland in 2007–2013, i.e. in the second programming period, was selected for the quantitative study. All data comes from the National IT System SIMIK (Computer Monitoring and Control System) 2007–2013, where information on projects implemented in Poland in 2007–2013 with the support of EU funds was collected. The source of data for the study were publicly available directories with records generated from the SIMIK system[2]. The research was carried out using the “R” software, to which records from the database generated from the SIMIK system were transferred. Because of the scale of the research sample, the data preparation process was carried out by a company dealing with data analysis, with instructions delivered by the researcher. The data interpretation process was carried out exclusively by the researcher herself. During the study, projects implemented by public organisations were separated from the database. Their separation made it possible to assess the scale of projectification in the Polish public sector (macro level). This was done by examining a number of public projects and their types, and determining which types of public organisations showed the highest intensity of project activities. On the basis of the results of this part of the study, a group of organisations was also selected for the qualitative study.

In the selected public organisations, 17 interviews with senior management Staff were conducted. The organisations were selected with a particular purpose in mind. The research focused on the public organisations that, according to reports on EU funding in Poland, have completed the largest number of projects and represented different types of Polish public organisations. The types of these organisations were selected based on the division adopted in the SIMIK system where each organisation had to indicate what type of public organisation it represents. Thus, the study included organisations from the central level (ministries, national units), the regional level (provincial unit), and the local level (communes/municipalities); also public research organisations were taken into consideration. These organisations can be found in various parts of the country. One property they all share is that, with the sheer number of projects they have carried out, they are more exposed to projectification processes. The interviews were partially structured and concerned organisational changes that took place in the studied organisations under the influence of EU funded projects. The interviews were conducted in different parts of Poland between September 2018 and January 2019. Each interview took approximately two hours. Most of them were recorded and then transcribed (in three cases, the respondents did not agree to be recorded) (Table III).

<table>
<thead>
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<tr>
<td>National unit which implements large infrastructural projects</td>
<td>2</td>
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<td>Municipality 2</td>
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</tr>
<tr>
<td>Ministry 1</td>
<td>1</td>
</tr>
<tr>
<td>Ministry 2</td>
<td>1</td>
</tr>
<tr>
<td>Provincial unit</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>17</td>
</tr>
</tbody>
</table>

Table III. List of studied organisations
Data analysis and interpretation

After obtaining the data, they were subjected to analysis before beginning each subsequent stage of research. Each method was different and allowed for obtaining and analysing different sets of data. This was helpful in the process of understanding what kind of influence EU projects have on the development of the public sector’s projectification in Poland and what characterises this process. The data from the first stage of the study (documentation analysis) were analysed and then interpreted by looking for codes connected with the process of state projectification. Particular attention was called to the question if – and how – project procedures and project-based actions are reflected in official documents. Moreover, the aim was to understand the impact, which legal changes implemented to catalyse the realisation of projects co-financed by the EU may exert upon the whole sector. The data from the second stage (quantitative analysis) was subjected to quantitative analysis; the obtained numerical data were then interpreted. The interpretative process was informed by the initial research question: based on the numerical data, it sought to understand what was the scale of the projects carried out under the influence of EU funds, what was their distribution over time and between different types of public entities. The data from the third stage (qualitative study) were transcribed and coded in the NVivo Pro program. It consisted of reading transcripts and manual coding of material. The next step covered the searching, defining, and naming the themes in the coded material. Then, through the interpretation of themes, an attempt was made to understand what changes at the organisational level had been caused by EU projects. The interpretation was based on a repeated reading of data and referring them to the research question.

The results of the analysis of each of the data sets are presented in the following part of the article. The summary of the results for the whole implemented mixed study can be found in the final part of this paper, i.e. the concluding discussion, which combines the results of all the research stages, confronting the research findings with the theoretical assumptions.

Limitations

The study has some limitations. First of all, quantitative research was carried out based on data, which required a lot of commitment in data preparation, especially data cleansing. The problem came from a large freedom of choice for the beneficiaries regarding the project type or the implementing unit. This caused difficulties in counting the projects. Efforts were made to ensure that the obtained results reflected the actual state of public sector projectification within the examined segment. Nonetheless, it should be noted that due to existing database impurities, the results may be subject to a minor risk of error, based on the fact that it is not possible to completely correct erroneous data entered by the project beneficiaries.

Another limitation of this study is that it concerns only three levels of research on projectification. As the research shows, projectification processes also have an impact on individuals (e.g. Jensen, 2012), which is why it would be interesting to determine the impact of these processes on public officials. However, the question of projectification on the individual level exceeds the scope of this study.

EU funds in Poland on state level (projectification at the mega level)

This chapter presents the results of an analysis of documents which shows how the project system of distributing funds by the EU influences the projectification processes at the mega level, i.e. at the level of the whole state.

The enlargement of the EU by the countries of Central and Eastern Europe was one of the largest political projects of recent years (Hübner, 2008). Poland had been preparing to join the EU for a long time, but it was only the official entry into the Community’s structures that catalysed the processes of inflow of funds for projects. In the introduction to his book,
Buttner (2012) mentions “regional mobilisation” – a phenomenon caused by the EU, and leading to a huge mobilisation of countries, regions, and local agents in order to achieve the set goals. The cohesion policy for 2007–2013 was, according to its creators, aimed at “increasing economic growth and employment in all regions and cities of the European Union” (www.funduszeeuropejskie.2007-2013.gov.pl/OrganizacjaFunduszeyEuropejskich/Strony/czymsafundusze.aspx).

At the same time, one may observe that integration with the EU consists primarily in the adaptation of the “lagging” Member States to the expectations of the EU as a community. As research (Börzel, 2003) shows, in cases when European policies, institutions or processes differ significantly from those found at the domestic level, Member States feel the need to change to decrease the “misfit” between them and others. The lower the compatibility between European and domestic processes is, the higher is the adaptational pressure Europe exerts on the Member States are (Börzel, 2003). The case of Poland was not different. When the country joined the EU on 1 May 2004, all Polish regions were below the threshold of 75 per cent of the EU average in gross domestic product per inhabitant. In 2004–2007, nearly 85,000 projects worth a total of EUR 22.5 billion were implemented in Poland (European Comission, 2009). Priority was given to investments in basic infrastructure – over half of all projects fell under this category. Among others, 3,700 km of roads and 200 km of motorways were constructed (European Comission, 2009). Despite these successful actions, the programming period of 2004–2006 is characterised by a low level of spending EU resources granted to Poland (Ministry of Regional Development, 2007). This results primarily from the fact that the developed implementation system failed to identify in a satisfactory way the needs of processes connected with project implementation, which, in turn, made the projects protracted and costly. According to the report issued by the Ministry of Regional Development, the elementary errors concern, among others, excessive centralisation of the system, its disproportionate caution and formalisation, too rigorous procedures which at times assume requirements that are far more restrictive than those imposed by the EU law, and underestimation of staffing needs in institutions (Ministry of Regional Development, 2007). There were also shortcomings in experience and knowledge of the beneficiaries with regard to implementation and settlement procedures of their projects. Hence, there was a clear “misfit” between the ability to implement EU policies in Poland and the expectations of the EU itself. As a consequence, a decision was made to increase the volume of training that was to prepare staff for better project management. Mass training began, teaching how to write projects, how to prepare project documentation and how to manage projects later.

At the mega level, there also occur clear legal changes, which made it possible for Poland to meet the standards of project implementation in all areas. Numerous documents reflecting plans for the implementation of state public policies underlined the urgent need to acquire competencies in the field of project preparation and implementation – as a prerequisite for obtaining EU funds. One may refer to the example of the National Strategy for the Development of Culture (Ministerstwo Kultury, 2004), a plan presented by the Ministry of Culture and National Heritage, whose aim was to adapt the Polish culture sector to the EU’s expectations regarding the readiness for grant implementation. First of all, the National Strategy for the Development of Culture, which is the main document defining the state’s cultural policy, supported the organisation of a variety of training sessions for managers in cultural institutions, who learned project management and how to apply for structural funds (Ministry of Culture, 2004, p. 135). In addition, the Strategy provided for massive debt relief of self-government cultural institutions as necessary to ensure pre-financing of the implementation of projects co-financed from structural funds. If a given unit were in debt, it would be very difficult or impossible to obtain EU funds. These provisions concerned the debt relief of cultural institutions which during the takeover by local governments were burdened with mortgage debt owed to the State Treasury. This debt had never been enforced and it
remained in some sense a dead accounting letter – at the same time preventing these institutions from implementing projects financed by structural funds. In addition, support for artists had been planned in the strategy, helping them to function on the new, project-based culture market: for example, a special programme of favourable loans to support the projects of those artists, who could not afford their own contribution, necessary in most EU projects. The Ministry of Culture (2004) also guaranteed special microloans granted by banks (p. 138).

In the subsequent programming period, 2007–2013, Poland implemented EU policy mainly thanks to structural funds, that is, the European Regional Development Fund, the European Social Fund, and the Cohesion Fund (Spidla, 2008). There were also other funds that benefitted Poland, directly related to the implementation of the Common Agricultural Policy of the EU, such as the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund (Portal Funduszy Europejskich, 2018). When the EU programmes for 2007–2013 launched in Poland, Poles submitted 302,400 formally correct project applications until 17 July 2016[3]. The total amount of subsidy sought by the applicants amounted to PLN 616 billion. These numbers confirm how big the eruption of projects was in Poland: it comprised more than 300,000 ideas for the total amount of approximately EUR 150 billion. Never before in Polish history was such a great number of projects submitted[4]. Not all submitted applications were projects generated by Polish clerks, businesses, or NGOs – this number indicates only the formally correct applications, which allowed them to pass the first stage of assessment. Unfortunately, there is no data on how many project proposals were submitted in Poland altogether for the programming period 2007–2013, but there certainly were many more.

After the competitions, there emerged 106,319 eligible projects, which means that beneficiaries signed contracts for subsidy for the amount of PLN 398 billion of expenditure. The subsidy from the EU amounted to PLN 285 billion, which was 100.6 per cent allocation for the period 2007–2013[5]. Hence, Poland was able to use the whole amount of financing granted to it in the EU budget. As EU statistics show, the support from the European Regional Development Fund and the Cohesion Fund in 2007–2013 amounted to EUR 57.2 billion in Poland (http://ec.europa.eu/regional_policy/en/information/publications/factsheets/2016/cohesion-policy-supporting-growth-and-jobs-in-poland).

To summarise, at the mega (state) level, projectification influenced by EU funds manifested through the absorption of a huge amount of funds allocated to projects. This influx was followed by significant legal changes, introduced at the central level and aimed at facilitating the implementation and execution of EU projects in all of the country’s sectors: private, public, and non-governmental. Projectification at the state level mainly manifested itself through legal changes and the phrasing of public policies. As the data show, since the availability of EU funds, largely based on projects, the Polish government planned its public policies as a set of programmes and projects. On top of that, the Polish government planned public policies in such a way that they are consistent with the rhythm of the EU’s programming periods, by the same token enabling applicants to obtain funds for projects even more.

Polish public sector and EU projects (projectification at the macro level)
This part of the article presents the results of quantitative analysis in relation to projects implemented by the public sector (macro level). Based on the data, the scale of project activities in the whole Polish public sector, their diversity and range will be shown.

European projects have greatly spread all over Poland. It is difficult to find an organisation or person who would not directly or indirectly experience the results of EU projects. Almost one in three of the formally correct projects were selected for implementation. Compared to the total number of projects, only a small part of contracts was later dissolved or cancelled. Based on the analysis conducted on the basis of the aforementioned databases (as of 31 December 2017), one may conclude that the total number
of projects implemented in Poland within the scope of EU programming for 2007–2013 was 105,910 for the analysed programmes (see Table IV).

Thus, public organisations implemented nearly 40,000 projects, which constitutes about 37 per cent of all projects completed in the analysed period in Poland; based on the analysed research sample. At the same time, the projects of public units “consumed” much more funds (54 per cent) than the projects of the private or non-government sector (Table V).

Organisations that represent the public sector contracted projects for a total amount of over PLN 208 billion, and thus became the main beneficiaries of the 2007–2013 programming period. Despite fewer projects than in the business sector, public projects had greater overall financial value. This is chiefly due to the fact that a large part of public projects was of infrastructural nature. The commencement of the implementation of the majority of public projects financed under the analysed perspective 2007–2013 occurred in 2008–2011. A year after the launching of the funds over 9,000 projects were already implemented. Due to the fact that the funds could be used for two more years after the programming period, until 2015 inclusive, the final phase in 2014–2015 saw the launch of 40,000 projects. Hence, the funds for projects were used very smoothly, which reveals the process of adaptation to EU expectations.

Close to 18,000 public projects were the “hard” projects. One may define hard projects as those in which the final result is a relatively unique tangible product, such as a building or another infrastructural entity. The average and maximum duration of hard projects was significantly longer than that of the “soft”, non-infrastructural projects, which one may define as those whose final result is not a tangible asset in itself (Wiedemann, 2018). The average financial value of the soft public projects under scrutiny was PLN 1.43 million, while the value of hard public projects amounted to PLN 9.69 million. The top ten of the largest public projects in Poland gather solely infrastructural projects; in nine cases out of ten these are various types of roads. The most expensive infrastructural project subsidised was the construction of the second underground line in Warsaw, with a budget of almost

<table>
<thead>
<tr>
<th>Organisation type</th>
<th>Number of projects</th>
<th>% of the overall number of projects subsidised by the EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>53,104</td>
<td>50.1</td>
</tr>
<tr>
<td>Public</td>
<td>39,420</td>
<td>37.2</td>
</tr>
<tr>
<td>Non-profit</td>
<td>13,359</td>
<td>12.6</td>
</tr>
<tr>
<td>NA</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>105,910</td>
<td>100</td>
</tr>
</tbody>
</table>

**Source:** Own elaboration

<table>
<thead>
<tr>
<th>Organisation type</th>
<th>Total value of expenditure in PLN*</th>
<th>% of expenditure in the overall value of all projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>169,815,257,238</td>
<td>44</td>
</tr>
<tr>
<td>Public</td>
<td>208,176,803,002</td>
<td>54</td>
</tr>
<tr>
<td>Non-profit</td>
<td>9,986,600,700</td>
<td>2</td>
</tr>
<tr>
<td>NA</td>
<td>4,734,039</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>387,961,894,980</td>
<td>100</td>
</tr>
</tbody>
</table>

**Notes:** "The total amounts of expenditure on projects listed in the table differ from the above-mentioned data provided by the Ministry of Regional Development, concerning the total value of funds contracted by Poland for projects in the 2007–2013 programming period (according to information from the government side – PLN 398 billion). This difference results from the fact that in the present study, the calculations were based only on data available in the databases described in the methodological subchapter. Discrepancies are related to the selection of a narrowed project base for this study. |

**Source:** Own elaboration

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**Table IV.** The number of projects per organisation type (private, public and non-profit) in the financial perspective 2007–2013 according to the findings of the study

**Table V.** Project value in PLN per organisation type (private, public, non-profit) in the financial perspective 2007–2013 according to the findings of the study
PLN 6 billion. The soft project with the highest financial value was “Research on the quality and efficiency of education and institutionalisation of research facilities 2009–2015” with a budget of nearly PLN 300 million.

However, not only large endeavours received financing but also small projects that did not exceed several thousand PLN. The maximum and minimum cost of projects was not determined solely by the needs of a given public organisation but also by the guidelines of individual competitions that clearly defined the framework for project financing. One of the assumptions regarding EU support granted to Member States is the principle of additionality, that is, co-financing or supplementing. This means that European funds should complement the financial resources of individual Member States rather than replace them. Therefore, the majority of projects co-financed by the EU required own contribution. The average EU subsidy for soft projects amounted to PLN 1.2 million, while hard project subsidies averaged PLN 6.3 million.

Looking at the division of projects through the lens of legal forms of public organisations, one may notice certain patterns. Nearly 60 per cent of all projects over 23,000 endeavours were implemented by communal or municipal organisations, which means organisations at the lowest level of self-governance. Currently, there are 2,478 communes/municipalities in Poland, so one may say that, on average, there were ten projects per commune/municipality. At the same time, there were communes/municipalities, which very intensely engaged in acquiring subsidies for projects. However, these were large municipalities like Lodz or Warsaw, in which municipal units implemented over 100 projects each.

The communes and municipalities received over 40 per cent of the financial resources allocated to projects, which means that they received most of the money. At the same time, the largest budgets were implemented by organisations who are “state legal entities” and “state organisational units”. One may mention such organisations as the Polish Agency for Enterprise Development, General Directorate for National Roads and Motorways, and the National Centre for Research and Development. A large part of the funds also flowed to higher education institutions and scientific units: they received a total of 13 per cent of all funds.

The abovementioned data indicate that EU funded projects were implemented by all types of public organisations in Poland. In fact, one may assume that there was no public unit, which would not come into contact with project work at least to some extent. Data analysis allows us to conclude that – apart from the dominant public infrastructure projects – institutions directed very large funds to the development of human resources. To summarise, at the macro level (public sector level), the influence of EU projectification is evidenced by the universality of project activities. Before Poland’s accession to the EU project work was a rarity at the sector level, and now it became one of the main forms of action, alongside standard activities, such as issuing documents, permits and conducting administrative procedures.

**Public organisations and EU-funded projects (projectification at the meso level)**

This section refers to the third part of the study, which concerns the changes that occurred in public organisations (meso level). All organisations selected on the basis of the previously conducted quantitative analysis go through changes that result from the implementation of numerous projects. Since the surveyed institutions represent various types of public organisations – from municipal offices, district offices, and provincial units through public national units, higher education institutions, and research institutes to ministries – these changes have a very diverse nature. In general, it is possible to divide these changes into three types on the basis of the data analysis: strategic changes, changes in organisational structures and changes in work processes.

**Strategic changes**

In the organisations under scrutiny, the projects are of strategic importance. Although all of the studied organisations only recently began conducting intensive project work, the
projects became for them a tool to implement even their basic activities. As the respondents observe, tasks which were earlier carried out in their organisations, but which were not labelled as projects, are now carried out as projects. The respondents started to use project planning tools to describe and plan these activities.

Some organisations indicate that after several years of experience with EU projects, they developed a clear vision of how they would like to manage project work. First of all, some interviewees state that organisations have long-term plans to implement a smaller number of projects but with larger budgets and greater coverage, which is supposed to allow for a greater coherence of activities with strategic plans. For example, public research organisations indicate that their main strategic goal is the internationalisation of project work and the implementation of large international research projects. Moreover, some respondents stressed that long-term projects carried out by their organisations will be primarily of an innovative nature. As an employee of a large municipal office pointed out:

Certainly, more projects will be related to innovations because innovations are very much part of the life of cities and the outside world will surely change, so I think we will launch more innovative projects […] because the expectations of city residents, the clients of cities, and their increasingly more mature understanding of the ongoing processes will make innovations necessary, which, in turn, will require a specific project orientation (Municipality 2, Respondent 3)

This may suggest that, for public organisations, projects become a tool for the pilot testing of organisational and social innovations.

Some of the organisations have special “project management policies” that are strategic documents. These documents present projects as tools for achieving the key goals of the organisation:

[...] a project management policy has been developed. [...] We have our own guidelines and best practices concerning the whole process of project management and reporting. We have a whole set of tools for these projects, we already have the know-how of project management (Municipality 1, Respondent 1)

Simultaneously, the respondents indicate in some cases that the process of implementing strategic tasks through projects disturbs the lack of long-term plans for project financing. Hence, due to the way of planning public policies based on EU several-year programming periods, no one has certainty that there will be money for projects in a given element of public activities in a few years’ time. In conclusion, the respondents explicitly state that projects are a good tool for the implementation of strategic activities, although the short-term character and changeability of the processes programming significantly hinders the long-term planning of public policies through projects. However, this applies not only to EU-financed projects but also to government programmes. In the latter case, the difficulty in long-term project planning results, among others, from political changes and term limits.

Organisational structure changes
Each of the organisations under analysis introduced modifications in the area of organisational structures in order to better adapt to the management of projects. These changes surface in two ways: first, institutions create new departments to specialise in project work and second, institutional structures change from typically vertical to matrix.

Most of these changes are visible in various types of offices, in which there sometimes appeared even a number of departments responsible for project implementation and its support. The name “European funds” appears in the names of many of these departments. The main mission of these departments often is the effective acquisition of EU funds. Their employees are proficient in, as they say, the “language of EU projects”, because they know the schemes and procedures needed to obtain and account for the funds. The employees
know how to deal with the very intricate guidelines for spending and accounting of project funds, how to prepare for frequent audits, and how to operate IT systems created for auditing the money transferred under EU programs. These offices represent the direct impact of EU funds on the changes in organisational structures of Polish institutions. Especially the large municipal offices, located in Poland’s biggest cities, hold departments that initially dealt only with EU projects and created specific project offices to manage entire portfolios of increasingly diverse projects, including their own projects. This shows a trend in acquiring knowledge about project work on EU projects, which then is transferred to develop solutions in all project activities.

We also observe significant changes in organisational structures under the influence of project work in other types of public organisations, such as universities or research institutions. However, in their case EU funds – even if dominant – are not the only source of projects. Therefore, research institutions organise their structures not exclusively for EU projects but for projects in general. In one of the analysed cases (a university), a specialised project office was located in the structure responsible for the broad support of researchers in obtaining and implementing projects, including large grants financed by the EU. The rank of this particular unit and its impact on the work of researchers is visible in the fact that the office prepares regular reports on: how many competitions a researcher applied for, how many projects he/she acquired, and how many competitions he/she could have applied for but did not. These reports go to the deans of individual faculties and serve to assess the researchers. Thus, the reports may persuade the dean to talk with researchers that require “encouragement” to intensify their project work. According to many respondents, projects become a kind of disciplining structure for researchers and constitute an important element of their evaluation:

The project is a tool to achieve scientific goals. If we are talking about employee assessment, it will be positive if the scientist delivers a certain number of publications and carries out a certain number of projects (Public University, Respondent 1)

In the case of the research institute under examination, there also appeared significant changes in the organisational structure that resulted from the prioritisation of project work. Here, the project office received in the organisational structure the status of a separate division, while the office’s manager became the deputy director of the whole institute. This is a very significant change in the structure, as it equated the project office manager with directors responsible for very large research divisions. Projects and their management increasingly become as important as sheer research work, as the priority goes to the acquisition of projects, especially international and financed by the EU.

An interesting example of changes in the organisational structure occurred at one of the public organisations responsible for environmental protection at the provincial level. This organisation supported 330 projects co-financed by the EU within the programming period 2007–2013. The organisation exercised a specific function of an intermediary that manages funds, selects projects, and directly supervises them, but does not conduct project-related tasks. In order to manage the large project portfolio, the organisation created a completely new Department of European Funds. The Department hired employees who received an extremely intensive training process. After 2013, a political decision dissolved the status of the intermediary institution, liquidated the Department, and dismissed some employees. The study’s interviewees suggest that no one received these changes well, as they were considered as a waste of accumulated project knowledge.

Finally, it is important to note that central-level organisations also go through changes in their organisational structures. Ministries under scrutiny established special units whose main and only task is to coordinate the flow of money allocated to EU programmes and projects. One of the ministries created as many as eight departments to manage EU project funds.
Changes in the work process
EU projects contributed to the change in the operations of all the studied organisations. In public offices, clerical work with usually repetitive administrative tasks became task-oriented. The respondents indicate that project work significantly differs from how their organisations operated before. They highlighted that, while working on the project, “You have to try harder”, which means, among other things, greater availability, readiness to work outside regular business hours, and willingness to “take work home”.

Changes in the work process were not of a grassroots nature. These were not employees who initiated the changes. Instead, the changes were imposed on the employees by the appearance of EU-funded projects in their organisations. For example, in one of the studied organisations, the managers referred to the situation at the beginning of the influx of EU funds, when despite allowances for project work offered to employees, they did not want to work on them. The reason was the fear of the “enormity of work” with which they identified project work. In many organisations, projects were initially an addition to their regular functioning. They were not part of the basic duties of officials. As a respondent from one of the surveyed district offices observed:

It was a great challenge for the departments of our office. After all, apart from their normal statutory work, customer service, things carried out on the regular basis when there were no EU projects, now everyone had to run projects, too […]. At the beginning, they were unhappy because they knew that this involved much more work, that if earlier they had a free hour or half an hour at work, now they no longer have it as there is project work (District 2, Respondent 1)

However, the initial fear of conducting project work gave way to a kind of fascination. In many interviews, the respondents said that working in projects was something fascinating for them, as it secured them from the monotony of clerical work. There was no major resistance to change in the work process. Even if the studied organisations had an interest in preserving existing rules, norms, and ideas, the necessity and eagerness to implement EU regulations prevailed over the initial resistance to change.

Moreover, changes in the work process also refer to the learning process. In all organisations, employees had to acquire new skills that would allow them to conduct projects. These were technical skills, but also social skills related to working in teams. EU projects also changed the work jargon of the respondents. The language of EU projects was full of new concepts, wordings, and issues that Polish public organisations first needed to integrate. In fact, the units created in the surveyed organisations, specialised in project implementation, became specific hubs of knowledge that allowed other departments to learn the vocabulary of projects:

We really taught everyone because the language we use in projects is also quite specific. We use various terms such as: grant, co-financing, refinancing, subsidizing, eligible costs, beneficiary, partner, leader, and so on. In other departments, these notions were often incomprehensible. Our colleagues asked: “What are you saying? What are overhead costs? What are eligible costs? What are you talking about?” They didn’t understand it at all (Provincial unit, Respondent 1)

The realisation of EU programmes and intensive trainings created a large group of highly specialised clerks, proficient in project work. Very many clerks under consideration gained new abilities during trainings organised by central organisations and the EU bureaus, but also learned from best practice handbooks and partook in study visits at Western European institutions, whose staff was accustomed to project work.

To summarise, at the meso level (organisations), the influence of EU projectification is evidenced by the changes of organisational structures from typically functional to project-oriented. Moreover, under the influence of EU funded projects, Polish organisations now base their strategies on projects and utilise significantly changed work processes.
Concluding discussion

The conducted study clearly indicates that EU funds transferred to Poland in the form of projects contributed to the projectification of the Polish public sector. We may understand projectification in two ways: as a process and as a result (Jacobsson and Jalocha, 2018). According to this concept, projectification may be seen as an ongoing activity or a result of this activity. In other words, “it is a change and leads to it” (Jalocha et al., 2019). Here, the process refers to the changes that occurred in institutions to fit their legal and organisational shape to EU expectations. As a result, projectification is the effect of these changes, which meant the mass acceptance of project work as one of the main methods of activity implementation by public institutions. The current study confirms the assumption that European institutions stimulate policy transfer by, e.g., catalysing isomorphic processes (Radaelli, 2000), which in this case study means the scope of activities’ projectification. Below, the process and outcome of projectification of the Polish public sector will be described in light of some elements of the neoinstitutional theory and the concept of Europeanisation.

Projectification of the public sector as a process

Large organisational changes usually engender resistance while their implementation is a long-term process. However, the Polish public sector very quickly adapted to the rules imposed by EU as the main, most powerful player in the analysed organisational field. Given the assumptions of organisational change, initiatives may meet opposition among actors, who feel that changes to current institutions are against their interests (Munck af Rosenschöld, 2017). In this case of transition to a project system, organisational resistance remained low. What motivated players to adopt projects as the main form of action in the public sector was the promise of potential benefits and non-compliance with the standards represented by the EU. The process of projectification was driven by two mechanisms: Europeanisation and organisational isomorphism. Thus, one may contend that projectification in Poland was not a bottom-up but a top-down process, in which the pattern of action was inspired from above. This was part of the ongoing process of Europeanisation, which had a political, legal, and organisational dimension: the mechanisms of the EU became a part of the national state system. The process of Europeanisation was that of accommodation and transformation of public policy management by the Polish public sector towards a model based on programmes and projects. The starting point for this process was a “misfit” between EU projectified means of conduct – which means the implementation of public policies based on projects – and the negligible degree of public sector projectification in Poland. In order to reduce this difference, the Polish public sector started the process of change towards a project-based system of task implementation. The mechanism behind these changes was organisational isomorphism (DiMaggio and Powell, 1983), in which Polish public organisations became similar to the projectified model imposed by the EU. This isomorphism was stimulated by various tools of change. For example, there occurred mass education of project staff in the projectification process of the public sector, as happened other countries that use European funding streams (Kovách and Kučerová, 2006; Mukhtar-Landgren and Fred, 2018). This is confirmed by various documents on the implementation of public policies, which strongly emphasise staff training in the scope of acquiring and managing EU projects, but also interviews conducted with civil servants. Poland created a host of experts who now can plan and implement projects. Therefore, projectification in Poland was a process that occurred simultaneously with the process of Europeanisation (cf. Figure 1).

On the basis of the assumptions that explain the mechanism of organisational isomorphism and Europeanisation, we may conclude that the project implementation process was triggered by a misfit between the projectified EU structures with mechanisms of its operation and the low level of project maturity with the low degree of project implementation in the Polish public sector. Striving to achieve the “goodness of fit”, the
Polish public sector began the process of imitating the main actor of the organisational field in projectification processes. This dissonance reduced due to isomorphic processes that occurred on all three levels of projectification: mega, macro and meso.

At the mega and macro levels, one can primarily observe coercive isomorphism, which manifested in the change of the Polish public sector under EU pressure. At the meso level (public organisations), mimetic mechanisms and normative isomorphism played an important role alongside coercive isomorphism. Among other things, mimetic isomorphism manifested public organisations’ imitation of the operations of similar organisations; for instance, municipal councils closely watched how other municipalities manage EU projects, while universities followed the activities of other universities. To strengthen this process, higher-level organisations and EU bodies created, for example, numerous best practice manuals for public organisations to follow the project activities of other similar organisations (e.g. Sartori et al., 2014; NCBIR, 2013). Mimetic isomorphism stemmed from the fact that public organisations did not know what would happen after the end of a given programming period; whether the EU would transfer further funds for the implementation of public tasks and, if so, for what. Therefore, this uncertainty created the need to emulate the more experienced players in the organisational field. Normative isomorphism was driven by the extraordinary activity of a variety of projectification “agents” (Fred, 2018), who legitimised the project approach to public tasks through intensive training. As research revealed, the Polish public sector underwent massive training in project preparation and implementation in order to arm a large number of officials with professional preparation for project work. Therefore, a process occurred in Polish public organisations, in which professionals in the field of project management influenced organisations to change over time and become more similar to one another; in this case it meant – more projectified.

**Projectification of the public sector as a result**

The Polish public sector was projectified as a result of the implementation of hundreds of thousands of projects co-financed by the EU, which among other things, effected in legal
regulations that support the project implementation of public tasks and changes in organisational structures towards a project-oriented direction. The data show that there probably is no such area of action in Polish public sector, in which projects would not be used in the implementation of tasks. The amount of funds that the EU also provides for soft projects resulted in the departure from the understanding of projects as large, significant activities like the construction of infrastructure towards understanding the project as any time- and budget-limited social action. Moreover, the programming procedure of public policies in Poland also changed under the influence of the EU. The government adapted the pace and time frame of internal policies to the EU programming periods, but also synchronised internal national policies with EU plans. As DiMaggio and Powell (1983, p. 152) argue: “Organizations tend to model themselves after similar organizations in their field that they perceive to be more legitimate or successful”. This happened to the projectification of Polish public sector’s activities. Table VI presents how projectification manifests itself on the three levels under scrutiny.

The individual results of the projectification process vary depending on the level at which they are observed. At the same time, one may note that the effects of these changes permeate to other levels (e.g. changes in the way public policies are formulated and implemented have an impact on the creation of new organisational structures at the macro and meso levels).

**Summary**

The aim of this study was to understand the impact of projectification processes, initiated by EU projects, on the Polish public sector. Of course, projectification is not the only process that brings changes to the Polish public sector, but, as the research shows, it has a significant impact on its transformation. This paper describes the process of projectification in reference to three levels: mega, macro and meso. It is important to note that the projectification process, understood as the multiplication of projects in all spheres of life, is visible both at the state and sector level, but also at the public organisation level, where projectification manifests through, e.g., rationalisation, formalisation, proceduralisation and naming activities projects (Maylor et al., 2006; Dornisch, 2002). EU projects impact this process, as their main objective is the implementation of EU policies at the state level. The results simultaneously show that this impact is not limited to the implementation of specific tasks. It changes the way the state and the sector operate, mainly through the dissemination and massification of project work, but also through the impact on the manner of formulating public policies. At the public organisation level, this situation causes changes in the scope of organisational structures, strategic management processes, and methods of work. Projectification processes at these levels are not separated from one another. They resemble a kind of cascade, in which projects

<table>
<thead>
<tr>
<th>Mega (state) level</th>
<th>Macro (sector) level</th>
<th>Meso (organisation) level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project-wise way of formulating and implementation of public policies</td>
<td>The creation of structures (e.g. intermediary organisations) that support the change in public funds distribution to one based on projects</td>
<td>Changes in the scope of organisational structures, strategic management processes, and methods of work towards a project form</td>
</tr>
<tr>
<td>Adaptation of public policy rhythm to EU programming cycles</td>
<td>Mass application of project activities and the change in funds distribution</td>
<td>Rationalisation, formalisation, and proceduralisation of project work in public organisations</td>
</tr>
<tr>
<td>Legal changes that support the timely realisation of projects</td>
<td>Source: Own elaboration</td>
<td>Emergence of a large group of civil servants who are experts in project management</td>
</tr>
</tbody>
</table>

**Table VI.**
The result of the projectification of the Polish public sector
flow like water from the EU level to lower levels of social life, affecting the way in which the engaged sectors, organisations and people operate. Thus, the EU is a projectification agent, which transfers its project activity practices onto the Member States, e.g., by a top-down Europeanisation and organisational isomorphism. What characterises the projectification of the Polish public sector is its universality, totality, and rapidity. These changes confirm a wider trend of EU-induced projectification processes, as scholars already described the implementation of European structural funds as an important push factor of projectification (Godenhjelm et al., 2015, Fred, 2018). Moreover, it is possible explain the intensity of this process with the results of other studies, which prove that public sector organisations, when compared with organisations in business and NGO sectors, are more susceptible to mimetic, normative and coercive pressures (Frumkin and Galaskiewicz, 2004).

The study also shows that one cannot fully understand this phenomenon without considering the projectification process in reference to separate social structures. Projectification is not something that happens separately at different levels. It does not only apply to people, organisations or societies. The above example of the influence of the EU on Poland shows how these processes permeate. Projectification does not only manifest itself in the fact that organisations start to make projects. Instead, it evokes far-reaching changes, namely changes in national law, the way public policies are implemented and formulated and the organisation of the work of offices on a state-wide scale. The consequences of the changes that occurred in Poland under the influence of EU projects are not yet fully known and require further research.

This article offers two main contributions to the theory. First, it attempts to understand the process and the results of projectification in relation to three different levels of research. Hence, we may observe the process as a multidimensional phenomenon that permeates different social structures. This approach complements the existing research perspectives on projectification, usually focused on just one level.

Second, this study applies elements of neoinstitutional theory and Europeanisation to the research on projectification. Thus, it shows that the use of previously unused theoretical inspirations in research on projectification allows for a better understanding of the issue, both in the field of management (organisational isomorphism) and political studies (Europeanisation).

Inspired by the processes of Europeanisation and neoinstitutionalism, one can partly understand the changes, but their long-term consequences remain largely unknown. This issue certainly requires in-depth reflection and further studies, which may shed light on long-term projectification processes in the context of the EU, the Member States, and other supranational organisations that set the tone for global activities.

Notes
1. The data comes from the website: www.funduszeuropejskie.2007-2013.gov.pl/AnalizyRaportyPodsumowania/Strony/KSI_raporty.aspx. This study uses files which were uploaded before 31 December 2017. Reading: 11 January 2018.

2. The projects that were analysed were implemented under the following programmes: Operational Programme Infrastructure and Environment – ERDF and SF, Innovative Economy Operational Programme – EFRR, Human Capital Operational Programme – ESF, 16 regional programs – ERDF, Operational Programme Eastern Poland – ERDF, Technical Assistance Programme – ERDF. The programmes whose data have not been collected in the referenced database, and thus have not been analysed, concern territorial cooperation, cross-border and transnational cooperation (intended for implementation of projects with partners from abroad). The database also did not include data of the Rural Development Programme for 2007–2013 (intended for farmers, agricultural processors and residents of villages and small towns) and the Operational Program “Sustainable development of the fisheries sector and coastal fishing areas 2007–2013” (subsidies for fishermen from fish processing plants, fish breeders and fish farms, and areas
dependent on fishing and fishery). Therefore, more projects were implemented in the EU support in Poland in the analysed period. Still, due to the fact that these data were not included in the abovementioned databases, their analysis was abandoned.

3. The data comes from the website: www.funduszeeuropejskie.2007-2013.gov.pl/AnalizyRaportyPodsumowania/poziom/Strony/Poziom_realizacji_programow_stan_na_17lipca2016r.aspx. The database summarises the implementation of projects from the 2007–2013 perspective, and it contains up-to-date information as of 17 July 2016. Since the n + 2 rule was written down in the EU programming rules, funds for projects from the 2007–2013 perspective could have been spent in competitions until 2015. Thus, data from 2016 shows the full picture of the scale of the phenomenon. Date of access: 01 July 2018.

4. Considering the fact that the financial data in the SIMIK database appear in Polish zloty (PLN), the financial data discussed below is presented in Polish currency. The EUR to PLN exchange rate underwent fluctuations during the period of implementation of the programmes. In January 2007, EUR 1 cost approximately PLN 3.9, while in December 2013, EUR 1 cost approximately PLN 4.1. To simplify the comparison of project values in zlotys and euros, we may assume that the value in PLN should be divided by 4.


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Documents


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Projectification in Iceland measured – a comparison of two methods

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Abstract

Purpose – The purpose of this paper is to improve the methodology of assessing the importance of projects in a national economy. The subject of study is projectification in the Icelandic economy and to measure this, the share of project work in relation to the total work done in an organisation was used as an indicator. This is a time-consuming approach and it was decided to do an additional benchmark study, to verify the alleged importance of projects, and to investigate the usefulness of a benchmark study and establish whether the two approaches could complement each other.

Design/methodology/approach – Data were collected from 146 organisations in Iceland, regarding the share of project work relative to total work, as explained by Schoper et al. (2018). In addition, by participation in a large quarterly omnibus survey among people with high management positions in their respective companies in Iceland, more general data were collected. The methods and outcomes of both surveys were compared, and general conclusions are drawn.

Findings – The authors conclude that the two research approaches complement each other and could be applied in a systematic way to give a longitudinal view of the evolution of projectification in a society, where projectification is measured, traced over time and benchmarked. The first part is more complicated and expensive in execution, and could be done at longer intervals, whereas the second part takes less effort and can be used to monitor the evolution more regularly.

Originality/value – Two very different research approaches were applied to assess projectification. On the one hand, a detailed quantitative survey of the economic impact of projects. On the other hand, a general survey of a very large sample of managers. This combined approach to assess the level of projectification is new, and the authors hope that this will be of value in the context of developing efficient, reliable and practical methods to assess projectification of societies.

Keywords Global project management, Project governance, Macroeconomics, Project business

Paper type Research paper

Introduction

The development of project management from being a rather narrowly defined technical undertaking to becoming a world-wide profession is fascinating. Interest in the field has grown steadily as it has been shown to cope with the world’s increasingly volatile and dynamic business environment. This new interest from the world of business created a need for new conceptual clarifications. The term “projectification” was first mentioned in 1995 (Midler, 1995). It refers to a transition from a classical, functional organisation in the 1960s to an organisation project coordination in the 1970s. The paper by Midler discusses the impact these changes had on hierarchic regulations, task definitions, carrier management, functions and relationships with suppliers in the Renault car factories. Therefore, a phase of “projectification” is a way to describe the adaption of these permanent processes. It is also used in public and global contexts to describe the shift towards projects and project management.

This research was supported by the Icelandic Project Management Association (VSF). The Association had no direct role in the research but contributed to the direct cost associated with data gathering by the contracted professional surveying company. The authors are extremely thankful to VSF for its contribution.

This paper forms part of a special section on “Projectification and the impact on societies”.

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www.emeraldinsight.com/1753-8378.htm
Ekstedt et al. (1999) described the present neo-industrial economy as being knowledge – and service intensive, utilising IT that is developing rapidly – and they stated that the most radical change in the daily work is the way in which organisations organise their activities. What these researchers were really pointing at was the emergence of project organisations. The spread of projects as a form of organising in the different sectors of the economy has since then been described by a number of researchers such as Lundin and Midler (1998) and Packendorff and Lindgren (2014). The literature on project management has repeatedly claimed that projectification is increasing in all sectors of the economy (Engwall, 2003; Sydow et al., 2004; Bechky, 2006; Whitley, 2006; Hodgson and Cicmil, 2007; Lindner and Wald, 2011; Packendorff and Lindgren, 2014). There has been a shift towards looking at the project as an organisation, rather than as a set of methods, and this has established a turning point in the development of project management. Morris (2012) described the evolution of the discipline as moving towards system engineering and a growing interest in the role of the project manager – as an effort to cope with the human and social challenges of dynamic systems. Different researchers have shown how the use of projects is expected to make organisations more innovative and flexible and increase their ability to solve complex problems (Hobday, 2000; Hanisch and Wald, 2014; Lundin et al., 2015). Ekstedt (2019) concluded that this expansion and spread of project work are challenging the traditional work organisation, and that the societies need to take action to prepare for a work life where project and temporary work are gaining importance.

The projectification of the economy is a reality but the economic impact of projectification has not been clearly defined until recently. Wald et al. (2015) described a method to assess the projectification of a society, where the share of project work as a percentage of total work (measured in working hours) in organisations was used as an indicator of projectification. This input-oriented measurement can be applied to all types of projects and it can be applied to all kinds of industries, and it is independent of organisational factors. This measurement allows the computation of the gross value added (GVA). GVA provides a monetary value for the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production. Identifying the economic significance of projects is instrumental for the private sector in forming organisational strategies and tactics. In the public domain the economic importance can influence educational emphasis as well as affecting how governance must be arranged.

In the present paper, we will specifically address the measurement of projectification in Iceland and refer to it as the GVA study. Iceland is a small European country, located in the Atlantic Ocean between the continents of North America and Europe. Despite the small population of only 330,000 inhabitants, Iceland has become a prosperous country with a gross domestic product (GDP) of $50,936 per capita in 2015. In 2013, 78 per cent of Iceland’s export value and 59 per cent of imports came from countries within the European Union. Economic growth is relatively very strong (7.2 per cent gross national product (GNP) in 2016) and Iceland’s prospects are generally considered favourable (Hagstofan, 2017).

The initial promoter of project management in Iceland is the Project Management Association of Iceland (VSF), founded in 1984 with the mission to lead and enhance the development of project management (VSF, 2017a). The most notable activity of VSF is the function of certifying project managers in collaboration with the International Project Management Association (IPMA). This process has been going on since 1997. Currently, 1,566 project managers have received certification at all of the four different IPMA levels (A, B, C and D) (VSF, 2017b). The birth of project management as a profession in Iceland has also been consolidated by a post graduate study programme, Master of Project Management (MPM), established in 2005. More than 330 project managers have graduated through the MPM programme. Project management is on the verge of becoming a profession in Iceland, with a solid theoretical knowledge base, best practice references, strong educational programmes, academic research activities and occupational interest groups. Project management can be seen as an international success and
Iceland has followed its international development. However, in spite of this success and the projectification of the private and the public industries, the economic impact has been more or less unknown (Ingason et al., 2019). The projectification of Iceland, Norway and Germany has recently been measured using the method mentioned above and defined by Wald et al. (2015), and the outcome was published by Schoper et al. (2018).

In Iceland, it was decided to do an additional benchmark study, to assess the current and future application and impact of projects in Iceland. The objective here was to verify the results of the GVA study regarding the importance of projects, by introducing a simpler assessment that can complement the costly and time consuming GVA method and help to shed light on how projectification evolves over time. The use of both studies can be seen as a methodical triangulation.

The benchmark study is based on a survey with a larger and more homogeneous sample than in the seminal GVA study. The benchmark study only involves people with high management positions in their respective companies. The idea presented here is that the two studies can complement each other. The benchmark study is an economical approach to measure the extent of projectification. By using the results to extrapolate the more expensive GVA survey, estimates of the projectification progression can be established on regular basis. Furthermore, project management as a professional conduct is escalating. The benchmark study can provide valuable feedback from the industry that could improve the more extensive and expensive GVA study.

In the benchmark study, a sample of more than 1,300 participants were asked two general questions, about the application of project management within the organisation, and the trend in the application of project management in the near future. This method is simple, includes more participants, and is less costly than the GVA study.

The basic research questions of this paper are:

\( RQ1. \) Are the results from the GVA study concerning projectification of the Icelandic economy confirmed by a benchmark study?

\( RQ2. \) Do some of the expert estimates of the GVA study regarding the projectification of specific business sectors in Iceland withstand a simple stress test?

**General methodology**

The methodology we present is partly based on the method developed by Wald et al. (2015), as has already been stated. In addition, a benchmark study among a large sample of managers was conducted to reveal first, the current application and impact of project management, and second, how the application and impact will evolve in the near future (next 12 months).

*The gross value added by projects in Iceland – GVA study*

The ideal way to measure the share of project work in an economy would be to use established macroeconomic measures of the value added, e.g. the GDP, the GNP or the GVA. The GDP is the total monetary value of all goods and services produced over a specific period and not applicable as a metric for projects. GNP indicates the value of all finished goods and services in a country in one year by its nationals and is not applicable either. However, the GVA represents the monetary value of the goods and services that have been produced, after the cost of the inputs that can be attributed to the production has been subtracted. For different reasons, Wald et al. (2015) used the share of project work relative to total work (measured in working hours) in an organisation as an indicator of projectification. This input-oriented measurement can be applied to all types of projects, both internal and external. It can be applied to all industries and it is independent of organisational factors.
A project is an undertaking largely characterised by the uniqueness of the conditions in their entirety. More specifically, an undertaking is defined as a project in the present study if it fulfils the following conditions:

- a specific target has been defined for the project;
- the project is limited in terms of time (start and end);
- the project requires specific resources (e.g. financial, staff, etc.);
- an independent process organisation exists, which is defined as different from the standard organisation in the company;
- the project work is based on non-routine tasks;
- the project has a minimum duration of four weeks; and
- the project has at least three participants.

Based on this definition, respondents were asked to indicate the relative share of project work in their entire organisation. This resulted in figures indicating projectification on the company level. The share of project work in the individual economic sectors – each containing different sub-sectors – was calculated as a mean value. And finally, the share of project work in the economy as a whole was obtained by adding up the sectors’ shares of project work, weighted by the sector’s share on total GVA (see Wald et al., 2015 for more details). In order to simplify the study, four sectors – construction, real estate, corporate service providers and agriculture – were excluded from the survey, but the share of project work was estimated by experts instead. This approach was used in Germany and the same approach was applied in the original research in Iceland, as reported by Schoper et al. (2018).

A panel of Icelandic economists assessed the same four sectors for Iceland and came to the conclusion to use the same estimates that were used in Germany for the four sectors. For Sector A, agriculture, forestry and fishing, the estimated weight was 4 per cent.

A professional research company (MMR) was hired to conduct the data collection. The survey consisted of 18 questions related to both internal and external projects. According to an agreement made with the research company, it was expected to deliver answers from no less than 100 and no more than 150 organisations. The basis for the data gathering was a random sample of 300 organisations from all the six business sectors under scrutiny – in all size categories, both public and private organisations. As stipulated in a contract made with the research company, the procedure for data gathering was in three steps:

1. Through a telephone call to an organisation – a contact was found within that organisation; someone who could provide the relevant information.
2. Another phone call was made to the contact, the research project was introduced to the person and the person asked if the organisation would be willing to participate. In that case, the questionnaire was sent to the person by e-mail.
3. The person was contacted a few days later and his/her answers to the questionnaire were registered. It was assumed that the third part, the actual interview and data gathering, would take no more than 15 min – assuming that the interviewee knew the answers or had obtained the relevant information, based on the questionnaire.

It was furthermore expected that not all contacted organisations would participate, but this was established already in the second step of the procedure, and if an organisation would not participate, another organisation in the random sample was contacted instead. According to the contract, the cost of this data gathering was 815,000 ISK (€ 6,500).
The present paper includes new information, because an effort was made in the spring of 2018 to execute the actual survey for a sector that was estimated in the original research, as pointed out before, namely, Sector A, agriculture, forestry and fishing. In Iceland, fishing is traditionally a very important business sector – close to 80 per cent of the gross domestic factor income for Sector A, according to Hagstofan (2017). The estimated weight of Sector A of 4 per cent was – in retrospect – considered conservative, and it was deemed appropriate to collect original data for that sector. The same method was in principal applied as in the original GVA study. Based on a random sample of companies in Sector A, a number of companies were approached and asked to participate in the survey, with the objective of twelve companies participating. This part of the research was in the hands of a group of eight students from the MPM programme at Reykjavik University, under the guidance of the authors of this paper. In this case, respondents were asked to assess the share of project work relative to total work (measured in working hours) in their organisations for the year 2016, the year 2011 and the expected share in year 2021.

The current and future application and impact of projects in Iceland – benchmark study

In order to confirm the results from the GVA study by asking a much larger and more homogenous sample, a benchmark study was planned and executed. This study was embedded in an omnibus survey that is done quarterly by a professional research company (MMR, n.d.). The company has extensive experience in this field and has conducted this omnibus regularly since 2011. The omnibus consists of a questionnaire that is sent to the sample by e-mail. In this case, answers were received from 1,356 executives of Icelandic companies. The sample is a random sample from the Icelandic registry of organisations. The survey took place in March and April 2016.

The NACE economic sectors classification was used as a basis for classification of organisations, to ensure international comparability and to ensure that the benchmark survey was comparable to the GVA study. The benchmark study consisted of two specific questions:

Question 1. With reference to the following definition of a project, how common is the use of project management in your company? (The definition referred to is the definition by Wald et al., 2015 – listed above).

Question 2. Do you think the importance of project management will grow, decrease or remain unchanged in your company in the next 12 months?

The cost of participating in the omnibus is a fixed sum for each question, 120,000 ISK. The total cost of the benchmark study was therefore 240,000 ISK (€1,900).

Results

The results from the two studies are introduced separately.

Results from the updated GVA study

The primary research delivered 142 answers divided among the six sectors included in the survey. The average size of the organisations that participated was 125 employees. The additional research in the spring of 2018 delivered four more answers on the seventh sector.

The total GVA in Iceland in the year 2014 was 1,530,775m ISK. The largest sector in terms of GVA economically is the public sector, followed by the retail/transport/hospitality sector and manufacturing industry. The projects were categorised according to whether they were internal or external. Internal projects were then classified into different project types (Table I).

The internal project types ratios are – on average – similar across the industries. IT and infrastructure score highest cross project types, and the organisational/HR projects score
<table>
<thead>
<tr>
<th></th>
<th>Organisational/HR projects (%)</th>
<th>IT projects (%)</th>
<th>R&amp;D/new product development projects (%)</th>
<th>Marketing/sales projects (%)</th>
<th>Infrastructure projects (%)</th>
<th>No. of cases</th>
<th>Commissioned projects (%)</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing industry</td>
<td>14</td>
<td>14</td>
<td>20</td>
<td>21</td>
<td>14</td>
<td>17</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Retail/transport/hospitality/tourism</td>
<td>17</td>
<td>22</td>
<td>18</td>
<td>15</td>
<td>20</td>
<td>9</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Information and communication</td>
<td>20</td>
<td>23</td>
<td>16</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Financial services and insurance</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>18</td>
<td>20</td>
<td>16</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Public sector, education, health</td>
<td>16</td>
<td>20</td>
<td>15</td>
<td>20</td>
<td>19</td>
<td>10</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Other service providers</td>
<td>14</td>
<td>21</td>
<td>17</td>
<td>17</td>
<td>14</td>
<td>16</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>19</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>13</td>
<td>142</td>
<td></td>
</tr>
</tbody>
</table>

Table I. The ratio (%) of projects classified by project types and external projects.
lowest, but the range is only 3 per cent. The external projects are relatively fewer (13 per cent) and the range is also higher; the cross-industrial differences are 6 per cent. The majority of Icelandic projects (≈85 per cent) are internal projects, with IT projects being the most frequent.

Table II shows the relative share (in per cent) of work assigned to projects in different industrial sectors at three instances in time – the past (2009), close to present (2014) and in the future (2019).

The average share of projects in the GVA in Iceland was 25 per cent in 2009 and is expected to rise to 31.5 per cent in 2019. This corresponds to a relative growth of 21 per cent.

The outcome of the data gathering regarding Category A in the spring of 2018 – as explained in the methodology section – was somewhat different. Since this data gathering is done two years later than the original research, the years of reference are not the same and this must be kept in mind. The share of project work to total work in Category A was found to be 9.3 per cent for the year 2016. It was 4.5 per cent in the year 2011 and was expected to be 8.8 per cent in the year 2021.

As stated in the methodology section, this data gathering was executed by a group of 8 students, as a part of an elective course in a graduate level project management programme. Data were received from only 7 companies, while the intention was to survey 12 companies. The resulting data set was partly corrupt and, in the end, data from only four companies could be used for calculations. This should therefore be kept in mind when interpreting the figures. Nevertheless, these results are a clear indication and will be used in the discussion section.

Results from the benchmark study
In the benchmark study, the population included 1,356 managers and 768 of these answered the omnibus (56.6 per cent). The responses were linked to the turnover of the organisations, number of employees, their industrial sector, trade and geographic region. Table III shows the results from the first question in the benchmark study.

To gain a clearer picture, the participants that claim that the use of project management is very common or rather common are added together. Consequently, clear pictures can be drawn to show how the commonality of projects changes with the turnover of the organisations, as shown in Figure 1, and with the number of employees, as shown in Figure 2.

<table>
<thead>
<tr>
<th>NACE Code</th>
<th>Sector</th>
<th>Share of project work</th>
<th>Share of project work</th>
<th>Share of project work</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-E</td>
<td>Agriculture, forestry and fishing</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>B-E</td>
<td>Manufacturing industry (excluding construction)</td>
<td>2.6</td>
<td>3.4</td>
<td>4.6</td>
</tr>
<tr>
<td>G-I</td>
<td>Retail/transport/hospitality/tourism</td>
<td>13.1</td>
<td>18.2</td>
<td>24.4</td>
</tr>
<tr>
<td>J</td>
<td>Information and communication</td>
<td>39.2</td>
<td>47.8</td>
<td>51.2</td>
</tr>
<tr>
<td>K</td>
<td>Financial services and insurance</td>
<td>34.8</td>
<td>34.2</td>
<td>37.5</td>
</tr>
<tr>
<td>O-Q</td>
<td>Public sector, education, health</td>
<td>32.1</td>
<td>33.3</td>
<td>40.9</td>
</tr>
<tr>
<td>L</td>
<td>Real estate</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>F</td>
<td>Construction</td>
<td>80.0</td>
<td>80.0</td>
<td>80.0</td>
</tr>
<tr>
<td>M-N</td>
<td>Corporate service providers</td>
<td>60.0</td>
<td>60.0</td>
<td>60.0</td>
</tr>
<tr>
<td>S+F+L+M-N</td>
<td>Other service providers</td>
<td>37.2</td>
<td>42.7</td>
<td>47.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25.0</td>
<td>27.7</td>
<td>31.5</td>
</tr>
</tbody>
</table>

Notes: “These are the categories estimated by a panel of experts, as explained in the methodology section. In particular, it is pointed out that the estimated ratio for category A was 4 per cent
Figures 1 and 2 show a clear pattern. The commonality of project management increases with increased turnover and a higher number of employees. The difference is striking. In organisations with more than 150 employees, 81.9 per cent of the participating organisations claim that the use of project management is common. The corresponding number for organisations with less than ten employees is 30.5 per cent.

Project management is most widely applied in manufacturing and service industries but is least common in the retail and wholesale industries. Project management is also significantly more frequently applied in the capital areas than in the rural areas; 46.6 and 35.6 per cent, respectively.
Table IV shows the results from the second question in the benchmark study.

Hardly any of the managers asked think that project management will decrease in importance in the immediate future.

To gain a clearer picture, the participants that claim that the importance of project management will increase in the next 12 months are added together. Clear pictures can then be drawn to reflect how the expected development of project management importance in organisations changes with the turnover of the organisations, as shown in Figure 3, and with the number of employees, as shown in Figure 4.

<table>
<thead>
<tr>
<th>Turnover (in ISK)</th>
<th>Huge increase (%)</th>
<th>Considerable increase (%)</th>
<th>The same (%)</th>
<th>Considerable decrease (%)</th>
<th>Huge decrease (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less or equal to 199</td>
<td>6.7</td>
<td>39.6</td>
<td>52.4</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>200-999</td>
<td>8.7</td>
<td>47.8</td>
<td>33.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>1,000–5,000</td>
<td>8.8</td>
<td>54.4</td>
<td>35.3</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>More than 5,000</td>
<td>11.3</td>
<td>62.3</td>
<td>25.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>No. of employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 10</td>
<td>5.8</td>
<td>39.0</td>
<td>53.1</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>11–49</td>
<td>10.3</td>
<td>49.4</td>
<td>39.7</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>50–149</td>
<td>4.9</td>
<td>60.8</td>
<td>33.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>More than 150</td>
<td>11.8</td>
<td>65.0</td>
<td>22.4</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9.1</td>
<td>38.6</td>
<td>51.5</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Service</td>
<td>9.1</td>
<td>56.0</td>
<td>33.3</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Retail/wholesale</td>
<td>3.2</td>
<td>43.2</td>
<td>52.8</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Fisheries/food production</td>
<td>5.6</td>
<td>42.8</td>
<td>50.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer market</td>
<td>7.7</td>
<td>47.5</td>
<td>42.1</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>B2B market</td>
<td>10.6</td>
<td>46.5</td>
<td>42.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Both</td>
<td>5.7</td>
<td>52.0</td>
<td>41.3</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital area</td>
<td>9.3</td>
<td>47.1</td>
<td>42.4</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Rural area</td>
<td>4.1</td>
<td>51.2</td>
<td>43.5</td>
<td>1.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Figure 3 shows graphically how the impact increases as turnover increases ($R^2 = 0.98$).

Figure 4 shows graphically how the impact increases as No. of employees increases ($R^2 = 0.98$).

Discussion

The economic impact results indicate that 27.7 per cent of the GVA in the Icelandic economy is via projects activities. This is somewhat less than in Germany and Norway (Schoper et al., 2018), but nonetheless a significant part of the real economy. Moreover, the participants estimate that this will rise to 31.5 per cent in coming years (2019). This means a relative growth of 21 per cent in work assigned to projects from 2009 to 2014.

Our new data collected in the spring of 2018 confirm our suspicion that project activities were underestimated in NACE Category A, where project activities were originally estimated to be 4 per cent. It can now be assumed that project activities in this important sector of business in Iceland are 9 per cent. In view of this, we have recalculated the estimate and the updated overall estimate is 28.1 per cent. The impact of this correction on the overall estimate is not large, because the weight of NACE Category A in the overall GVA of Iceland is only 7 per cent.

This discrepancy between an estimate and results from data collection calls for a critical reflection on the method of estimating the weight of project work for some sectors, while collecting original data for other sectors. We now question all the other expert estimates of the original GVA study. For example, Category M-N, corporate service providers,
estimated to be 60 per cent. This category needs to be better understood as these organisations are likely to be central as tools in the projectification process itself.

We also point out that while it is well known and understood that using the service of professional research companies is expensive, academics must try to make sure that financial limitations do not lead to compromises regarding methodology. We can now discuss our experience of using a professional research company, as compared to our experience of using a group of students, as a part of a research-oriented course at graduate level at a university. A professional research company may be an expensive alternative at first sight, but the benefits of seeking the service of professionals, stipulating contractual terms in a formal written form and using people trained in research methodology are overwhelming. Using students may be a tempting alternative when funds for research are limited, which is the usual situation. But it is advisable to look at the whole picture and savings of this type may lead to lower quality in the obtained data and diminished value of the research. Our experience was that, in spite of the fact that our student group was highly motivated, and that they had all finished BA or BSc degrees and were in the final stages of their master’s programme in project management, they did not have the necessary training and understanding of research methods to carry out the data collection as instructed. In addition, their status or credibility when asking organisations to participate in a survey of this type may have been less than that of people from a professional research company. Other factors may also be relevant, and the outcome of this exercise speaks for itself, because not only was the number of organisations that participated less than anticipated, but in addition, the data obtained was incomplete and, in the end, useful results were obtained from only 4 of 12 organisations, which was the original target.

Our benchmark study is of course quite limited, compared to the GVA study, but it has nevertheless led to new insights. To begin with, the benchmark study indicates that the application of formalized project management is considerable in Icelandic organisations. In total, 58.8 per cent of organisations with 50–149 employees claim that the application of project management is “common”. In total, 65.7 per cent of organisations in the same category believe that the importance of project management will increase in the next 12 months. While these figures cannot be directly compared to the figures from the GVA study, it is maintained that application of project management is considerable and is expected to rise. The results from the benchmark study confirm the importance of project management in the Icelandic economy.

Another interesting result from our benchmark study is that there are significant differences in the views of the managers in the context of the size of the company. The application of project management increases in positive correlation with the number of employees and capital turnover. The same applies to the expected importance of project management – it increases in positive correlation with the number of employees and capital turnover. In total, 30.7 per cent of managers in companies with a turnover of less than 199m ISK find project management to be very common or rather common compared to 72.7 per cent among their peers in companies with a turnover exceeding 5,000m ISK. This is a relative difference of 137 per cent. The difference is even more striking when compared to the number of employees. On average, the number of employees per firm is much higher in Germany than in Iceland (Einarsson et al., 2013), and this might explain the somewhat lower ratio of projectification in Iceland as compared to Germany. We can only speculate on the reasons for this correlation. It could be related to internal use of projects in larger organisations, e.g. research and development projects, design projects and IT projects. Such activities are likely to be internal in larger organisations but outsourced or not as common in smaller organisations. It could also be related to stronger infrastructure and more formalized work procedures in larger organisations. Furthermore, large organisations are more likely to take on large projects that could promote the need for more formal approach. This is certainly
an interesting research topic; how can this correlation be explained and is it found also in other countries?

Our results show that the use of project management is more common in capital area as compared to the rural areas. This is an interesting observation and could be attributed to the fact that the capital area offers more possibilities of professional training and a better access to specialised consulting in project management.

Another interesting contribution is the determination of the importance of projects and project management among top managers in Icelandic companies. The interest in the profession of project management and how it is applied is manifested by the people managing Icelandic companies, and the significance is positively correlated to the size of the company. All of this indicates the continuing progress of project management in Iceland.

We have applied two very different research approaches in this work. The first part – the GVA study – was a detailed survey of the economic impact of projects through the application of a method that had already been tested. This method yields a quantitative assessment of the gross added value of project work in a country, and a prognosis on how this will evolve in the near future. But the second part is a general survey of a very large sample of managers, where they assess the present and future projectification of their organisations. This yields a very revealing portrait of the projectification of the Icelandic economy, which can be viewed in reference to the size, turnover and type of the organisations, as well as other variables. The two research approaches complement each other and could be applied in a systematic way to give a longitudinal view of the evolution of projectification in society. The first part is more complicated and expensive in execution, and could be done at longer intervals, whereas the second part takes less effort and can be used to monitor the evolution more regularly. Furthermore, by adding questions on the work ratio assigned to projects within each industrial sector to the omnibus review, the monetary value estimate of projects could be identified regularly with the GVA study as a reference.

A simple conceptual model for this methodology is shown in Figure 5. It is based on the premise that a GVA study is expensive and complicated, but necessary to obtain reliable information about the status of projectification in different business sectors. We emphasise that a GVA study should be executed by a professional research company and it should span all categories of the NACE system, i.e. we do not recommend the use of a panel of specialists to estimate some categories. Our conceptual model assumes that a GVA study is followed up with a series of benchmark studies, applying an omnibus. We recommend that the benchmark studies are also executed by a professional research company, preferably as a part of a regular omnibus.

![Figure 5. A conceptual model of a holistic assessment of projectification, consisting of a combination of GVA studies and benchmark studies.](image-url)
More specific descriptions of the different studies are as follows:

(1) An extensive GVA study is executed at 10-year intervals. It includes all NACE categories and is based on a statistically reliable random sample; the methodology is as explained in the methodology section.

(2) Benchmark Study A is executed one year after the GVA study. Its main objective is to verify the outcome of the GVA study. It should be based on a large, statistically representative sample from all NACE categories. We propose the following set of questions:

- With reference to the following definition of a project (the definition by Wald et al., 2015), how large a part of the total work hours in your organisation are used for projects? (possible categories are 0–15, 16–30, 31–45, 46–60, 61–75 and 76–100 per cent, respectively).
- Do you think this ratio of work hours for projects relative to total work hours will grow, decrease or remain unchanged in your company in the next three years?

(3) Benchmark Study B: three years later, the main objective is to probe trends and find out if the development in different categories – and in society as a whole – is as expected according to the GVA study. The same questions as above. If the outcome is significantly different from previous results, consider doing another GVA study instead of Benchmark Study C.

(4) Benchmark Study C: three years later, the main objective is to probe trends and find out if the development in different categories – and in society as a whole – is as expected according to the GVA study, and confirmed by Benchmark Study B. The same questions as above.

Based on the figures from Iceland that we have already presented, the total cost of this series of GVA and benchmark studies is little more than 1,500,000 ISK (€12,000). This cost is distributed over a period of 10 years.

Conclusion

Projects and their management are of major significance in the international arena. Project management has evolved from being a technical approach to planning, to be a profession with its own doctrines and practices. This study reveals the impact of projects in Iceland, a developed Nordic country, in terms of the Icelandic economy. The study indicates that close to one-third of the GVA in the economy is project-related work. For obvious reasons, projects and management of projects must therefore be accounted for as a part of the overall strategies and tactics of both the public and industrial sector. In light of the enormous sums of money at stake in the economy via projects, any improvement must result in massive financial rewards. It is therefore timely to measure how projects influence both industry and the public sector. The authors also regard this study as a contribution to further development of metrics that can inspire work on strategy and vision in the context of project management.

This study was aimed at answering two specific research questions:

- We conclude that the results from the GVA study concerning projectification of the Icelandic economy are generally confirmed by the benchmark study. Projects are of immense substance in Iceland in terms of economic value, just as in other countries where the economic margin of project management has been studied. According to the GVA study – including our update – 28.1 per cent of the GVA can be traced to project work, indicating that the money that projects turn is in the vicinity of 430bn
ISK (0.281×1,530,775m) a year and growing relatively. The benchmark study confirms the importance of projects in Iceland in a general way, without financial reference, and indicates that the results from the GVA study may even be conservative.

- We have furthermore tested an important assumption of the GVA study, where the projectification of an important business sector was estimated by a panel of experts and excluded in the actual data collection of the research. In this case, the estimate is too low and as a consequence, the total results regarding projectification of the Icelandic economy were underestimated. We conclude that such estimates should be avoided and a GVA study should include all business sectors.

Based on our experience, we have defined a general but holistic research scheme for assessing the projectification of an economy, based on a combination of a detailed GVA study and more simple benchmark studies. We have complemented this scheme with more specific survey questions for the benchmark study, for the sake of better alignment. We have elaborated on our experience of using a group of engaged master’s students for data gathering for a GVA study, as compared to a professional research company. Based on our experience, it is better to work with a professional research company and what may initially be perceived as the advantage of the lower cost of using students may be quickly lost if objectives regarding the number of survey participants are not met, if the strict protocol regarding the data gathering is not followed, and if the quality of research data is jeopardised.

We have come to realise a methodological problem with comparing the results from the studies. In our benchmark study we asked about the use of project management, instead of collecting data to calculate projectification. Even though the direct comparison is useful in the sense that it confirms a general trend towards projectification, the questions in the benchmark study referred to formalised project management, rather than projectification. We saw this as an opportunity to sharpen our questions in the benchmark study and align them better to the corresponding questions in the GVA study. But at the same time, we conclude that the relation between projectification and formalized project management needs to be studied in future research.

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Further reading


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Lifecycle-oriented framing of value at the front end of infrastructure projects

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Catherine Killen
University of Technology Sydney, Ultimo, Australia

Abstract

Purpose – Infrastructure projects are expected to deliver value to their stakeholders long after completion. Project value is multi-dimensional and subjective and evolves over the project lifecycle. How stakeholders frame the expected value is central to the public debate about proposed infrastructure projects and influences the financing decisions; however, this framing is inadequately understood. The purpose of this paper is to develop new knowledge for shaping infrastructure projects by identifying the ways in which stakeholders frame project value at the project front end.

Design/methodology/approach – Three transport infrastructure projects are compared in a qualitative, document-based study. The authors map the dimensions of value at the project front end and identify stakeholders’ approaches to lifecycle-oriented framing of value.

Findings – Financial, social and comparative values are dominant in the project front end. The authors frame value into positive and negative dimensions and identify four themes in the lifecycle-oriented framing of value, including uncertainties, timing of cost and benefit realization, project relations and external sponsorship.

Research limitations/implications – The research is limited through the focus on transport infrastructure projects and project front end only, the selection of cases from a single country and the use of document-based data. The systematic analysis approach has yielded novel analytical frameworks that will be useful for further research.

Practical implications – This study identifies value dimensions that are specific to transport infrastructure projects and proposes a framework to assist stakeholders and project managers to better assess and negotiate value when designing their projects.

Originality/value – Regional and comparative values are revealed as novel aspects of value specific to infrastructure projects. The alternative lifecycle-oriented frames offer a new way to understand and structure the co-creation of value and shape negotiation for investment decisions in the project. A portfolio perspective to investment decision making is proposed.

Keywords Infrastructure projects, Value, Stakeholder, Project lifecycle, Front-end management

Paper type Research paper

Introduction

The success of projects is increasingly determined by the benefits and value they deliver, and not just through the achievement of project goals (Ahola et al., 2008; Shenhar, 2001). Projects are not implemented merely to deliver a “product,” but they are considered as value creation processes (Winter and Szczepanek, 2008) with the potential to deliver long-term value for the stakeholders (Artto et al., 2016). Infrastructure projects, such as constructing roads, railways, tunnels and cities, are expected to deliver value for decades or even centuries after the project’s termination, an expectation reflected in the concept of project value. This study focuses on value in infrastructure projects, particularly how stakeholders frame and, thereby, set expectations for lifecycle-oriented value at the project front end.

Project value incorporates all benefits and costs over the complete lifecycle of the project, including the use of its deliverables (e.g. Ahola et al., 2008; Laursen and Svejvig, 2016) and is often the primary rationale for instigating a project. Project value is a long-term concept, however, and so it is highly uncertain and difficult to forecast and assess in a project’s early
phases (Kolltveit and Grønhaug, 2004). Project value is also multi-dimensional and subjective (e.g. Ahola et al., 2008; Martinsuo and Killen, 2014; Ang et al., 2017), comprising both financial and non-financial elements. Estimating a project’s value is essential when large infrastructure projects are considered for funding.

Value in project management has been explored by identifying and contrasting a project’s benefits and sacrifices (or costs) (e.g. Ahola et al., 2008), exploring stakeholders’ viewpoints (Ang et al., 2017), and through the activities and integration mechanisms used to create value in an inter-organizational setting (Artto et al., 2016; Matinheikki et al., 2016). Various appraisal techniques can be used to evaluate and estimate value in infrastructure projects at the project front end (Garvin and Cheah, 2004; Ho and Liu, 2002). Assessment-related studies focus on monitoring and evaluating project value in the later lifecycle phases, yet existing assessment indicators tend to be limited to certain value dimensions or lifecycle phases only (Kivilä et al., 2017; Shen et al., 2010). Project management has generally been considered as an execution-oriented discipline that focuses on the delivery of pre-defined deliverables rather than a project’s value over the whole lifecycle (Edkins et al., 2013). However, for large infrastructure projects that require high levels of investment, the project’s value needs to be anticipated and negotiated very early in the project.

Strategic decisions about infrastructure projects are made at the early phases of the project lifecycle, often called the project front end (Edkins et al., 2013; Matinheikki et al., 2016; Williams and Samset, 2010). The project front end includes all activities from creating the idea through to decisions that secure project financing (Williams and Samset, 2010). Large infrastructure projects entail lengthy prioritization and elaboration phases in the front end that involve extensive stakeholder negotiation (Priemus, 2007). The front end incorporates significant value-related activities (Kolltveit and Grønhaug, 2004; Matinheikki et al., 2016) – especially through defining the project’s core concept (Samset and Volden, 2016), using stages and gates to structure decision making (Edkins et al., 2013) and involving stakeholders in various activities that promote value creation (Edkins et al., 2013; Kolltveit and Grønhaug, 2004; Matinheikki et al., 2016) – and emphasizes the governance and leadership work that shapes the project (Edkins et al., 2013). Significant project investment and design decisions are made at the project front end, even when such decisions must be based on uncertain information (e.g. Kolltveit and Grønhaug, 2004).

Defining and shaping the project concept and content requires collaboration by stakeholders, each with specific ideas of what value the project should deliver. Value is therefore a socially constructed phenomenon, and stakeholders with their different framings must make sense and negotiate value to make decisions. Stakeholders’ framing of value is central to the complex process of proposing, justifying and debating whether a project should be funded. The ways that stakeholders frame, argue and negotiate value expectations at the project front end are so far insufficiently understood.

The objective of this study is to support improved stakeholder relations and processes for collaborative shaping of large infrastructure projects by identifying the ways that stakeholders frame project value at the front end. We map lifecycle-oriented dimensions of value at the project front end in three different infrastructure projects, and identify how stakeholders frame and debate a project’s value. We address the following research question:

RQ1. How do stakeholders frame project value at the front end of infrastructure projects?

The focus is delimited to the front end of large transport infrastructure projects since the front end is when the project value over its lifecycle is planned and negotiated. We first review previous research on project value, focusing on lifecycle-oriented framing of value in infrastructure projects. We then describe the multiple-case study of three transport infrastructure projects. In the results section, we map the dimensions of value covered in the front end of each case project, and identify four themes used in the lifecycle-oriented framing
of value. The findings provide evidence of how value is framed and discussed through lifecycle-oriented claims at the front end, and illustrate the qualitative and social aspects of value that are central to infrastructure investment decisions. Finally, we discuss the findings, highlight the main contributions and suggest future research directions.

Literature review

Value in infrastructure projects

The design and construction of infrastructure such as motorways, railways, subways, tunnels and cities are typically organized as projects. Infrastructure projects have several important distinguishing characteristics. They are often large (or “major” or “mega”), requiring major investments and involving multiple stakeholders in their delivery (Flyvbjerg, 2014). Both the implementation phase and the project deliverable are highly visible to the public, and the deliverable is typically used by the general public after project implementation (Flyvbjerg, 2009b; Ng and Loosemore, 2007). Infrastructure projects often require public sector actors to be highly involved in the project, most often as investors and owners (Flyvbjerg, 2009b; Ng and Loosemore, 2007). Other private and public stakeholders influence and are influenced by infrastructure projects, with their own expectations of the value to be created (Aaltonen and Kujala, 2010; El-Gohary et al., 2006; Ng and Loosemore, 2007). Infrastructure projects shape societies significantly and are typically designed to deliver value for a long period of time after project implementation (Ng and Loosemore, 2007). They are, therefore, an excellent context for studying value.

The concept of project value is especially relevant and challenging for infrastructure projects and their deliverables over the project lifecycle. Project value can be defined as the “quotient of benefits/costs, where value is not absolute, but relative, and may be viewed differently by different parties in differing situations” (Laursen and Svejvig, 2016). The evaluation of project value is made more difficult by its multi-dimensional, subjective and uncertain nature (Ahola et al., 2008; Martinsuo and Killen, 2014; Van Marrewijk et al., 2016).

Multi-dimensionality implies that project value consists of both financial and non-financial (Martinsuo and Killen, 2014) and short-term and long-term elements (Ahola et al., 2008). Several methods are used to evaluate projects across multiple dimensions, especially when sustainability is a goal (Ding, 2008). One popular framework is triple-bottom-line accounting (Elkington, 1994), which includes economic, social and environmental (ecological) values and is commonly applied for planning and decision making in the public sphere (Satterfield et al., 2000; Söderbaum, 1982). In project management, triple-bottom-line concepts are proposed to be combined with stakeholder and learning/organizational considerations for both front-end and in-flight management of multiple values (Sánchez, 2015). Dimensions of value, including the triple-bottom-line, have been mapped in project environments in various empirical contexts (Ahola et al., 2008; Ang et al., 2015) and also specifically in some infrastructure projects (Kivilä et al., 2017; Eskerod and Ang, 2017). Flyvbjerg (2017, pp. 6-7) discusses technological, political, economic and aesthetic “sublimes” as drivers of value in megaprojects, while others highlight the symbolic aspects of the value created (Eskerod and Ang, 2017; Söderlund et al., 2017). Previous research has already differentiated value between the project phase and the operation phase in the system lifecycle (Artto et al., 2016).

Due to their public ownership and funding, infrastructure project decisions are strongly influenced by interests and aspirations of public value. Public value creation is central to transport infrastructure projects due to their profound impact on every-day lives (Koppenjan et al., 2008). Numerous public values are proposed in the literature (de Bruijn and Dicke, 2006), and the values may compete with each other (van Gestel et al., 2008; Steenhuisen and van Eeten, 2008). Some studies that investigate the use of public private partnerships for funding public infrastructure through private investment focus almost
exclusively on financial value (Tang et al., 2010; Ho and Liu, 2002) with little mention or measures of the benefits to society (Bing et al., 2005). Similarly, while many studies highlight the importance of “value for money” over an infrastructure project’s lifecycle, qualitative aspects are considered a matter of judgment and there is little detail on how lifecycle value can be holistically considered at the front end of projects (Burger and Hawkesworth, 2011). Despite the general increase in value-focused project management research (Laursen and Svejvig, 2016), there is limited empirical evidence on the concept and creation of value in infrastructure projects.

Negotiating and deciding about value at the front end of infrastructure projects
The project’s potential to deliver value over its lifecycle is significantly influenced by the activities and decisions at the project front end. The project front end is a strategically important phase that influences project success: it is where the project owner (investor) must form a clear idea of its goals for the project and identify the necessary partners for the project delivery. As such, it has received increasing research attention (Klakegg et al., 2009). The project front end offers potential for innovation and planning that can optimize value creation (Kolltveit and Grønhaug, 2004); conversely, many factors leading to project failure have their origins at the project front end (Edkins et al., 2013). Understanding stakeholders’ needs (Kolltveit and Grønhaug, 2004) and customers’ expectations (Brady et al., 2005) are considered as especially important at the project front end.

Several issues require decisions at the project front end, such as stakeholders’ needs and requirements, technology and design, policy and strategy, finance and commercial agreements (Edkins et al., 2013). Such decisions fall into two main areas at project front end: whether to invest in a specific project proposal (Laursen and Svejvig, 2016; Williams and Samset, 2010), and the design and definition of the project’s goals, objectives and expected value of projects (Williams and Samset, 2010). To address a variety of stakeholder perspectives and gain support for funding decisions, the strategic framing must be wide enough to encompass the complex nature of transport infrastructure investments (Salet et al., 2013). Considering multiple infrastructure alternatives will aid decision processes and proactively incorporate a level of adaptability to support stakeholder negotiations (Giezen et al., 2015; Priemus, 2007). Social network analysis and taking a lifecycle approach to stakeholder management can provide both deeper understanding of the complex interrelationships between stakeholders and better management decisions (Mok et al., 2015, 2017). Too often infrastructure projects fail to deliver the forecast outcomes; decision processes that incorporate available real-world data and experience are proposed to provide more realistic expectations and support better infrastructure decisions (Flyvbjerg, 2013).

Making decisions during the project front end can be challenging. Front-end decisions require evaluations and estimations that look far into the future and are based on very uncertain information (Williams and Samset, 2010); merging such subjective decisions with diverse stakeholder expectations and the project front end can become fuzzy, messy or a “wicked mess” (Edkins et al., 2013; Williams and Samset, 2010). Humans are not rational decision makers (Miller and Hobbs, 2009), and typical problems at the project front end include overestimating benefits and underestimating costs (Flyvbjerg, 2009a). This bias can have technical, psychological and political-economic explanations, and can be subconscious or accidental, but such “misrepresentations” can also be intentional, designed to influence decisions to implement a specific project (Flyvbjerg, 2009a).

Lifecycle-oriented framing of project value
Judging a project’s value is subjective, and the ways that stakeholders “frame” a situation affect their perception of value and influence their decision making. A stakeholder’s frame is their underlying mental picture of the topic, used to select, filter, interpret and communicate
information; the type of frame used will influence the perceived salience of particular issues (Entman, 1993; Goffman, 1974). The concept of framing, developed in the field of sociology (Bateson, 1972; Goffman, 1974), is “immediately applicable to the selection and communication of values” in a corporate communication context (Schmeltz, 2014, p. 193). Frames can be cognitive representations (knowledge structures in individuals’ minds) or interactional co-constructions (dynamic ways of negotiating or shaping meaning in interactions between people) (Dewulf et al., 2009). We adopt the interactional view of framing whereby project stakeholders explicate and negotiate their lifecycle-oriented project interests at the front end of projects and so co-construct the meaning of project value.

A project’s key strategic decisions are based on what premise should this project be financed and conducted. Several studies have examined how stakeholders influence on the ways that project value is framed (Ang et al., 2015, 2017). Aaltonen and Kujala (2010) used a lifecycle perspective to explore the ways that secondary stakeholders – often community or environmental groups opposed to the project – influence investment decisions in a construction project. They found that involving secondary stakeholders at the beginning of the project lifecycle is most beneficial, while involving them only at the execution phase or beyond, as often happens, can be disruptive (Aaltonen and Kujala, 2010).

The main influence of framing on decision making and action is whether an issue is framed as an opportunity (positive) or threat (negative). Negative framing has a higher impact on decisions than positive framing of the same information (Kahneman and Tversky, 1979), with the framing of risks showing strongly influencing behavior (Hallahan, 1999). A study of framing in connection with project portfolio management showed how project personnel framed uncertainties as opportunities and threats, with the type of framing reflected in the consequent actions (Martinsuo et al., 2014). In a study of corporate social responsibility communication, Schmeltz (2014) found that deliberate value-based framing of issues can affect perceptions, which, in turn, affected resulting behaviors. In this study, we build on this idea of value-based framing and anticipate that the stakeholders use their specific lifecycle-oriented framing of value and, thereby, promote their goals and aspirations at the front end of infrastructure projects. It is important to develop better understanding of how value can be delivered to all stakeholders successfully.

**Research method**

**Research design and overview to the cases**

A qualitative multiple-case research design is used to reveal the patterns of stakeholders’ lifecycle-oriented framing of value at the front end of infrastructure projects. Multiple-case design brings the benefits of robustness, versatility and replication (Yin, 2009), enhances the generalizability of results (Saunders et al., 2009) and removes the possible distortion caused by uniqueness and specific context if just one case is used (Yin, 2009).

This study was designed to explore strategic ongoing or completed infrastructure projects with regional or national significance, using case projects of public infrastructure so that their progress could be observed through public media. Transport projects were selected as the focus to enable sufficient similarity. Transport infrastructure projects have significant effects on the environment and region over time, highlighting the importance and multi-dimensionality of value. We sought cases that had the potential to produce both confirmatory and contrasting results and enable theoretical replication (Yin, 2009), although they differed in terms of the transport infrastructure being built, success of the project, contractual arrangements, contexts and experiences with value creation. The three selected case projects are Ring Rail Line, West Metro and Tampere Rantatunneli in Finland (referred to as RAIL, METRO and TUNNEL) and they highlight the specific nature of the infrastructure developed and delivered in the project. Table I summarizes the basic characteristics of the projects and each project is further described below.
RAIL provides an important public transport link between the main railway line connecting the capital city with the north, and the nearby airport. The objective of the 18-km-long track is to improve the service level of the public transport in the municipalities of the capital region and to offer more fluid connections to the airport. The track connects the district centers of the metropolitan area to each other and facilitates the movement of people within the metropolitan area. The project was carried out cooperatively between the national transport agency, a medium-sized city and the local airport operator (Liikennevirasto, 2016a) using a traditional design-bid-build method.

METRO creates an extension to the existing subway network in the capital region between Helsinki (the capital) and a large nearby city, Espoo. The project extends the subway of Helsinki westward to Espoo and across its multiple residential areas. The construction is divided into two separate projects, and this study focuses only on the front end of the first project, constructing a 14-km-long metro line with eight new metro stations (Länsimetro, 2016). A subsequent second extension project is now in progress, continuing the subway further west. The project was carried out by a joint venture company owned by Helsinki and Espoo.

TUNNEL replaces a previous route next to a lake at the center of a large city Tampere, and changes traffic arrangements for 4 km including 2.3 km of underground tunnel. The project’s objective is to free the northern center of the city for the use of the town residents, to construct a better entrance to the shore of the nearby lake and to improve traffic through the city. A new district of blocks of flats is designed at the lakeshore. The key project stakeholders are the city, government traffic agency, the main construction contractor and two design contractors. The project was carried out through an alliance model where the participants designed and carried out the project together, with a shared incentive scheme (Liikennevirasto, 2016b).
Data collection
The research was conducted through a document-based study, exclusively using existing news items, documents, websites and publicly available information as data sources. In public projects with a strong influence on society, news is the primary medium for sharing information and also for external stakeholders to influence the project. Written documents play a central role in social settings, informing both organizations and individuals (Atkinson and Coffey, 2004). Although document-based data are limited through the way in which they are produced – i.e., in this case written by journalists – they can well be used as “data in their own right” (Atkinson and Coffey, 2004, p. 59), particularly when the researchers acknowledge the conditions in which the data have been produced and take into account the validity implications. Validity issues are discussed at the end of this paper.

The primary research data are news and stories in newspapers, collected for all projects from the article archive of Helsingin Sanomat from 1990 onwards. Helsingin Sanomat is the most significant newspaper nationally and the most important newspaper of the capital area. Data for TUNNEL were also collected from the article archives of Aamulehti, beginning from 2011; the tunnel is located outside the metropolitan area and Aamulehti is the regional newspaper for that area. The accessible material sufficiently covered the active phases in the project front ends, older materials were not required.

The article search was made using the country’s native language. All news data for each of the infrastructure projects were collected, but only articles relevant to the projects’ front end, the focus of this study, were used (Table II). Secondary data comprised available on-line documentation concerning project decision making and planning (including intermediary and final reports, project audit reports, projects’ websites, and unofficial documents about the projects’ histories), and information leaflets, presentations and other supportive materials.

Data analysis
The data were organized into spreadsheets according to the date, media source (Helsingin Sanomat or Aamulehti) and relevance. Articles were excluded from the analysis if they were (mainly) a duplicate, if the case project was not the main focus, or if there was no linkage to project value (see Table II).

Each relevant article content was individually coded, using three categories of coding. First, the “speaker” in the article (the stakeholder who expressed the value issue, e.g. journalist, politician, public servant or some other stakeholder) and the type of the article (e.g. a news article or an opinion piece) were coded. If there were multiple speakers in a single article, all the speakers were analyzed separately. Second, the dimensions of project value were identified and coded, as illustrated in Table III, building upon the established idea of triple-bottom-line approach to sustainability (financial, social and ecological value) and extending it with novel categories of regional value and comparative value. The codes were identified inductively when reading the article, and during the analysis they were grouped into logical categories. All of the selected codes appeared in the newspaper data at least three times, and viewpoints appearing only once or twice in the data were excluded.

The third type of coding focused on how the stakeholder framed the value, as either positive or negative (Martinsuo et al., 2014). “Positive” refers to arguments supporting or

<table>
<thead>
<tr>
<th></th>
<th>Available data at the project front end</th>
<th>Total number of articles</th>
<th>Number of relevant articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAIL</td>
<td>January 1990–December 2008</td>
<td>255</td>
<td>128</td>
</tr>
<tr>
<td>METRO</td>
<td>January 1990–May 2008</td>
<td>431</td>
<td>260</td>
</tr>
<tr>
<td>TUNNEL</td>
<td>August 2007–September 2013</td>
<td>97</td>
<td>83</td>
</tr>
</tbody>
</table>

Table II. Summary of the newspaper data

Lifecycle-oriented framing
issues promoting the initiation of the project; “negative” refers to arguments objecting to or issues endangering the initiation of the project; and “neutral” refers to neither being the case. Four other ways that stakeholders framed the value at the project front end were identified inductively from the data and coded: uncertainty, timing of cost and benefit realization, project relations and external sponsorship. The coding approach to framing is summarized in Table IV.

All coding was done separately for each project, using case-specific tables and narratives to analyze the prevalence of the value dimensions and their lifecycle-oriented framing. Frequencies of value-related and frame-related issues were calculated, to understand the extent of the discourse in the documents. The cross-case analysis consisted of first cross-tabulating the results concerning project value and its positive or negative

<table>
<thead>
<tr>
<th>Category</th>
<th>Codes</th>
<th>Sample quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial value</td>
<td>Project cost</td>
<td>The Planning Group of the capital region wishes the Ministry of Transport and Communication would make a financial commitment to the new railway (RAIL)</td>
</tr>
<tr>
<td></td>
<td>Project income</td>
<td>The subway project will be buried due to Espoo. The city council of Espoo has clearly expressed there is no money for a subway. Helsinki would have wanted a western extension to the subway (METRO)</td>
</tr>
<tr>
<td></td>
<td>Project financing</td>
<td>The chair of [a political group] considers the tunnel too risky for this economic situation, and too expensive for its benefits (TUNNEL)</td>
</tr>
<tr>
<td></td>
<td>Share of cost</td>
<td></td>
</tr>
<tr>
<td>Social value</td>
<td>Housing benefits</td>
<td>The new railway will enable the building of a new residential area for 20,000–25,000 inhabitants (RAIL)</td>
</tr>
<tr>
<td></td>
<td>Traffic and travel time benefits</td>
<td>The urban structure of Espoo is dominated by small apartments. The housing is not dense enough for a heavy railway solution (METRO)</td>
</tr>
<tr>
<td></td>
<td>(including public transport benefits)</td>
<td>Even if there are some traffic jams, it is normal for a city of this size. The benefits are not worth hundreds of millions of euros (TUNNEL)</td>
</tr>
<tr>
<td>Ecological value</td>
<td>Environmental value</td>
<td>The routing of the railway has been adjusted due to endangered animal observations (RAIL)</td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td>We, the residents of Helsinki, have become tired of growing private motoring, emissions and noise (METRO)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental issues, such as traffic noise, will be mitigated and a busy street can be hidden (TUNNEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Even if there are some traffic jams, it is normal for a city of this size. The benefits are not worth hundreds of millions of euros (TUNNEL)</td>
</tr>
<tr>
<td>Regional value</td>
<td>Employment benefits</td>
<td>The largest benefit of RAIL is that it will connect the whole capital region so people can travel easily and in environmentally friendly way (RAIL)</td>
</tr>
<tr>
<td></td>
<td>Business benefits</td>
<td>The subway is worth its high price. The new subway will become a focal transport line for connecting the capital region as one metropolitan city (METRO)</td>
</tr>
<tr>
<td></td>
<td>Benefits of connecting regions</td>
<td>The chairman of [name of a union] is supporting the TUNNEL due to its large employment effects (TUNNEL)</td>
</tr>
<tr>
<td>Comparative value</td>
<td>Project compared to other projects</td>
<td>There are several transport infrastructure projects competing for the government funding in the capital region. These include for example RAIL and [names of the other projects omitted] (RAIL)</td>
</tr>
<tr>
<td></td>
<td>alternative project designs or</td>
<td>A light rail solution is one option for the new public transport system in Espoo. METRO and buses are the two other alternatives (METRO)</td>
</tr>
<tr>
<td></td>
<td>alternative uses of funding</td>
<td>TUNNEL should not be evaluated as a single project. The project has a central role in the overall development of the city center (TUNNEL)</td>
</tr>
</tbody>
</table>

Table III. Categories of project value, listing of included codes and example quotes
framing, separately cross-tabulating the results concerning the other dimensions of the lifecycle-oriented framing of value, and finally exploring the similarities and differences across the cases, to identify patterns concerning project value and its lifecycle-oriented framing. Also illustrative quotes from the document data are used to highlight key findings. The secondary data were used in three ways: to develop a general overview of the projects, to add and check details in the analysis, and to verify and validate findings.

**Results**

*Overview of the front-end processes in the case projects*

The case projects differed in both context and front-end processes. Table V summarizes the front-end processes of the three case projects. RAIL’s front end included four phases. Much before the official funding decision, the benefits of the railway idea were analyzed. At that time, the country could not afford to initiate the project, but RAIL began to be included in

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition and dimensions of coding</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation toward the initiation of the project</td>
<td>Argumentation concerning whether or not the project should be started</td>
<td>Positive: arguments supporting or issues promoting the project initiation</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>Negative: arguments objecting or issues endangering the project initiation</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>Neutral: arguments neither positive nor negative concerning the project initiation</td>
</tr>
<tr>
<td>Uncertainty dealing with value</td>
<td>Expressed uncertainty concerning project benefits, effects or consequences</td>
<td>Uncertainty of project costs</td>
</tr>
<tr>
<td></td>
<td>Uncertainty of housing benefits</td>
<td>Uncertainty of employment effects</td>
</tr>
<tr>
<td>Timing of cost and benefit realization</td>
<td>Anticipation of cost and benefit realization</td>
<td>During: project costs, employment effects</td>
</tr>
<tr>
<td></td>
<td>During the project implementation</td>
<td>After: housing benefits, public transport, transport and traffic benefits</td>
</tr>
<tr>
<td>Project relations</td>
<td>Relations of the project with other projects</td>
<td>Competing projects or project proposals</td>
</tr>
<tr>
<td></td>
<td>Alternative project types, project designs etc.</td>
<td>Competition for specialized project resources</td>
</tr>
<tr>
<td>External sponsorship</td>
<td>Funding or other kind of support that was needed for or enabled the urgency of the decision or starting the project</td>
<td>National government as a key funder</td>
</tr>
</tbody>
</table>

Table V. Overview of the front-end processes for the case projects
the city’s strategy papers and vision statements. Preliminary planning was enabled by the improved general economic situation and the accelerating internal migration to the capital region. Detailed plans for the design and routing of the railway were made and adjusted through stakeholders’ feedback. The city reached a consensus with stakeholders that the railway should be built as soon as possible, and negotiated with the government and other key stakeholders. A preliminary funding decision was eventually made by the government, but parliamentary elections meant that it took another year to persuade and convince the decision makers and confirm the government’s commitment. The efforts of the city and Planning Group paid off, and the parliament made a positive funding decision.

The front end for METRO can also be divided into four distinctive phases, but the duration for the front end was clearly longer than for RAIL (Table V). It took decades to create the vision and ideas for the project and explore various railway connections between Helsinki and Espoo, and these general plans were not initially acted upon. Helsinki’s subway opened in the 1980s, which led to more active discussions about the western extension. Debate about whether or not to proceed to preliminary planning for METRO continued through the 1990s: competing alternatives were presented and proposed, numerous analyses were made, bargaining between the two cities took place, alternative projects were prioritized to either oppose or justify the project, and the cities considered whether the planning should continue and how. Detailed planning occurred fairly rapidly but resulted in a cost estimate significantly higher than the earlier approximations, which caused further critique, negotiation and discussion. The national government’s commitment to METRO became crucial, with doubts about it covering 30 percent of the budget. Eventually, the government committed but set an upper limit to their share of funding, which encouraged Helsinki and Espoo to make the investment decision on METRO.

The front end for TUNNEL was shorter than the two other projects and comprised two distinct phases (Table V). The first involved identifying solutions to the traffic issues in the center of the Tampere, and discussion among key stakeholders centered on whether or not to build the tunnel. In this early phase, benefits and costs were debated and rough plans were made. The city council composition was then changed through municipal elections, concurrent with a decrease in the economic situation and a decline in employment. As a result, some politicians changed their opinions to favor the TUNNEL, and the city council decided to initiate the project. The choice of implementing the project through an alliance model meant that detailed planning continued even after the investment decision was made, as the incentive model of the contract encouraged all partners to be involved in innovating and finetuning the details.

Project value at the front end of the case projects
The five dimensions of project value (financial, social, ecological, regional and comparative) appeared in different ways in the three case projects. The discourse on financial value dominated in the data and was particularly prominent in TUNNEL and METRO, and all three projects were seen as sources of new income for the cities involved. However, the high costs of the projects caused debate and concern, which also was communicated in the media. For example, the METRO project opponents criticized the expensive subway option and emphasized the existence of alternative less costly solutions with better service levels, including developing the existing bus network and a light rail solution. As the mayor of Espoo and a politician of Espoo described:

According to the mayor, the building costs of the light rail alternative are 10–50% of the subway solution (News article, citing mayor of Espoo).

The costs of the bus alternative are significantly lower than the costs of the subway (Opinion piece, politician of Espoo).
Social value from the projects was anticipated in terms of benefits in housing, traffic and transport. Housing issues were prominent in the public debate for RAIL because of the accelerating internal migration to the city and the capital region. A journalist described the change during the active planning phase in this way:

The recession put the ambitious plans of the city on hold, but the better economic situation and the accelerating internal migration have brought back to life both the development of the residential areas and the RAIL. In addition, the Planning Group has returned the RAIL to the list of the most important traffic infrastructure projects in the capital region.

Discussions for the TUNNEL project were dominated by traffic- and transport-oriented social values. Project supporters emphasized the worsening traffic situation and the need to develop a new residential area next to the city center. Opposing politicians disagreed about the severity of the traffic problems – or at least believed that the tunnel was not the best way to mitigate the problems – and claimed that the residential area could be built without the tunnel. The data suggest that the housing issues were tightly connected with transport solutions, as indicated in the following excerpts:

The supporters of the project justify their opinion with, for example, traffic improvements; the politicians opposing the project emphasize the high cost. [article continues] – The chair of [a political party supporting the project] considers the main benefits of the tunnel its employment effects and the possibilities for building a residential area next to the city center. It is cheaper to build residential areas close to current infrastructure and services than building completely new areas (News article describing the viewpoints of the two sides).

Even if there are small traffic jams, it is completely normal for a city of this size. The benefits are not worth a hundred million euros (A politician opposing the project).

Ecological value appeared in a minority of articles. It was expressed both in terms of the disturbances, noise and pollution from current transport solutions, the project as an environmentally friendly solution and the potential threats coming from implementing the projects nearby nature, residential areas and water.

The data revealed regional value as one novel dimension of project value, particularly relevant to transport-related infrastructure projects. Employment and business benefits were emphasized quite clearly in TUNNEL, where unemployment was crucial to the decision to implement the project. Arguments opposing and supporting the project were prominent in the strategy phase and were still evident after the municipal elections. At that time, a few politicians who represented a political party that had officially opposed TUNNEL during the municipal elections decided to change their opinion and vote in favor of TUNNEL, regardless of their party’s official viewpoint. The anticipated increase in employment was decisive, and the city council initiated the TUNNEL project:

Four politicians are going to vote in favor of the tunnel, despite the party’s official line. “I have felt quite conflicted by the situation, because unemployment is growing and our city region is regressing. This is an excellent revitalizing project for the region”, [the name of the politician] explained (Journalist interviewing one of the politicians).

The aspect of connecting regions appeared more clearly in RAIL. Two arguments were formed very early in the vision and strategy creation phase of the project: the railway enabling the development of new residential areas and the railway creating a better public transport connection to the airport, as was concluded in one of the early studies:

The national railway company and the city are finalizing a preliminary study about RAIL. The company and the city unanimously agree that the railway should be built. It will create a faster public transport connection to the airport and serve the new residential areas (News article).
This connectedness was emphasized during detailed planning and funding negotiations, and was used as part of the argument to win public approval and when seeking funding commitment from the government. A newspaper article cited the mayor of the city:

The mayor believes that RAIL should be also of interest for the government, because “in this country the public transport connections to the airport are, in international terms, very poor” (News article).

The analysis revealed the existence of another novel category, comparative value. Project stakeholders compared different investment options and project implementation options, and linked the project proposal to previous, ongoing or planned investments. Transport infrastructure projects did not appear as separate entities, but their value was clearly connected by existing infrastructures and their long-term development in the region. Similarly, the project could be opposed, due to the possibility for reaching the same benefits through alternative means.

This comparative value was particularly apparent in METRO and TUNNEL, where alternative transport means and project designs (buses and light rails in METRO) and alternative routes or implementation types (TUNNEL) were used for comparison. In the METRO project front end, public transport in Espoo was completely bus-based. Possibly due to the decentralized nature of Espoo, residents considered the bus network quite satisfactory. It was evident that the bus network would require significant changes to save costs, if a subway was to be built, and this was a main argument for opponents of the subway option, both members of the general public and politicians of Espoo.

The comparative value is considered in the following quotes:

According to the mayor, the building costs of the light rail alternative are 10–50% of the subway solution (News article, citing mayor of Espoo).

The costs of the bus alternative are significantly lower than the costs of the subway (Opinion piece, politician of Espoo).

Table VI summarizes the dimensions of value identified at the front end of the case projects and examples of the positive and negative ways in which the value dimension appeared among stakeholders’ claims.

As shown in Table VI, the three transport projects had different arguments for and against the projects and different issues promoting and/or challenging value expectations. RAIL had fewer opinions against the project idea itself and clearer unanimity concerning the investment need among decision makers, but several negative issues threatened the project’s implementation, such as late increases in the cost estimates, uncertainty of governmental funding, negative impacts on residents on some regions, endangered animals, and alternative routings and designs. Opinions about METRO and TUNNEL were much more divided between the supporters and opponents of the projects, with debate among stakeholders, politicians representing different ideological and regional strategies, and the key partners involved in the project design. The negative views were dominated by arguments that questioned the overall purpose of the project and featured alternative “better” solutions to the proposed project design, goal or value. In all three projects, public discussion was raised by residents impacted by the projects, both positively and negatively.

 Lifecycle-oriented framing of value at the project front end
Stakeholders for each project framed their arguments about project value from a number of perspectives. We identified four prominent themes: uncertainty, timing of cost and benefit realization, project relations and external sponsorship (Table VII). Overall, lifecycle-oriented framing was clearly more active in METRO than RAIL and TUNNEL. The use of framing in
| Financial value | Frequency: 38 articles | Positive | If the government agrees to finance part of the project, the city is ready to initiate the project very quickly. The city will get income by selling land areas for residential development purposes. | Negative | The city cannot initiate the project without financial commitment from the government. Estimated cost was increased very late in front-end phase. The city considered it unfair that it had to bear this whole increase. |
| Social value: housing benefits | Frequency: 32 articles | Positive | The area of the project attracts a lot of people, especially due to employment possibilities. The increased internal migration led to a housing issue for the city. The new railway enables the building of new and the development of existing residential areas, both with good railway connection. | Negative | The new residential areas and the railway are highly dependent on each other. Without the railway the new residential areas are endangered, and without the new residential areas the cost of the railway cannot be covered. |
| Social value: traffic and transport benefits | Frequency: 18 articles | Positive | Railway is an effective form of public transport, and the new connections can increase the popularity of public transport. | |
| | Frequency: 129 articles | Positive | The city will get income by selling land areas for residential development purposes. | Negative | The project is too expensive; less expensive transport technologies are available. The city cannot initiate the project without significant financial commitment from the government. The government’s share of cost is too low. |
| | Frequency: 43 articles | Positive | The project enables accelerated housing activities to match the increasing need for apartments. | Negative | In order for the project to be profitable, highly centralized housing is required near the subway line. |
| | Frequency: 45 articles | Positive | The city will get income by selling land areas for residential development purposes. The government has agreed to cover 1/3 of the cost. | Negative | The project is too expensive. The cost of the project and the possible housing income are too uncertain. The city should use the money for other purposes. |
| | Frequency: 12 articles | Positive | The tunnel enables the development of a new residential area next to the city center. It is cheaper to develop residential areas close to the existing services and infrastructure. | Negative | The income from the housing for the city is uncertain. The new residential area will become too expensive for many inhabitants. |

(continued)
<table>
<thead>
<tr>
<th>RAIL</th>
<th>METRO</th>
<th>TUNNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative</strong></td>
<td><strong>Positive</strong></td>
<td><strong>There are no “real” traffic jam issues in the city (i.e. the problem is considered minor)</strong></td>
</tr>
<tr>
<td>While the new railway connections benefit many people, some others will suffer from the altered bus connections.</td>
<td>The current bus network works very well. A new subway will require significant cuts to the bus network, leading to longer travel times for many people.</td>
<td></td>
</tr>
<tr>
<td><strong>Ecological value</strong></td>
<td><strong>Frequency: 17 articles</strong></td>
<td><strong>Frequency: 21 articles</strong></td>
</tr>
<tr>
<td><strong>Positive</strong></td>
<td>Railway as a form of public transport is environmentally friendly.</td>
<td>Railway as a form of public transport is environmentally friendly.</td>
</tr>
<tr>
<td><strong>Negative</strong></td>
<td>Although the project has environmental benefits, they should not be exaggerated.</td>
<td>The current bus traffic causes disturbance in the city center of Helsinki.</td>
</tr>
<tr>
<td>Observed endangered animals required slight adjustments to the route of the railway during front-end planning.</td>
<td>The positive effects of decreased bus traffic should not be exaggerated.</td>
<td></td>
</tr>
<tr>
<td><strong>Regional value: employment and business benefits</strong></td>
<td><strong>Frequency: 15 articles</strong></td>
<td><strong>Frequency: 21 articles</strong></td>
</tr>
<tr>
<td><strong>Positive</strong></td>
<td>The project will create a better public transport connection to a growing business area. The development of this business area has a large role in the future plans of the city.</td>
<td>The tunnel will mitigate many environmental problems, such as traffic noise.</td>
</tr>
<tr>
<td>The project will improve people’s options for traveling between home and work.</td>
<td>Road traffic noise is not a major problem. Noise of a nearby railway is a bigger issue.</td>
<td>Negative</td>
</tr>
<tr>
<td>Building of both the tunnel and the new residential area will generate new jobs.</td>
<td>The tunnel does not mitigate railway noise at all.</td>
<td></td>
</tr>
<tr>
<td>The positive employment effect is especially important in a difficult financial situation (esp. high levels of unemployment).</td>
<td>Frequency: 25 articles</td>
<td></td>
</tr>
<tr>
<td><strong>Negative</strong></td>
<td>The project will improve people’s options for traveling between home and work.</td>
<td>The positive employment effect is especially important in a difficult financial situation (esp. high levels of unemployment).</td>
</tr>
<tr>
<td><strong>(continued)</strong></td>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td>The employment figures are uncertain.</td>
<td>The new jobs will not benefit the city area or the country; many employees will be foreign.</td>
</tr>
</tbody>
</table>
### Regional value: benefits of connecting regions

**RAIL**

- Frequency: 21 articles
- Positive: The railway will enable better public transport by creating better connections: to the airport, to a growing business area next to the airport, and to the new residential areas generally throughout the capital region.
- Negative: The railway connection to the airport could be straighter and faster, and could better benefit the whole country. These would both require the railway to follow a different route.

**METRO**

- Frequency: 21 articles
- Positive: The subway will create a more seamless public transport connection between Helsinki and Espoo.
- Negative: Due to the required changes to the bus network, many people will suffer from worse connections between the two cities as well.

**TUNNEL**

- Frequency: 2 articles

### Comparative value

**RAIL**

- Frequency: 21 articles
- Positive: The project is a focal part of a wide range of transport infrastructure projects in the region.
- Negative: Several alternative project designs or routings are available. There is competition for resources and, especially, money between different project initiatives in the capital region. The delayed initiation of RAIL can cause difficulties for the subsequent transport infrastructure projects.

**METRO**

- Frequency: 108 articles
- Positive: The project has a logical linkage to the existing subway network in Helsinki.
- Negative: There are several alternative project designs available. There is competition between different project initiatives in the capital region.

**TUNNEL**

- Frequency: 23 articles
- Positive: The project plays a central part in the development of the city center.
- Negative: Several alternative project designs are available. If the tunnel is not built, it will endanger many other development ideas for the city center. The cost of the project endangers other activities of the city.
Table VII.
Themes of argumentation for project value at the front end of the case projects

<table>
<thead>
<tr>
<th>RAIL</th>
<th>METRO</th>
<th>TUNNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uncertainty</strong></td>
<td>Frequency: 25 articles</td>
<td>Frequency: 67 articles</td>
</tr>
<tr>
<td>Uncertainty of the project budget</td>
<td></td>
<td>Uncertainty of the project budget</td>
</tr>
<tr>
<td>Realized uncertainty in earlier reports, analyses and studies in creating urgency for project initiation</td>
<td></td>
<td>Uncertain effects on the existing public transport network and people's behavior</td>
</tr>
<tr>
<td><strong>Timing of cost and benefit realization</strong></td>
<td></td>
<td>During the project (100 articles):</td>
</tr>
<tr>
<td>During the project (41 articles):</td>
<td></td>
<td>Cost of the project</td>
</tr>
<tr>
<td>Cost of the project</td>
<td></td>
<td>Share of cost between key stakeholders</td>
</tr>
<tr>
<td>Share of cost between key stakeholders</td>
<td></td>
<td>Benefits of connecting areas</td>
</tr>
<tr>
<td>After the project (62 articles):</td>
<td></td>
<td>Housing benefits</td>
</tr>
<tr>
<td>Benefits of connecting areas</td>
<td></td>
<td>Income from the project (housing)</td>
</tr>
<tr>
<td>After the project (134 articles):</td>
<td></td>
<td>Traffic and travel time benefits</td>
</tr>
<tr>
<td>Housing benefits</td>
<td></td>
<td>Negative effects on housing and travel times</td>
</tr>
<tr>
<td>Income from the project (housing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic and travel time benefits</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project relations</strong></td>
<td>Frequency: 36 articles</td>
<td>Frequency: 115 articles</td>
</tr>
<tr>
<td>Alternative project designs</td>
<td></td>
<td>Alternative project designs</td>
</tr>
<tr>
<td>Different routings:</td>
<td></td>
<td>Different routings:</td>
</tr>
<tr>
<td>To comply with environmental requirements (change implemented)</td>
<td></td>
<td>Different routings evaluated</td>
</tr>
<tr>
<td>To create a faster connection to the airport (not implemented)</td>
<td></td>
<td>Different technologies:</td>
</tr>
<tr>
<td>Competing projects</td>
<td></td>
<td>Bus, light rail and metro compared (metro selected)</td>
</tr>
<tr>
<td>Multiple transport infrastructure projects competing for national government funding</td>
<td></td>
<td>Competing projects</td>
</tr>
<tr>
<td>Also competition for expert workforce</td>
<td></td>
<td>Multiple transport infrastructure projects competing for national government funding</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>RAIL</th>
<th>METRO</th>
<th>TUNNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsequent projects</td>
<td>Subsequent projects</td>
<td>Subsequent projects</td>
</tr>
<tr>
<td>RAIL had a central role in different vision and strategies, in which subsequent future projects would be linked to RAIL (from the perspective of the public transport network)</td>
<td>Helsinki emphasized how METRO would be a logical extension to the existing subway network</td>
<td>The project supporters emphasizing how TUNNEL has a central role in the overall development of the city center</td>
</tr>
<tr>
<td>Symbiotic projects</td>
<td>Symbiotic projects</td>
<td>Symbiotic projects</td>
</tr>
<tr>
<td>Almost all of the politicians and public servants emphasizing how RAIL and the development of the residential area were dependent on each other</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Frequency: 29 articles</td>
<td>Frequency: 63 articles</td>
<td>Frequency: 11 articles</td>
</tr>
<tr>
<td>Share of cost</td>
<td>Share of cost</td>
<td>Share of cost</td>
</tr>
<tr>
<td>City representatives emphasized the importance and urgency of national government’s funding decision</td>
<td>Debates about the fair share of cost secured by the national government</td>
<td>National government’s funding decision relatively early in the project front end</td>
</tr>
<tr>
<td>Many negotiations about a prioritized list of transport infrastructure projects in the region</td>
<td>Many negotiations about a prioritized list of transport infrastructure projects in the region</td>
<td>The funding decision as an argument for supporting the project</td>
</tr>
</tbody>
</table>
relative terms (i.e. share of expressions compared to the total number of articles) appeared equally actively across the three projects in terms of uncertainty and timing of costs and benefits during the project. Framing through timing of cost and benefit realization after the project and external sponsorship was clearly more active in RAIL and METRO than in TUNNEL; Framing through project relations was more active in METRO than RAIL and TUNNEL.

Framing of value through uncertainty. In most of the news articles, the speakers followed a relatively deterministic approach to value: “if project X is implemented, value Y will be achieved” (or vice versa). On several occasions, however, they expressed uncertainty about the value. The two main viewpoints emphasized by the speakers were the uncertainty of the expected benefits or the estimated project budget (especially opponents of METRO and TUNNEL), and the role of different reports, analyses and studies in decreasing uncertainty (especially supporters of METRO and TUNNEL in response to opponents’ arguments). In addition, adjustments to earlier forecasts highlighted the uncertainty inherent in such forecasts, which for RAIL resulted in increased urgency in funding the project.

Stakeholders in all three projects were concerned about budget uncertainty. The project benefits to employment and housing were also considered highly uncertain – or even inaccurate – by some politicians opposing TUNNEL. In METRO, similar uncertainty was related to the effects of the project on the existing public transport network and the consequences on people’s behavior (public transport and private motoring, in particular). Politicians and public servants in favor of the projects addressed concerns about uncertainty by basing many of their counter-arguments on reports and studies:

According to the study conducted by [a research institute], the building of the tunnel and the subsequent residential area will generate work to the value of 11,000 person years (News article).

The RAIL project had the advantage of earlier studies and forecasts on the development and internal migration of country residents. Changes in these forecasts, such as internal migration to the capital region increasing faster than expected, accelerated the preliminary planning of RAIL and were used as arguments by the city and the Planning Group for an urgent funding decision by the government. The same phenomenon concerning the internal migration to the capital region was evident in the front end of METRO.

Framing of value through the timing of cost and benefit realization. The front-end value argumentation about the timing of cost and benefit realization focused on both the project implementation and the post-project operations phase. In all three projects, more value dimensions were discussed concerning the post-project phases, including for instance the social benefits (or disadvantages) for housing, traffic and travel times. The value dimension most discussed during the implementation phase was financial value, especially the project cost and the share of cost.

In RAIL, the benefits related to the post-project phase were nearly unanimously agreed by most of the speakers. However, it was clear that the city would not (or could not) implement the project without government funding and therefore much discussion in the implementation phase focused on the financial value, in particular how costs could be shared between the two cities and the national government.

In METRO and TUNNEL, opinions on the post-project phase benefits and, especially the ratio between costs and benefits, were clearly more divided than in RAIL. For METRO, a number of speakers representing both the general public and the decision makers were very skeptical about the need for the project. The main arguments were that the existing public transport network worked well, a heavy railway solution was not optimal for the decentralized urban structure of Espoo, and the project was significantly too expensive. In TUNNEL, the opinions and the projected votes of the decision makers remained very even until the very end of the front-end phase. However, in the last stages of the TUNNEL’s front
end, a few politicians who had formerly opposed the project changed their mind and began
to offer their support. When asked to justify their new viewpoints, the main argument was
the employment benefits of the project in both implementation and post-project phases, as
one of the politicians described in an interview:

The building of the tunnel and the subsequent residential area will generate work for thousands of
people. This will in turn deliver necessary tax income for the city (News article).

Framing of value through project relations. The three case projects were not discussed only
as individual projects; value arguments focused on each project’s links and dependencies
with other projects (Figure 1). The value arguments included comparing the value delivered
by each individual focal project with that of different projects or project designs, and also
that of multiple projects simultaneously or subsequently.

In all projects, alternative project designs were discussed. Three different project designs
were discussed in TUNNEL, and those supporting or opposing a specific design alternative
focused on illustrating its value or lack of value. For example, politicians opposing the
long tunnel based their opinion on cost, while supporters of the tunnel based their
counter-argument on a comparative study:

The shorter tunnel option would create only additional problems: the noise and pollution would not
be decreased, the street would still be an obstacle for other activities and the area could not be
developed optimally. In addition, this option is not cheap either.

Similarly, alternative project designs had a focal role in METRO. Three main alternatives
were discussed and compared: the subway option, the light rail option and the development of
the existing bus network. Within all three options, several different routings were evaluated.

The competing projects phenomenon was especially evident in METRO and RAIL.
In particular, multiple competing transport infrastructure project proposals in the capital
region (including METRO and RAIL) needed to be prioritized by the cities of the capital
region and the Planning Group. The national government expected a unanimously
prioritized list of proposals that it could then consider for funding. Especially in METRO,
Espoo used the situation to its advantage by demanding several projects be included in the
prioritized list in exchange for agreeing to start planning METRO. In addition to
competition between projects or project proposals, parts of METRO and RAIL were through
tunnels and this created competition for specialized skills in the workforce.

Regarding subsequent projects, almost all of the supporters of the TUNNEL emphasized
the linked nature of the project idea – subsequent projects in the city center depended
on the tunnel being completed. Similarly, RAIL had a central role in different visions and
strategies of the future public transport network within the region and between regions.
In both cases, any rejection of the project was viewed as jeopardizing future development.
In METRO, Helsinki emphasized that after building the subway to its own region in the
1980s, it would be logical to continue the subway network west, thus justifying the need for
the METRO project. However, Helsinki also discussed and evaluated several routes within
its own city region.

The symbiotic projects phenomenon was emphasized throughout the front-end phase in
RAIL, where the majority of politicians and public servants emphasized how RAIL and the
development of the residential area were dependent on each other. One could not be done without the other. A similar idea was expressed by the supporters of TUNNEL, although opponents argued that residential areas could have been developed without the road tunnel.

**Framing of value through external sponsorship.** Although the four cities were the focal parties for the three respective projects, the support from two external stakeholders was decisive. This included financial support from the national government (for all projects) and project prioritization and support from the Planning Group (for METRO and RAIL).

All three case projects included discussions and negotiations about the share of cost between the cities and the national government. The possibility of national funding for the TUNNEL project was a key argument of supporters, who explained how the project idea was even more sensible when approximately one-third of the total cost would be covered by the government. In comparison, the granting of national funding remained unclear for a significantly longer period for RAIL than for TUNNEL, which is why the representatives of the city and the Planning Group put extra focus on justifying the urgent need for this national funding. In METRO, for years Espoo unsuccessfully demanded a higher share of costs to be covered by the national government.

In METRO and RAIL, in addition to the funding negotiations between the city and the government, the Planning Group negotiations were critical. Several cities, each with their own opinions, expectations and priorities for the upcoming traffic infrastructure projects, participated in the Planning Group meetings. Because the government expected a prioritized list of upcoming projects unanimously accepted by the Planning Group, the cities worked hard on gaining a high priority for METRO/RAIL.

**Discussion**

This study contributes to the ongoing discussion on the project front end as the phase where significant strategic decisions are made. It highlights the negotiated and social aspects in the early phases of infrastructure projects that are politically sensitive. This study was designed to respond to RQ1. It explored expressions and, in particular, lifecycle-oriented framing of value at the front end of three transport infrastructure projects. The findings reveal the most prominent types of value that stakeholders express during the lead-up to the funding decisions, and identify four primary themes used in the arguments about whether or not the project should proceed, to complement the previously identified positive and negative framing. The different cases offer new knowledge on competing value priorities in projects and stakeholders’ argumentation in the social processes of co-defining project value.

**Context-specific and relative character of project value in infrastructure projects**

The findings extend the research on types of value, demonstrated in three regionally and politically sensitive infrastructure projects, and reveal a more nuanced view of value than represented in frameworks such as the triple bottom line (Elkington, 1994; Kivilä et al., 2017; Satterfield et al., 2000; Söderbaum, 1982). The results reflect and extend the financial, environmental (ecological) and social aspects set forth in the triple-bottom-line framework. Discourse on financial aspects of value dominates, while ecological value is also represented. The specific character of social value in transport infrastructure projects was revealed: it is manifest as benefits concerning housing, traffic and transport. These aspects of social value appeared in quite distinct ways in the projects: in RAIL, housing was strongly emphasized, potentially due to the accelerating internal migration in the region, whereas TUNNEL focused more on traffic and travel, possibly due to the city center location. In METRO, significant housing activities were not only anticipated to ensure a sufficient number of commuters to the subway but also debated between the project supporters and opponents.
These findings suggest that the content of the social dimension of value is particularly sensitive to context-specific expectations.

Regional value, in terms of employment, business and regional connectedness, was identified as a novel value category, characteristic to infrastructure projects. The three case projects showed clear differences in regional value: regional connections were emphasized in RAIL and METRO, which connected two cities with each other and to other transport systems, whereas in TUNNEL, as a local project in the city center, regional value emphasized what was at stake in terms of employment and business. As with local social value, stakeholders’ perceptions of regional value are shaped by their context-specific expectations.

This study has revealed the relative nature of project value: it is not absolute, but appears in comparison to other investment options. Much of the value-oriented debate in the case projects involved comparing the specific project proposal with ongoing investments, other implementation options and competing investment proposals. In METRO and TUNNEL, the comparisons were centered on alternative project designs, reflected in debates about the costs and benefits of different alternatives. In METRO and RAIL, the projects faced competing investment proposals in the capital region. This finding highlights that infrastructure projects are not isolated but their value needs to be understood in relative terms, as part of a portfolio of project options and synergies.

In this study, all three projects were eventually funded, implemented and completed despite stakeholders’ arguments both for and against the projects. The analysis of positive and negative framing suggests that such framing is primarily linked with the consideration of whether to invest in the project or not (Laursen and Svejvig, 2016; Williams and Samset, 2010). Previous research on stakeholder claims and influence (Aaltonen and Kujala, 2010), particularly linking the nature of the claims to the different value dimensions, has suggested negative framing as more impactful than positive framing on decisions (Hallahan, 1999; Kahneman and Tversky, 1979). This study reveals the dynamics in the negotiations and debates on value already at the project front end, the emergence and evolution of positive and negative value orientations over time, and the use of alternative value dimensions in the stakeholders’ purposeful attempts to convince other stakeholders.

Contextual, lifecycle-oriented framing of value at the project front end
Stakeholders framed their value claims through four themes that deal with the project in its context: uncertainty, timing of cost and benefit realization, project relations and external sponsorship. Earlier research has acknowledged the fuzzy terrain of the front end of large projects (Edkins et al., 2013; Williams and Samset, 2010) and pointed out its social and non-rational nature (Miller and Hobbs, 2009). This study offers insight into the structuring of this fuzziness, identifying how and when stakeholders make their claims about the proposed value of large infrastructure projects, and providing an insight into how their lifecycle-oriented arguments fit into the public debate leading up to eventual funding decisions. The findings suggest that stakeholders apply different themes when framing their arguments, selectively presenting information to shape and support their points of view and, thereby, assisting the second aspect of front-end decision making, namely the design and definition of the project’s goals, objectives and expected value (Williams and Samset, 2010).

The findings on framing value through uncertainty and timing of costs and benefits generally concur with the outcomes of previous research. All three case projects show a similar pattern, probably because all were similar types of project; projects with fewer uncertainties and shorter lifecycles could portray different patterns. Other studies have emphasized uncertainty and lack of information at the front end of projects (Kolltveit and Gronhaug, 2004; Williams and Samset, 2010), with stakeholders needing to convert the possibly conflicting expectations into shared goals. This study shows that stakeholders can
promote funding decisions by determining ways to overcome any uncertainties. In terms of the timing of costs and benefits, some projects adopt a very limited lifecycle view and focus exclusively on financial value (Ho and Liu, 2002; Tang et al., 2010). In contrast, this study reveals cost and financial issues as a concern for the project implementation phase; indeed, the regional, ecological and social value can be achieved only in the later operations phases of the project lifecycle.

The framing themes of project relations and external sponsorship, in turn, connect the project to the broader arena of investment decision making. The arguments around project relations again highlight that projects are not isolated, and that their value is often related to the dependencies, competition or synergies with other projects. The findings offer novel evidence and contribute to the discussion on project interdependencies (Mok et al., 2015, 2017). Stakeholders’ value arguments for RAIL and METRO were tied to these kinds of project relations in a very versatile way, whereas in TUNNEL the arguments focused more on considering alternative funding options or on the linkages within the project roadmap. These findings suggest that the multi-project context of infrastructure investments can be highly relevant when projects are prepared, prioritized and “sold” to public sector decision makers, in terms of the project roadmap and portfolios. The cases reveal how available external sponsorship influences the funding decision by adding a sense of urgency to the decision making. A multi-project perspective (where the project is viewed in context with other projects and funding sources) is required to determine project value at the project front end. Previous research has failed to identify this portfolio-level view of the value of infrastructure investments.

Conclusions

Theoretical contributions

This study pursued better understanding of stakeholders’ framing of project value at the front end of infrastructure projects, portraying infrastructure projects as large endeavors with a long-term influence on society. As project value accumulates through costs and benefits over the project lifecycle, including ongoing operations, stakeholders anticipate and argue for such value in different ways at the front end of the project. The findings show that, even if financial value may be central in stakeholders’ claims, the other dimensions of project value may become more salient when the urgency and scope of the project are negotiated among stakeholders. The study also found evidence of the positive and negative value claims that characterize the debate that occurs between stakeholders when preparing for the decision on project funding.

The study contributes to the ongoing appreciation of the front end of large projects as the strategic phase where significant decisions are made. A novel finding is that the front end of infrastructure projects is a portfolio decision issue. Project portfolio management is usually associated with an organization seeking to implement strategy through a balanced investment across many smaller projects (such as new product development or IT projects). This study extends the portfolio view to infrastructure investments and highlights the socially constructed and negotiated nature of decision making among multiple stakeholders. Large infrastructure projects are often considered as stand-alone entities seeking targeted funding, but they, too, are susceptible to the competition and complementarity of other projects – in terms of both threats and synergies. This finding encourages the exploration of infrastructure funding decisions within large public organizations from a portfolio perspective, as this approach is limited in previous research.

Furthermore, the findings reveal the central themes in stakeholders’ framing of project value. As infrastructure projects require collaboration between multiple stakeholders, we need to understand why and through what themes these stakeholders argue their viewpoints on value. This study complements previous research on positive and negative
framing of arguments, and reveals how value claims can also be framed through a concern over uncertainty, timing of cost and benefit realization, the project’s relations with other projects and implementation options, and the availability of external sponsorship. This finding supports the development of new ways to anticipate, map, compare and align stakeholders’ interests at the front end of infrastructure projects. This study’s contribution emphasizes the socially constructed nature of the lifecycle value expected from large projects, and highlights how each stakeholder’s framing of their views contributes to the public debate about whether or not a project deserves funding.

**Managerial implications**
The framework used for analyzing project value offers new insight concerning the specific character of infrastructure projects. While this research focuses specifically on infrastructure projects, it could also be useful in mapping the dimensions of value in other projects, and in activating discussion and negotiation among project stakeholders. The various perspectives of framing identified in this study may help to understand the debates and conflicts concerning value during negotiations and decision making for infrastructure projects. These perspectives could also be useful in educating public officers, decision makers and project sponsors on developing justifications for new project proposals or implementation plans, or how to assess and compare such proposals and plans. The multi-project aspect of infrastructure investments highlighted here encourages public sector stakeholders and sponsors to pay attention to project relations and comparisons at the front end of projects. As the framing of a project’s value does not take place in isolation but in relation to other projects, owners and sponsors need capabilities to align project values with other projects on the investment roadmap.

**Limitations and ideas for future research**
The multiple-case study is limited through the choice of the infrastructure type, cases and their context. Although types of infrastructure other than transport are not covered, similar phenomena may also be valid in other large projects. This study purposively sought ordinary but somewhat different infrastructure projects, and their conditions are characterized to help assess the generalizability. The study comprised infrastructure projects from a single small country, and they are among the most significant large public projects in the country. The country context delimits attention to a context where infrastructure projects are not very typical, which may be different from large countries with broad experiences in infrastructure implementation.

The document-based data also create limitations, in that the producers of the data – journalists and other authors – influence the reliability of the data. In the small country, little competition takes place among newspapers and, therefore, the choice of the dominating newspaper channels was a necessity and offered rich data. Some validation took place by comparing news articles with the project’s websites and other project-specific documentation. While interviews or questionnaires could potentially supplement document data, the sole focus on documentary data avoided potential problems with informants’ memory limitations and biases.

The inductive analysis approach may cast some doubt on validity, due to researcher bias. To mitigate this concern, this study used previous literature and two researchers in the coding of value dimensions, to develop a robust and credible analysis framework, and the coding results were checked and re-checked jointly in the author team. The findings concerning lifecycle-oriented framing, in particular, may benefit from further research with broader data sets.

As the delivery of value is a current and compelling research domain (Ahola et al., 2008; Artto et al., 2016; Laursen and Svejvig, 2016; Martinsuo et al., 2012; Martinsuo et al., 2017),
this research paves the way for more systematic approaches to framing and assessing value at the front end of infrastructure projects. Further research could pursue five main domains. It could test and verify the ideas on lifecycle-oriented framing of value in different types of projects. It could map the stakeholder-specific framing approaches concerning value. It could study the framing of value, stakeholder power and negotiation practices in the negotiation processes in the front end of infrastructure projects. It could study further the cognitive and social processes of value management in large infrastructure projects. Finally, it could extend the findings beyond infrastructure projects, by investigating the unique aspects of lifecycle value in knowledge-intensive projects.

Acknowledgments
The authors thank Jesse Kivilä, Tuomas Ilvonen and Mihkal Laiti for assistance in collecting and arranging the original data at the front end of this research. An earlier, partial version of this paper was presented at the “Managing Major and Mega Projects” track of the EURAM European Academy of Management conference, June 20–23, 2018, Reykjavik, Iceland. The authors gratefully acknowledge the helpful and constructive feedback of the reviewers, session chair and discussant, and the audience. Significant modifications have been made based on the feedback.

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Abstract

Purpose – The purpose of this paper is to investigate a case of collective sensemaking about the project success of the multifunctional amphitheater of Quebec (Canada).

Design/methodology/approach – For this explorative and qualitative research, the authors started from the post-mortem document and complemented their comprehension with six semi-structured interviews with the main project actors and other public documents regarding this project.

Findings – According to the respondents, the main success factors of this project can be attributed to: a clear governance structure; proven project management and construction methods; the use of emerging collaborative practices in construction (such as building information modeling (BIM) and lean construction); an adapted policy for procurement; as well as a code of values and ethics shared by all stakeholders.

Originality/value – The sensemaking perspective has been scarcely mobilized in project management studies, emerging from a constructivist view of reality and being sensitive about material-discursive practices. This exploratory study explores a case of collective sensemaking of a major project success and suggests avenues for major and megaprojects research. Lessons learned and implications for practice are also outlined. The conclusion allows a synthesis and an opening to consider how practitioners and researchers can build on this (and other successful) case(s) for future projects and research.

Keywords Governance, Case study, Innovation management, Project success, Stakeholder collaboration, Collaborative working, Emerging practice, Major infrastructure projects

Paper type Research paper

1. Introduction

The case of the multifunctional amphitheater of Quebec (MAQ) as a major project is interesting, as new emerging collaborative practices have been used to achieve completion below planned costs and schedule, while respecting the requirements set out in the functional and technical program. Several innovations have been made to this project, in terms of management methods, contractual agreements and information technologies used. Yet, the MAQ project included many elements of risk, coupled with significant challenges in terms of technical and social complexity, budgetary constraints and visibility. In order to attain project success, the City of Quebec was open to receive suggestions from its stakeholders and suppliers, allowing the implementation of various measures for an optimal project management: a clear governance structure, with dedicated teams; proven project management and construction methods; the use of building information modeling (BIM) and lean construction; an adapted policy for procurement and contracts; as well as a code of values and ethics shared by all stakeholders.

A previous version of this paper has been presented to EURAM 2018, in the Special Topic Track on Managing Major and Mega Projects: The Importance to Broaden Classical Project Management Approaches. The authors wish to thank the anonymous reviewers along with the interviewed participants who took part in this research.
As most research in the area of major and megaprojects point to their underperformance (Flyvbjerg, 2017), it is interesting to analyze a successful case to understand how the project evolved and how project actors collectively enacted their sensemaking to respond to challenges and complexity. The MAQ project generated popular and media enthusiasm, yet few people had the chance to open the black box of the realization of this project to understand the workings that made it possible to reach this unprecedented success. This paper does not focus on the choice of this project as a political object; instead we aim to investigate the collective sensemaking of the main project actors about its success. The sensemaking perspective has been gaining increasing attention by organization studies scholars in the past decades, yet this perspective has been scarcely mobilized in project management studies. Thus, the research question asked is:

RQ. How did the main project actors collectively enact their sensemaking about the success factors of the MAQ major project?

2. Literature review

The literature review presents three important themes: the sensemaking perspective, innovation in construction projects, and the success factors of major and megaprojects.
2.1 The sensemaking perspective

The sensemaking perspective has been originally developed by the social psychologist Karl Weick (1988). The perspective gained increased recognition in organization studies over the years, as researchers mobilized this theoretical lens and broadened it to an extent where it has been a driving force in the emergence of process organization studies and organizational practices (Sandberg and Tsoukas, 2015). The sensemaking perspective is based on a socio-constructivist approach, it can be individual or collective (O’Leary and Chia, 2007). Unlike in the physical sciences, there is no immutable truth in social sciences; there are many different realities, socially constructed and contextualized (Noël, 2011). Social practices are given primacy over individual agency and intention (Golsorkhi et al., 2010). The process of sensemaking is useful to study how a work group produces “appropriateness” of a situation (Gherardi, 2012). This sensemaking process shapes collective organizing and produces learning, being mostly done retrospectively (Weick, 2001). According to Stigliani and Ravasi (2012, p. 1232), collective sensemaking occurs “as individuals exchange provisional understandings and try to agree on consensual interpretations and a course of action.”

The role of materiality is also being increasingly acknowledged in organization studies (Carlile et al., 2013) and more specifically in sensemaking (Stigliani and Ravasi, 2012). Gherardi (2012, p. 118) proposes to explore sensemaking “as a social practice concomitant with work and as a collective outcome obtained mainly through material-discursive practices.” Orlikowski and Scott (2008) challenge the classical view in organization studies which conceptualize technology, work and organizations separately, and advance a sociomaterial perspective which poses that there is an “inherent inseparability” between the technical and the social.

In project management, sensemaking has been gaining influence albeit more slowly than in organization studies. Thiry (2001) was one of the first advocates for the use of the sensemaking perspective in order to contribute to value management and stakeholder theory, emphasizing the important role of temporality as a sensemaking factor. Researchers have used the sensemaking lens to understand how various project stakeholders interpreted and acted on discontinuities (Alderman et al., 2005), unexpected events and conflicts (Tukkainen et al., 2010), governance representations (Simard and Laberge, 2014) and crisis (Simard and Laberge, 2018). Papadimitriou and Pellegrin (2007) used a sociomaterial view to study the dynamics of intermediary objects of design through the project lifecycle. Hoezen et al. (2013) used a process perspective to study the interactions between formal bargaining and informal sensemaking in the procurement phase of a complex construction project. Fellows and Liu (2016) propose to study projects through cultural schemas and cultural sensemaking. In the megaproject literature, Clegg et al. (2017) bring the focus on complex sensemaking power practices and stakeholder relations. To our knowledge, project success has not been investigated from a sensemaking perspective, with the exception of the work by Alderman and Ivory (2011), who proposed to look at projects’ success and failure from a sensemaking perspective, in term of the characterization of the project network on a continuum between convergence and divergence. Before getting into the main literature on major and megaprojects success factors, a brief review of innovation in construction projects is presented.

2.2 Innovation in construction projects

According to Taylor and Levitt (2005), while most research in project-based industries on innovation have focused predominantly on incremental innovations (those which improve an existing product or process), the impact of systemic innovations (those that reinforce an existing product but require multiple firms to change their practices and work processes) have been much less studied. As the construction industry is fragmented, Taylor and Levitt (2005)
have found that the diffusion of systemic innovations in this economic sector was much less than for incremental innovations. As BIM, along with other emerging collaborative practices, is seen as a systemic and disruptive innovation (Poirier et al., 2016), the potential to foster better collaboration have to be measured against the potential loss of adopting such innovations without proper incentives and training. Papadonikolaki et al. (2017) have studied two cases where innovations focusing on integration (BIM and supply chain management) were adopted. By doing a social network analysis, they conclude that an equilibrium is needed between formal (transactional) and informal (relational) relations in order to benefit from better integration.

In major and megaprojects, innovations have been used to improve project’s processes and outcomes (Davies et al., 2009; Dodgson et al., 2015), but these were framed through an innovation strategy and carefully harvested, with important learning being made and the development of capabilities, as project ecologies, leaders and team members mostly transitioned together from one megaproject to another (Davies et al., 2017). New approaches involving collaborative practices require a paradigm shift to foster the collaboration of different actors (Bryde et al., 2013). In particular, the revision of current work processes will enable new information technologies to be used to their full potential. Moreover, the contracts awarded and the expertise of the individuals involved must be aligned with the needs of the project. Thus, incentives must be provided and collaborative practices must pay, as there are important barriers to innovation in the construction of megaprojects. Brockmann et al. (2016) discuss important barriers such as separation of design and construction, project size and the necessity to reduce costs. Similarly, Steen et al. (2018) highlights two important challenges to innovation: to capitalize on time-limited project opportunities to develop innovations, and to influence networks partners to adopt them when they are focused on minimizing project delivery risk. As many major and megaprojects are sponsored by public actors, it is also relevant to outline that most of the research on innovation carried out in the public sector have focused on internal innovation rather than with the environment (Bernier et al., 2015). In order to foster innovation in the public sector, government must create an environment that supports rather than hinders innovation (OECD, 2017). As new emerging collaborative practices are disruptive, systemic and transformative, this has implications for governmental policies, along with organizational and institutional field implications (Whyte and Hartmann, 2017). So far, researchers and public regulators are only beginning to understand the dynamics and complexities of innovation in megaprojects, more research is expected on those important topics in the upcoming years.

2.3 Success factors of major and megaprojects
It is widely acknowledged in the project management community that there is a distinction to be made between project success (measured against the project objectives) and project management success (measured against cost, time and quality) (Cooke-Davies, 2002). As major and megaprojects usually embrace more risks and complexity as they grow in size, in the number of stakeholders, in the number of jurisdictions involved, etc., it is interesting to reflect on success factors and optimal/adapted organizational modes for such endeavors (Ansar et al., 2017). Turner and Xue (2018) suggest a new model to evaluate the success of megaprojects based on four dimensions of value: they produce an output at a time and cost that makes it valuable; they achieve the desired outcome and benefit at a time and cost that makes them valuable; they deliver positive net present value; and they deliver a business or public need at a time and cost which makes it valuable. Additionally to major and megaprojects, the dimension of publicness of projects can also create additional constraints, as it is now more recognized in the academic literature (Crawford and Helm, 2009), for example: the complexity of the environment, including many actors from different
government bodies, non-governmental and private organizations; budgetary and time constraints; as well as the impact of the media on public opinion.

According to Shenhar and Holzmann (2017) as they reviewed 14 megaprojects, the three secrets of megaproject success are: a clear strategic vision, total alignment and adapting to complexity. On the other side, Lenfle and Loch (2017) have recorded three common causes of megaproject failures: underestimation of, or refusal to acknowledge, uncertainty, stakeholder neglect or mismanagement and inflexible contractor management (prominently, awarding work to the lowest bidder). However, as new technologies, work processes and emerging collaborative practices are getting more widely spread across the construction industry in many countries (Davies et al., 2015), the impact of innovation in megaprojects is still a relatively new phenomenon, not fully understood (Worsnop et al., 2016). The impact of innovation can be positive to the project success, as some case studies have revealed (e.g., Davies et al., 2014), yet it can also lead to several additional challenges related to complexity, learning and the nature of innovation (e.g., Shenhar et al., 2016). Ultimately, success factors are not immutable but are subjective, depending on the perception of the different persons and groups of actors. The research question asked is thus:

RQ. How did the main project actors collectively enact their sensemaking about the success factors of the MAQ major project?

In order to investigate this, the methodological approach is discussed next.

3. Methodological approach

This section covers two points: research design and data collection, along with the presentation of the case itself (the context, project actors, main deliverables and the evolution of the project).

3.1 Research design and data collection

To study the linkages of the collective sensemaking made for the success of a major project, an exploratory study of a single case study was designed (Yin, 2009), where extreme sampling was chosen (Patton, 2002), as a myriad of strategies have been used such as emerging collaborative practices. The starting point for data collection was the access to a post-mortem document, which has been developed by the main project actors through meetings, and agreed upon by all in April 2015, near the completion of the project (see Figure 2 for the timeline of the project). The role of material artefacts in social inquiries is increasingly acknowledged in organization studies, and as such they give important insights into how people perceive their realities (Carlile et al., 2013). The structure of the post-mortem document inspired the results section of this paper, which is enriched by the different points of views expressed by respondents during the interviews.

To corroborate the post-mortem findings and gain deeper insights, five semi-structured interviews were carried out by the two authors with representatives of the main organizations involved in the project: the City of Quebec project director (represented visually on Figure 1 by the circle named I-1); the external firm of project management (I-2); the engineering firm responsible for the team of professional masters (I-3); the architect firm involved in the team of professional masters (I-4); as well as the construction manager (I-5). The interviews took place once the project was completed, in June 2016; they were individual, recorded with detailed notes taken by the first author, and then coded and analyzed. A documentation analysis also completed data collection, with the City of Quebec giving public access to many project documents[1] and a review of media articles covering this project. A processual view is used to explain the results, in an evolutive perspective of the project (Langley et al., 2013). Thick description is also carried out, as a narrative strategy
helps to theorize and make sense of process data (Langley, 1999). After the first draft of the paper was written, we send it out the interviewed people in order to validate our understanding and findings. Finally, a subsequent interviewed was conducted in 2017 by the first author with the associate project director (I-6) of the City of Quebec, as this project had become a catalyzer for developing BIM and facilities management in the City of Quebec (Gurevich et al., 2017). Initial findings of this research paper and implications for the future were discussed in this interview, which served to validate and triangulate our results. A second validation with the project director was conducted in January, 2018, prior to the presentation of the paper to EURAM conference. Next, the case itself is presented.

3.2 The multifunctional amphitheater of Quebec: from the idea to its realization

Context and opportunity. The MAQ project began to take shape in 2009, when Régis Labeaume, who had made it a major stake in his campaign in the municipal elections of Quebec City, was elected with almost 80 percent of the votes, and more of 50 percent of citizens participation. The fervor of the population of the old capital for hockey, coupled with the feeling of loss when in 1995 the Nordiques hockey team left Quebec, strongly contributed to make this project a priority for the city, with a massive media and political visibility.
In March 2012, a final agreement was reached to build the future amphitheater with a total budget of CAD$ 400m; it was announced jointly by the City of Quebec, Infrastructure Quebec and Quebecor Media. In October 2012, a first work schedule is formalized, which determines the end of the work for August 2015. Indeed, the official inauguration of the MAQ (renamed Videotron Center) took place on September 8, 2015, for total costs of CAD$ 30m less than expected.

Although this project has been the target of numerous media and political controversies, the fact remains that its realization was a success – for respecting the requirements, the schedule and the budget initially defined. However, this project has been a real challenge for the team, with significant constraints of coordination, implementation and budget.

**Project actors.** The governance structure of the project is presented in Figure 1 (the actors in grey are from the construction manager firm); this representation was developed and agreed upon by the project team early in the project; it was their interpretation of the governance as embodied in a material artefact (Simard and Laberge, 2014). The project team, led by the Steering Committee of the City of Quebec, had an external team mandated to do the project management, a team of professionals and a construction manager firm, which had the responsibility for coordinating more than 27 contractors and 32 external suppliers. The main assignments of each actor were thus:

- the management team (the client) – ensures project governance and the link with the private partner, Quebecor Media;
- the project management team – assists the client, monitors the scope, cost and schedule parameters;
- the integrated consortium team of professionals (covering architecture and engineering) – responsible for the design, preparation of plans and specifications, and the monitoring of the quality of the work, including changes; and
- the construction manager – leads construction contractors, coordinates their work and links them to the project management and management teams, as well as the integrated team of professionals.

**Main deliverables.** The project, divided into seven main work packages at the design stage (excavation, foundation, structural steel and precast terraces, architecture, mechanics/electricity, specialized equipment and reserved parking and site development), was divided into 27 specialized work packages of construction to promote competition between contractors and suppliers. In terms of supplying and installing specialized equipment, 32 work packages were defined to foster competition between suppliers and getting best bidding prices.

**The evolution of the project.** The timeline presented in Figure 2 relates the different milestones of the project (source: www.ville.quebec.qc.ca/touristes/attraits/amphitheatre/historique/index.aspx, consulted January 4, 2018, as well as our respondents). From October 2011 to July 2012, the project was initiated and planned, with the granting of contracts (project manager, professionals and construction manager) and the final agreement including the project charter being announced in March 2012. The construction began in September 2012, paralleling the finalization of plans which ended in June 2013 in order to optimize the construction schedule. In June 2013, tenders were launched for specialized building work packages. The construction work packages were subsequently executed: the steel structure and building architecture in August 2013; the upper course of the stands, main course of the terraces and parking in January 2014; the exterior cladding in June 2014, for a conditional acceptance of delivery in July 2015. The post-mortem meeting took place in April, 2015, near project completion. The official inauguration took place in September 2015, as it had been announced two years and a half ago.
4. Results

This section presents the five most important success factors of the project, according to the project team and the respondents of the semi-structured interviews conducted after the project had been completed. Two important project issues have also been raised by participants, regarding a demanding governance structure and adapting to new collaborative practices.

4.1 Success factors of the project

According to project stakeholders, the various factors that facilitated the success relate to five themes: a clear governance structure; proven project management and construction methods; the use of BIM for 3D building modeling and lean construction methods; an adapted procurement and contracting policy; as well as a code of values and ethics shared by all stakeholders. Each of these factors is presented below.

A clear governance structure. At the start of the project, some of the actors had concerns about the governance structure, having had previous experiences where decision-making was neither simple nor quick. Given the challenges and the tight timeline for this project, it was agreed to put in place a number of mechanisms to support timely and informed decision-making. The MAQ project was sponsored by the mayor of Quebec City himself, it was prioritized and very visible in the media, which certainly helped to establish a solid basis for coordination among stakeholders. Moreover, the teams in place were entirely dedicated to the project and physically co-located.

Every month, a meeting of the steering committee was held. The steering committee members were: the Director General of the City of Quebec, elected officials, representatives of Infrastructure Quebec (now Société québécoise des infrastructures) and independent members with major projects construction expertise. Agility was a key principle of this committee, accountability was made so that the required decisions could be taken in a timely manner. The main tasks of the steering committee members were to validate the guidelines, budgets and change requests regarding the project content. As a result, the City of Quebec delegated a significant portion of the powers to the project director, who was at the time the Director of the City’s Building Management Service, which facilitated the fluidity of decision-making, going back only to the more substantial issues at these monthly committee meetings.

Figure 2. Evolution of the MAQ project over time
In terms of coordination from a more tactical point of view, the different stakeholders of the project opted for a collaborative mode. The team, dedicated full-time to this project, was open to the proposed new approaches; the motivation of all was palpable with regard to this large-scale project despite the related challenges. To allow for optimal coordination, a project management office (PMO) has been set up to foster collaboration, information sharing and a sense of belonging. All seemed unanimous to state that setting up this PMO has been an important factor of success. On the one hand, the mobilization of teams locally has facilitated communications, and on the other hand, this co-location on the construction site has fostered synergy and a collegial work.

At the PMO, a management committee was set up to enable the project objectives to be met, a “committee of wise men” as they liked to refer to. The members were the project director and the assistant director for engineering/costs control of the city, the project manager, the professionals (the lead architect and engineer) as well as the construction manager. Decisions were made consensually, quickly and at the right time. As the team was co-located and had frequent and inclusive discussions, the project team was fluid, the interests were common – as one respondent mentioned: “we are not paid to start again.” Thus, the main actors were involved in all decisions, to make costs estimates, risks analysis, etc.

Finally, the private partner, Quebecor, was involved throughout the process, including approving any changes to the original functional and technical plans. This partner of the City of Quebec has been an important stakeholder in the meetings to comment on the plans. Quebecor hired a firm of professionals to validate the work done by the project team, specifically regarding the list of equipment required and the needs of the arena. When issues were raised by the private partner, the project team would put them on the table and work on them until they found acceptable solutions for all parties.

Proven project management and construction methods. The various project stakeholders seemed unanimous that project management and construction methods used favored the success of this project. One of the important components, however, was the maintenance of the objectives of departure by the client. Indeed, there was no major change in the scope of the project – the process in place and the work plans were respected; the functional and technical plans were used for contracts. The private partner, the operator, was bound by the initial agreement that was signed at the end of the initiating phase, which was a project charter. Another interviewee mentioned that the quality of preliminary studies, along with an optimized vision for the project, with a call for professionals collectively accountable for the quality, budget and schedule, also favored the respect of initial requirements. As noted by one respondent: “A good project has well-defined constraints that eliminate risks. In the case of the amphitheater, the oval and compact shape of the building derives from the constraints.”

During the course of the project, the City of Quebec demonstrated flexibility to allow for a change of the delivery mode. At the beginning, a hybrid delivery was considered, two turnkey construction work packages. The city officials listened to the advice of experts involved in the project and agreed to change the delivery mode to construction management, which was more suited to the high complexity of the project and allowed a reduction of associated risks. According to the interviewed actors, the chosen construction method, construction management, was more appropriate and enabled a fast realization (in fast track); the first construction work package (excavation) was developed early for a call for tenders. In addition, the division of labor into 27 specialized construction work packages and into 32 work packages for the supply and installation of specialized equipment fostered competition between specialized contractors and suppliers in each of the specialties, thus obtaining better bid prices than a turnkey approach. The construction management firm insured a centralized coordination for all those contractors and suppliers.
In order to answer this large-scale project with tight time and budget constraints, risk management has been approached with unusual rigor in construction, and in fact seemed to have played an important role in controlling costs. An exercise to estimate the reserves required for risks and construction contingencies was carried out in collaboration with all the actors, which made it possible to establish amounts for these envelopes in order to palliate to risks materialization and any other unexpected event. For example, when the first work package of excavation and piles was started, the plans and specifications of the structural work package were not yet completed, so a costly amendment was subsequently granted to install additional piles. This amount was taken from the risk reserves. According to respondents, this balanced attitude of Quebec City regarding risk taking (carefully measuring them but agreeing to take some in order to accelerate the work) contributed to the project success, because the choice to go for construction management permitted to accelerate the project schedule substantially. Moreover, the project team had to share risks with the specialized contractors, as their fees would be reduced according to an agreed proportion bound contractually in case of cost overruns. Indeed, the fact that the project was finally delivered below initial budgets is partly explained by these risk reserves which were included in the total budget of the project but have not been fully used.

Respondents noted that the level of control for the project was well balanced: present but not too restrictive. A structured, centralized and accessible document management on a virtual platform allowed the actors to optimize their communications and the sharing of information. To manage changes to the project, a system of questions and answers was established with a maximum of 15 days allocated to professionals to respond. Specialized contractors involved were encouraged to bring their questions and issues as soon as possible.

In addition, the coordination of the work has been optimized through the use of the last planner system approach, a lean construction participatory planning and execution method that involves the various specialized contractors, as well as the use of conflict detection using BIM. This resulted in a better control of schedules and reduced costs of change requests during the construction. In particular, the city’s management team, the director of the project management firm and the construction manager did an analysis of constructability prior to launch the construction work packages. They also defined the scope of work together, allowing to stay within the defined budgets. In addition, two value engineering workshops were conducted during the development of the plans and specifications, which were useful considering that the costs estimate for the project were at the limit of the budgets. However, some stakeholders in the project considered that optimization was not done exclusively at these value engineering workshops, it was done on a day-to-day basis. Moreover, ultimately the needs had to be translated beyond the numbers. For example, the use of wood in this project is a key element in terms of architectural quality. This component of the project was retained despite the fact that the choice of another material could have been more economical. In summary, the project management and construction methods used have contributed to the success of the construction of the MAQ project.

The use of BIM and lean construction methods. The BIM approach is part of a growing trend to use new technologies of information and communication in the construction and maintenance of buildings. The BIM approach is as much a process as a technology, and offers many opportunities for optimization in a project (Poirier et al., 2015). BIM softwares allow to develop three-dimensional models of an infrastructure rather than the conventional 2D plans, no longer sufficient to represent the complexity of large projects. This approach allows for simulations, increases the capacity for analysis, management and reuse of information, promotes collaboration among stakeholders, both for the construction of a building and its maintenance and operating phase.
However, the interviewed actors stressed that this innovative approach must be put forward by teams with the expertise required to use this technology. Thus, the BIM approach can become a catalyst, improve synergy and project performance. Originally, the MAQ project was not intended to be done in BIM. Along the way, the construction manager convinced the City of Quebec representatives that the adoption of these working methods would facilitate achieving project success. The city demonstrated openness and accepted these methods to be used following an amendment to the original contract of the construction manager. Moreover, another contract was awarded to the construction manager in order to transfer the model to the city’s asset management team for the operation of the building after project completion.

Following the adoption of the guidance to use the BIM approach, a detailed planning was developed with all project stakeholders, over a period of approximately three months. Meetings were held once a week to coordinate and negotiate the sequencing of activities. The construction manager received the 3D model of the architect and produced the models for the structure and mechanics from the 2D drawings of the engineers on Revit software. They then used Navisworks to detect professional coordination errors. By identifying these errors and proposing solutions to professionals before doing the work, significant savings were made. Indeed, the expertise of the construction manager has been essential for using these new approaches. The latter played an important role of education and support for specialized contractors and suppliers to learn about BIM technologies. As one of the respondents pointed out: “the tool is not a guarantee of success, it remains tools to work with, it is (all the members of the project team) who make the project work, the collaboration and the complicity of the people in the same environment. Innovation is possible in this case and everyone contributes.”

So, being supervised by the construction manager, specialized contractors and suppliers have been engaged in these new approaches. An individualized adaptation was required at the beginning as they were not all at the same level. Initially, about 80 percent of these specialized contractors did not know about these technologies and planning methods, but this project has enabled them to develop their skills, thanks to trainings offered by the construction manager which facilitated the work of coordination and collaboration upstream. A survey carried out by the construction manager after the completion of construction showed a global satisfaction of specialized contractors for these methods, which permitted to have much less work to resume compared to a regular project of similar size and complexity, according to them.

Although some have underestimated the effort required to adopt the BIM approach, the added value for this project has been demonstrated: especially with an increased detection of conflicts on the plans before the execution of the work on the site resulting in a decrease of the change requests. In addition, the BIM model was an important tool for communication and collaboration between stakeholders. Over time, the various specialized entrepreneurs and suppliers got accustomed to it, they were better prepared.

In parallel with the BIM, lean construction methods were adopted for this project. According to one respondent, many specialized contractors and suppliers work intuitively according to lean methods, even if they do not say so; for example, sequencing jobs or using the last planner system. The project team organized upstream planning days with specialized contractors, who have found it strange at first but then realized the gains from these sessions once on the construction site. The purpose of these planning meetings was to build trust, to enable specialized contractors to commit to certain dates and for the construction manager to challenge them and propose alternative scenarios to reduce the overall project schedule. Thus, the milestones were defined by all, as well as the strategies of realization. The identification of the responsibilities of each was established as to the
sequences of work and ways of doing things. A last planner activity was applied by the project team to maintain room for manoeuvre in the project, as described by one respondent: “we kept all the buffers and we gave them back piece by piece.” Suppliers were asked to estimate weekly their work percentage of completion, which resulted in low loss of material. As one respondent told us “We did not have to start again what we did, maybe a little bit, but a lot less compared to other projects of this size.”

In addition, the SmartUse tool was used in this project, a platform which allows to eliminate static documents on paper (plans and specifications) with the following advantages: several subcontractors can have access to the same drawing in real time, version control, and the ability of annotations to capture changes that improves. Thus, this tool helped to manage the information flow and seems to have been appreciated by all. This tool was used for onsite monitoring, and facilitated document management, as it was always the last version of the plans that was available.

Finally, other technical innovations were adopted: the ventilation through the terraces, which had never been done before for a project of this scale; and LED lighting, which reduced energy consumption. In fact, their overall approach toward sustainability and energy efficiency has led the City of Quebec to be awarded the first place at the 2018 ASHRAE[2] Technology Award (Category V – Public Assembly – New), one of the industry’s most prestigious honor for efficient energy use in building and environmental system performance recognizing outstanding design innovation and successful implementation. For specialized equipment supplies work packages, bids were delayed to the maximum possible extent in order to take advantage of the latest technologies. Next, more details are provided on the procurement policy.

An adapted procurement and contracting policy. The procurement policy put forth in the MAQ project appears to have played a decisive and favorable role according to the respondents interviewed, in several respects.

First, the initial call for tenders to hire professionals required an integrated consortium of professionals (architects and engineers), which is rather unconventional in Quebec, although similar contracts are common in other Canadian provinces such as Ontario or British Columbia. Thus, the team of professionals was integrated in a consortium which was led by the engineering firm. The consortium was responsible for the design of the facility and for the quality control in the execution phase of the project. According to the respondents, having a single team of professionals was very beneficial: “we did not have the choice to get along with each other”; “we could not paint someone in a corner”; “it’s good to have both (architects and engineers) on the same side of the fence, I think it’s better, it is more difficult in the other case.” This contractual form enabled the alignment of stakeholders and the convergence of interests (to deliver a building according to targeted costs and schedules).

Second, the hired professionals and the project manager were contractually bound to the success of this project. All parties were responsible for delivering the defined project content in the agreed times and costs. The initial work schedule was even signed by everyone. Penalty clauses were included in the contracts for the professionals and the project manager in case of delays and cost overruns. Respondents acknowledged that these clauses were beneficial to the success of the project even though they were more “stressful” during the conception and execution phases of the project. In contrast, the construction manager’s contract did not include a penalty clause for delays or costs overruns. Thus, the construction manager’s contract provided for less risk transfer than the contracts for the professionals and the project manager. However, the main challenge for the construction manager was to maintain its credibility and reputation in this major, highly visible and challenging project.

Third, for all the specialized contractors and suppliers involved in contracts related to work packages for the construction of the infrastructure and the installation of specialized...
equipment, the City of Quebec has signed and controlled all the contracts for the project. This practice has generated significant savings and opened the market to smaller firms and entrepreneurs. The procurement policy stipulated that for each tender, the required specifications should be applicable to at least three manufacturers and/or suppliers for each of the products, equipment or materials incorporated in the building. In consultation with the City of Quebec, the project manager assembled the documents for the request for proposals and the construction manager defined the specific clauses. Moreover, several requests for proposals were made simultaneously, which was a beneficial practice that saved time according to the respondents, although the management of the received tenders caused a temporary bottleneck. Thus, for all matters related to these tenders – there were more than 2,000 questions or clarification requests in total for the project – bidders had to address them to the project manager, who consigned those in a table and relegated specific issues or questions to the concerned professionals.

Finally, a clause that was included in all contracts stipulated that all information about the project (the models, the plans, etc.) belong to the City of Quebec, from the beginning of the project until completion and transfer to the owner. The representative of the city interviewed for this research, based on his previous experience, told us that this element was very important, because “otherwise the transfer at the end of the project can be very difficult.” After having detailed the procurement policy adopted for this project, the last project success factor is introduced: a shared code of values and ethics.

A code of values and ethics shared by all project actors. The last factor contributing to the project’s success was the adoption by all parties of a shared code of values and ethics (van Wee and Priemus, 2017), shown below:

- rigor for control of the content (according to the functional and technical plans), the costs and the schedule;
- flexibility in the improvement of the project by adding elements and equipments to enhance the customer experience, the operation of the building and revenues;
- transparency for accountability to the Steering Committee, to the City General Directorate and the Mayor;
- tenacity and perseverance to keep management and professional teams within the agreed beacons content/schedule/costs and to offer guidelines for product specifications, looking for optimal solutions in the design and work methods to put in place in order to meet the timetable; and
- integrity by promoting regular and statutory presence of Revenu Québec and the Permanent Anti-Corruption Unit (UPAC) of Quebec at project management meetings and on the construction site.

Beyond the adoption of this code of values, a determining factor worked in favor of the project team: the fact that it was a project generating much mobilization and involvement from all project actors, who had common interests and collaborated efficiently. Despite some occasional tensions and differences, all felt the willingness of the actors to get involved in a project of such visibility. The pride came from everyone – employees, professionals and specialized contractors – which allowed to cross over many obstacles and complete the project according to the initial parameters that were established.

This section concludes the presentation of the five main factors that contributed to the success of the MAQ project, according to the respondents we met as part of this research. However, respondents interviewed also raised some issues, which mainly refer to adapting to new collaborative practices and a demanding governance structure. These issues are explained in the next section.
4.2 Project issues

Adapting to new collaborative practices. As this project benefited from new approaches and tools, these helped in some respects, most notably for compliance with constraints such as content, costs and timelines. However, an important issue was raised as there has been some resistance regarding these new approaches differing from traditional methods, on the part of some stakeholders, suppliers and other specialized contractors; information sharing has not always been easy. Insuring gradual change management has been beneficial: team work learning has been gradual for the construction phase, there has been some issues with the coordination of the work at first (Matthews et al., 2017). The construction manager acted as the leader and facilitator for this overall coordination, as this firm had this expertise and agreed to train the actors in these new methods. As the vast majority of infrastructure and construction projects still perform according to traditional methods, the industry and its different actors have not yet turned the corner to adopt new technologies and collaborative methods, but this is expected to change in the next years. Thus, this project enabled participants to learn in a perspective of long-term vision and development of the construction industry.

A demanding governance structure. A second issue raised concerns the governance structure adopted for the project, which seemed challenging to some. The client (the City of Quebec) was rigorous and pursued its interests proactively throughout the development of the project, which was identified as a major reason for the project’s success. In addition, some respondents mentioned that on occasion there was some duplication of work between the project manager and the construction manager. Moreover, given the public nature of this project, there were many “observers vs performers,” responsible for monitoring the project’s progress and for challenging the professionals. Thus, as one respondent noted “not one element of the project has not been challenged, it is impossible to escape this reality. It requires energy. The challenge is good, but to some extent, there is a limit.” These two issues have been identified as the main ones, but overall, this project was a striking success overall according to the people interviewed.

5. Discussion

The discussion is structured in three parts. First, the collective sensemaking for the project success is considered, along with the contributions and inherent limitations of this exploratory study. Second, innovation is examined through the adoption of collaborative practices in construction. At last, the lessons learned from this project are outlined, according to the project actors.

5.1 Collective sensemaking

Project success, one of the most studied subject in project management, has been traditionally explored from rational ontologies (Ilka, 2009). Researchers are now calling for conceptualizing project management as a reflexive practice and practitioners as reflexive agents, the project being “a network of actors embedded in a social context in constant transformation” (Gauthier and Ilka, 2012, p. 12). Stakeholder management theory and value management are two important streams of research currently within project studies (Eskerod et al., 2015; Geraldi and Söderlund, 2018). Stakeholder value in megaprojects is a construct bearing many perspectives, one of which being identified by Eskerod and Ang (2017, p. 63) as “Retrospective-reflective-future oriented value”: “Involves rolling insight in sensemaking […] ends with […] may pave the way for present and future opportunities.” (Weick, 1995). Value is not static, it shifts (Grönroos and Voima, 2012) based on past experiences, present realizations and future anticipations. Value realized in the past may pave the way for present and future opportunities.” This case study is an interesting illustration of this, as this successful project paved the way to further innovation in projects and facilities management at the City of Quebec.
Using the terminology of Alderman and Ivory (2011), this project showed a collective sensemaking with a strong convergence of the main project actors, which might be partly explained by the governance structure that has been adopted, the physical co-location and the adoption of a code of values and ethics shared by all (O’Leary and Chia, 2007). The governance structure set up in the MAQ project allowed the main client, the City of Quebec, to retain the responsibility for decision-making and for project control. The client’s approach in this regard has its importance, being a “strong owner” (Winch and Leiringer, 2016). The various contracts linking external firms: the professionals, the project manager and the construction manager, helped to make each party responsible for the overall success of the project (Che Ibrahim et al., 2017). The framing of the governance model adopted by the participants (shown in Figure 1) has facilitated decision-making, and the formation of an optimized project team.

The project director from the City of Quebec, as a leader, has fostered a climate of trust and consensus, allowing the project team informed decision-making and reflexive intelligence (van Wee and Priemus, 2017). This refers back to the importance of individuals to shape projects, their expertise, their knowledge, being and experience (Medina and Medina, 2017). In particular, the openness of the client with collaborators and suppliers allowed to bring new innovative ideas and practices during the project that proved to be beneficial. The experience, intuition and judgment of the project director permitted to exploit several opportunities to drive innovation for this project, otherwise it could not have been carried on at such a scale. Unlike the three common causes of megaproject failures outlined by Lenfle and Loch (2017), the MAQ project actors acknowledged the uncertainty and adapted to it; a careful stakeholder management strategy was adopted; and procurement methods were flexible, allowing changes for the better during the course of the project.

This investigation of collective sensemaking of a major project success makes important contributions and has inherent limitations due to the exploratory stage of this research. The main contributions and limitations are outlined; future research avenues could address those. This inquiry has focused on the core project team, as the project post-mortem was conducted with the main project actors who were subsequently interviewed. A wider investigation of the enlarged project team actors, the operators of the facility, societal actors, politicians, civilians, etc., might not have resulted in such a strong coherence about what the success factors were (and whether this project was a success at all, as a broad range of stakeholders might bear different perspectives). Nonetheless, this exploratory investigation of a major project success from the sensemaking perspective contributes to the development of the theoretical views on projects calling for practical value, reflexivity and transformation; such as “emancipatory type 3 projects” (Geraldi and Soderlund, 2018) or the “hypermodern perspective of project management” (Gauthier and Ika, 2012). In that sense, although the case study is contextualized, the implications are far-reaching as generalization of the findings could result from replicating this study to other contexts, as emerging collaborative practices and innovation in construction projects are developing and transforming the industry worldwide (Whyte and Hartmann, 2017).

The use of the material artefact of the post-mortem document is an interesting contribution of this research that could be mobilized further in the future, as sociomateriality is increasingly acknowledged in social sciences (Jones, 2013), being performatively co-constructing the meaning along with the actors. Future studies could get deeper into the process of sensemaking, for example by conducting ethnographic research, which would bring interesting insights on prospective sensemaking rather than retrospective (Sandberg and Tsoukas, 2015). Obviously, major and megaprojects are essentially political, and materiality bears a strong political meaning. Having the opportunity to uncover the process of collective sensemaking as project actors experiment
it, for example by attending meetings during the project or the post-mortem, would allow a deeper understanding of collective sensemaking, power practices and stakeholder relations (Clegg et al., 2017). In the case of the MAQ project, the post-mortem document acts as a “boundary object” (Chang et al., 2013), performing the collective sensemaking for the closure of the project, but also allowing the initiation of a wider undertaking by the City of Quebec to replicate this approach to other major projects and to develop their facility management capabilities. The next section discusses the findings regarding innovation and the emergence of collaborative practices.

5.2 Innovation through the adoption of collaborative practices

The case of the MAQ project shows that innovation correlates with the adoption of emerging collaborative practices in construction (e.g. BIM, lean construction). As necessity is the mother of invention, this project has fostered creativity as the constraints and complexity were high. The context of the project – which was very risky and very visible politically and the set goals difficult to attain helped the team to adopt innovative ways to deliver the project within the constraints of content, cost and time.

However, adoption of collaborative practices was not made radically; a gradual approach has rather been used (Davies and Brady, 2016). BIM was not initially considered, but after discussions the City of Quebec agreed to embark on this platform for construction. For other collaborative techniques, such as the last planner approach, the “method of small steps” has been used by the project team to test and explore about those (Worsnop et al., 2016). When certain techniques were adopted, a first deployment was done on a small scale. Furthermore, the expertise of the construction manager contributed to the success, as the firm provided training and support for all suppliers and specialized contractors involved in the project.

In order to create a favorable environment for innovation in construction projects, three inter-related poles must be considered (Orlikowski and Scott, 2008):

- the organization – an adapted governance structure, organizational agility and actors needed for the project;
- work processes – established to favor the interaction and collaboration of actors (such as lean, integrated design, physical co-location, etc.); and
- technologies – used as leverage for the two other poles to significantly contribute to the project’s success.

Setting up new collaborative practices in construction requires being careful in order to implement and support these changes. Additional investments are required by participating firms (for training, tools, coordination, documentation of the building for the operation phase) that are reflected in total costs for the client. New collaborative practices also require people to become familiar with these, to be trained and offered support. Indeed, the adoption of these practices implies that old ways of doing things must be reviewed. In the long term, it is, however, beneficial for the client to invest upstream, as it saves time and money in building and operating an infrastructure.

5.3 Lessons learned/implications for practice

Here are the key lessons learned, as verbalized by the various respondents who were involved in the MAQ project:

- Governance structure:
  - The City of Quebec has ensured a strong governance of the project and has been empowered to deal with deliverables and risks, notably to negotiate demanding contracts including contractual clauses with penalties for costs and time overruns.
Thus, project actors had to find ways to collaborate and to foster communication and coordination of project tasks.

- Moreover, the City of Quebec has shown itself to be listening to experts and flexible in its approach. The change of the project delivery model early in the project to go for construction management instead of turnkey, and the adoption of BIM approaches promoted the success of the project.
- The respondents raised the importance of having good actors around the table, to have people with experience and complementary expertise. Ideally, some important actors could have been included earlier in the project: the construction manager, and the operator of the infrastructure.

Project management and construction methods:
- It is beneficial to extend the design period to promote sound planning: including tests, verifications and coordination. The plans must be optimized, both for construction and for operation.
- The delivery mode for the construction of a major infrastructure project must be chosen following a rigorous analysis, which presents the consequences, positive and negative, of this choice. An integrated design team, including the construction manager and the specialized contractors greatly facilitates the process.

BIM:
- The use of BIM was perceived as favorable to the project. However, originally, it was not set up for this project. During the project development, in 2013, the City of Quebec asked for proposals to adopt this approach; the one made by the construction manager was retained. Thus, as the construction manager got involved later than professionals in the project, the impact has been that they had to develop an inverted BIM (which generated the reverse engineering, transcription errors and confusion); it has not helped for the design phase. Respondents agreed that having started the project in BIM from the beginning would have been a good thing, by including it in the contract for the professionals.

Procurement and contracts:
- Overall, the procurement policy was perceived very positively to the success of the project.
- The functional and technical plans were included in the contractual documents between the City of Quebec and the private partner, Quebecor. Although some respondents mentioned that this situation has resulted in a heavy management to list the differences between the original plans and the subsequent plans and specifications, this practice helped to ensure compliance and monitoring of the project content. This helped to clearly identify the content changes in order to ensure product quality and to make a clear accountability to the steering committee, the operator (Quebecor) and the consultants.

Values:
- The adoption of a shared code of values and ethics fostered the success of the project, as it has contributed to a climate of trust, information sharing, collaboration and transparency.

6. Conclusion
The case of the MAQ is interesting because it illustrates a case of a strongly convergent collective sensemaking for its success. The core team of the project highlighted several
important components favoring its success: an adapted governance structure, proven project management and construction methods, the adoption of collaborative practices in construction, an adapted procurement policy, and a shared code of values and ethics. As such, this case can serve as a basis for reflection in order to build on this experience for future projects.

As Shenhar and Holzmann (2017) have argued, the three secrets of megaproject success are a clear strategic vision, total alignment and adapting to complexity. In the case of the MAQ project, the client established a clear strategic vision, including an adapted governance structure and entrusted project management to an outside firm to keep only the governance component in order to promote project success. The alignment of stakeholders was also very successful, by using proven project management and construction methods, by having proper incentives with an adapted procurement policy, and by sharing a code of values and ethics with all. And at last, the project team succeeded to adapt to complexity, as it has shown to be open and flexible to new collaborative approaches in construction, such as BIM and lean construction.

The case of the MAQ project demonstrates the importance of considering project success from a sensemaking perspective. Having a team sharing values and being co-localized might foster new, collaborative approaches in construction, especially when having people with the right experience and expertise as team members and leaders, according to the project’s needs. As collaboration intensifies among all stakeholders, this requires work processes to be adapted and generates new challenges, such as revising the team rules and dynamics, and to promote a common and shared commitment for achieving project objectives. Shared values of trust, respect and transparency can positively transform the work environment. Developing a collective sensemaking and adopting collaborative practices have implications for the management of major and megaprojects, whether in relation to revision of processes, tools and training people to these new approaches. They imply a paradigm shift, to go from a fragmented industry to a collaborative, information sharing hub of megaprojects’ ecologies. This important, systemic change will need support in order to be sustained at a larger scale; for individuals, firms, but also more broadly to institutional fields and the whole construction industry. These new collaborative approaches in construction offer enormous potential to improve the success of major infrastructure projects, ultimately, aiming at democratizing space for all citizens.

Notes
2. ASHRAE is the world’s foremost technical society in the fields of heating, ventilation, air conditioning and refrigerating.

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Top government hands-on megaproject management: the case of Istanbul’s grand airport

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Abstract
Purpose - The purpose of this paper is to explore top government hands-on megaproject management model applied to Istanbul's new airport megaproject. The study aims to find an answer to this research question: “How is the organizational design and management of a megaproject that has been alive in a confrontational socio-political environment and whose national strategic importance is high?”

Design/methodology/approach - Organizational theory and critical theory perspectives are used in this study. Istanbul’s grand airport is chosen as the case study. Interview, focus group and document analysis methods are used together. The research yields data from qualitative resources. Verbal and written materials are organized into three major themes and 27 key subjects for content analysis.

Findings - A top level of organizational management can be attained in the state in order for the megaprojects with high national strategic importance to survive without problems and with high performance. The top government-level organizational structure implemented at Istanbul’s new airport has reduced complexity, risk and uncertainty; increased performance and product quality; and strengthened inter-organizational compatibility and communication within the megaproject organization. However, this structuring also increased centralization, reduced transparency and direct public participation in the decision-making process.

Research limitations/implications - The megaproject is run in strict confidence and limited information is shared gradually in a controlled way with public by the megaproject organization. Therefore, a qualitative methodology is followed and the usage of quantitative data remained limited in the research.

Practical implications - The study presents an exemplary top government-level megaproject management model for countries experiencing strong socio-political conflicts and aiming to perform megaprojects with high national strategic importance.

Social implications - The organization of Istanbul’s new airport megaproject offers an exemplary, flexible and innovative organizational management model for countries that want to realize mega projects with high national strategic importance and experience strong socio-political conflicts. The questions of how to cope with challenges, how to build management capabilities and how to improve the cooperation and coordination within megaprojects have found some answers with this study. In addition, this study provides an insight into how to make more effective objections to wrong megaproject practices and the right strategies that the opposing organizations can follow.

Originality/value - This empirical research widens and deepens the theoretical foundations of top government hands-on megaproject management. The study, which includes a process analysis, allows to better understand the philosophy, nature, success, planning process, social organization and dynamics of megaprojects and to explain them through the values and strategies of organizations.

Keywords - Value, Organizational strategy, Management, Organizational theory, Istanbul, Airport development, Mega project

1. Introduction
We are now in an era of mega projects. Every country put large-scale urban projects into practice mainly expecting to grow its economy. The idea of developing a mega project is still very attractive to national and local governments so the number of mega projects is...
increasing rapidly in relation to the popularity of global neoliberal economic policies in the world (Jessop, 2002; Ponzini, 2011; Rizzo, 2013). These policies drag all cities and countries into an economic competition (Boisen et al., 2011; Albrechts, 2015). Since global cities are the engines of national growth and development (Kennedy and Zérah, 2008; Robbins, 2015), countries and cities expect to be ahead in global competition making a good move through mega projects. The intense interest toward developing new mega projects has significantly increased the number of scientific research on this topic in recent years. There is a growing literature on mega projects from varied academic disciplines due to their huge multiple impact on society, economy, environment and space (see Carrie’re and Demazie’re, 2002; Jacobs, 2004; Matthews and Satsangi, 2007; Orueta and Fainstein, 2008; Hale, 2010).

Mega projects are mostly brought to agenda in relation to international relations and national economic policies in a country. National governments decide to develop a mega project basically to increase National Gross Domestic Product, decrease unemployment rates and ensure economic growth (i.e. The Panama Canal, Dubai’s international airport, The Mass Transit Railway of Hong Kong and so on). They also apply mega projects for the sake of many other socio-cultural, symbolic, spatial and environmental targets (Swyngedouw et al., 2002; Leick, 2015; see also “The Community Pride” of Frey, 2016). Looking at mega projects, it is possible to understand the desires, problems and vision of a society (Söderlund et al., 2017). Mega projects have a ground-breaking character. Even though a very careful and democratic planning approach is followed, it is inevitable that they meet with resistance (Jordhus-Lier, 2015). According to Li (2007) and MacKinnon (2000), a mega project is like a war in which multiple actors struggle with each other drawing up multi-dimensional strategies to win. Mega projects are rarely considered in the literature as a battlefield in which a government struggle with varied opposing organizations (Jia et al., 2011; Davis et al., 2013; Liu et al., 2016).

As one of Turkey’s most important mega projects in history of the Republic, Istanbul’s new international airport project met with a determined and multifaceted opposition. Istanbul’s grand (3rd) airport was lived in a confrontational socio-political environment and has been subject to a battle between the Turkish government and opposing organizations (for more details about the conflicting socio-political environment in Turkey, see HBS, 2018). Both parties were organized and strong-minded so have not taken a step backward. This battle has finalized with the victory of the government. Managing new airport’s planning and development process in an unusual way, designing a top government hands-on megaproject organization and following efficient strategies have brought success to the government.

Knowledge on the management and organization of megaprojects advancing as top government hands-on is limited in the literature. This paper explores top government hands-on megaproject management model applied to Istanbul’s new airport megaproject. The study aims to find an answer to this research question:

RQ1. How is the organizational design and management of a mega-project that has been alive in a confrontational socio-political environment and whose national strategic importance is high?

The study examines the planning and development process of a mega project through the values and strategies of the two conflicting parties and reveals the successful and unsuccessful steps taken by the parties in the process.

2. Literature review
According to Pitsis et al. (2018), there are seven characteristic features apart from the cost (scale) that allows us to define a project as mega: “reach, duration, risks, uncertainties, widely disparate actors, areas of controversy, legal and regulatory issues.” Hence, mega
projects can now be defined using many social and economic variables. This leads to a feature of mega projects: “complexity.” Indeed, the planning and implementation process of mega projects include many issues in social, economic, engineering and scientific sense (Salet et al., 2013; He et al., 2015). Therefore, academic studies on mega project management in recent years have focused on understanding and resolving the complex system of mega projects in particular (Giezen, 2012; Brady and Davies, 2014; Davies and Mackenzie, 2014). Miller et al. (2017), for example, see megaproject management as an innovative game and tries to explain how best to play this game in their work. Davies et al. (2017) propose an innovative and flexible management model for megaprojects:

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Traditional PM skills and techniques are insufficient to properly plan or manage the complex dimensions of high-tech mega-projects [...] Project meta-risk and preparedness for the unknown need early and serious consideration (Crosby, 2017, pp. 10-11).
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According to Flyvbjerg (2017), there are four drivers that reveal mega projects: “technological, political, economic and aesthetic sublimes.” The field of megaproject management is young and multidisciplinary. Mega projects are often misled by planners or managers who have not had enough experience in megaproject management, which creates a weak leadership (Flyvbjerg, 2017). Many actors participate in decision-making, planning and management processes in mega projects so conflicts of interest between public and private actors, cost overruns, schedule delays and benefit shortfalls that effect project viability often arise. While success in mega project management is a very rare event, failure is a very common occurrence (Frey, 2016; Lenfle and Loch, 2017; see “The Failure Science Proposition” of Jia et al., 2011). According to the weighted view, mega projects are condemned to over budget, over time and under benefit. Failed mega projects which do not progress as planned on schedule may do serious damage to cities and countries in every sense (Cantarelli et al., 2010; Flyvbjerg, 2014). According to Söderlund et al. (2017), mega projects’ success is often driven by political and/or power-related factors. Clegg and Kreiner (2013) see megaprojects “as processes of organizing, as emerging organizational entities, and action localities for the intermingling of politics and power.” Hodgson and Cicmil (2008) consider the issues of morality, equality, ethics and work-life balance very important in project management. They also draw attention to political and power relations in mega projects and underline that other factors besides time, cost and quality performance must also be identified for the success of a megaproject. Eskerod and Ång (2017) indicate that the success of mega projects can be assessed from the perspective of values. It should be well understood what actors and organizations acted with which values and strategies in the process (Flyvbjerg, 2001).

Mega projects should be seen as a practice with multiple effects which are developed in a global competitive environment. Different type of policies is taken into consideration and varied targets at global scale to local are combined together in mega projects. They carry a lot of weight with countries and cities where they are built up. Mega projects progress in a conflicting environment because they make a profound impact on all urban systems not only in cities where they are built up but also in the other cities (Hellman et al., 1997; Kennedy et al., 2014; Ansar et al., 2017; see also the “Big Fix” mentality of Douglass, 2010):

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(Mega) projects which transform landscapes rapidly, intentionally, and profoundly in very visible ways, and require coordinated applications of capital and state power (Gellert and Lynch, 2003, pp. 15-16).
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Since mega projects, which have a large sphere of influence and cause a change in legal, institutional and managerial structures, they meet with resistance (Altshuler and Luberoff, 2003; Kennedy et al., 2011; Larner, 2015; Mitchell et al., 2015):

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A megaproject is not only big, in terms of scope and scale and costs, it is also big in its potential for politics in and around the project (Pitsis et al., 2018, p. 9).
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Swyngedouw et al. (2002), Pitsis et al. (2003) and Grün (2004) draw attention to the importance of who dreams, appropriates and leads a mega project. Flyvbjerg (2014) believes that there is a relationship between the level of aspiration and the management organization of mega projects. A management organization is created specific to a megaproject in general (Lehrer and Laidley, 2008; Robbins, 2015). Communication among the actors within the megaproject organization is regarded as a directly related issue with the success of a megaproject (Hyväri, 2006). Bröcker et al. (2010), Mouterar et al. (2013) and Giezen et al. (2015) emphasize on the issues of how a mega project’s organization is set up and how this organization struggles with opposing groups and manages the planning and development process.

Even though some scholars criticize the prioritization of economic policies (instead of social or environmental policies) in mega projects (Jessop, 2000; Mouffe, 2005; Allmendinger and Haughton, 2009) and claim that they do not help cities and countries to reach high economic targets as anticipated (Jessop, 1997; Leitner and Sheppard, 1998; Cochrane, 1999), the idea of developing a new mega project is still very attractive to many central and local governments (see “The megaproject paradox” of Flyvbjerg et al., 2003). Scholars argue that mega projects, which are considered as a good source of prestige and economic gains for cities and countries, may produce an ideal of consensus, inclusion and administration and may develop discords into harmony (Kamat, 2015; Wilson and Swyngedouw, 2015). These scholars predicate their argument on the concepts of post-politics and post-democracy (Vento, 2016). However, some others claim that mega projects may create new and unexpected social conflicts whilst they are building consensus among different communities (Dean, 2015). Scholars who accept that mega projects begin and progress in a conflicting socio-political environment draw attention to specific approach which is followed by central or local governments to struggle with opposing groups in order to finalize mega projects in a successful way (Burdge and Vanclay, 1995; Li et al., 2005; Esteves et al., 2012).

Many studies may be found in the literature about the detailed examination of planning processes in mega projects. Swyngedouw et al. (2002) states that central, vertical, formal, bureaucratic, hierarchic and top down planning approaches give place to a decentralized, horizontal, informal, flexible, bottom up and network planning approach. Some scholars defend that this new planning approach may weaken public legitimacy and civil society and may erode democracy (Albrechts, 2015). Some others claim that mega projects are put into practice in undemocratic and non-transparent ways; they focus on economic targets very much; normal planning mechanisms are not run for them; and they break out of existing institutional settings and legal procedures (Wilson and Swyngedouw, 2015). Ahlers et al. (2017) argues that political power is engaged in megaprojects, which in turn makes it difficult to protect transparency and citizen rights.

Davis et al. (2013) examined the political and economic consequences of the failure of the Mexico airport project, the nature of citizen protest, the state’s responses, and how each played out in the course of this particular project in a study entitled “How to Defeat a Megaproject: Lessons from Mexico City’s Airport Controversy.” As a result of research, it has become clear that the institutional relations between the state and citizens must be well understood in the democratization, decentralization and globalization processes of Mexico. Similarly, in this study, an airport project is examined in depth. However, unlike the Mexican airport project, a successful top government-level megaproject management was carried out at the Istanbul airport project. Therefore, unlike Davis and Dewey’s work, this study mainly focuses on the reasons for the successful completion of megaproject, the structuring of the megaproject organization and its mode of action.

3. Research methodology, data collection and analysis
Organizational theory (OT) and critical theory (CT) perspectives are used in this study. OT provides a useful and all-round perspective about how mega projects are planned, put
into practice and managed. The theory generally tries to explain the establishment and
development process of social organizations. It aims to explore social interactions in an
organization and between different organizations. The issues of how an organization makes
or changes strategic and operational decisions and factors that affect social organizations’
policies and strategies are also taken into consideration in the theory (Lindblom, 1959;
Bunning, 1992; Johnson and Scholes, 1997). In order to start and finish a mega project in a
successful way, the creation of a special social organization is a basic necessity (Imrie and
Thomas, 1999). Power and politics, new type governmental structures, competition
environment and social conflicts are some of the popular concepts in OT. An organization is
defined as a social structure which is created consciously to achieve a specific target; this
structure requires a board of managers and coordinators (Raco, 2002). Urban projects are
put into practice in accordance with the rules, procedures and norms of formal social
organizations (Young, 1990). OT helps researchers to understand how a social organization
is created specific to an urban project and how that organization acts in a changing
political and economic environment and finds solutions to the hardships encountered.

CT is “an attempt to understand the world in such a manner that enables people to become
more emancipated” (Philips, 2009). CT provides a perspective that reveals what is
overlooked and what is often ignored. CT is defined as “a philosophical approach to culture,
and especially to literature, that considers the social, historical, and ideological forces and
structures which produce and constrain it” (OALD, 2018). Critical management studies help
us to understand the historically embedded nature of projects (Kreiner, 1995; Engwall, 2003).

Istanbul’s grand airport is examined from OT and CT perspectives. This mega project has
chosen as the case study in this research because it is the most strategic mega project of Turkey
which meets with the strongest opposition in history of the Republic. Neither the Turkish
government nor opposing organizations have taken a step back in this struggle. Moreover, both
parties used all their power to the full extent and did their best for victory. The exploration of
the project as a case may reveal important findings about the philosophy, nature, success,
planning process, social organization and dynamics of top government hands-on megaprojects.
Istanbul’s grand airport project has been run in strict confidence and limited information has
been shared gradually in a controlled way with public by the megaproject organization.
In addition, both parties produced different arguments from their perspectives and published
many documents on mass and social media in the process. Therefore, the most suitable methods
to collect data about the project are case study, interview, focus group and document analysis.

These four methods are used together in this qualitative research. Case study, interview and
focus group are common research methods in descriptive and exploratory studies (Stake, 1995;
Yin, 2003). The basic advantage of the methods is to explain a complex social phenomenon in
depth (Seawright and Gerring, 2008) and to help to access empirical data on a selected research
topic (Herazo et al., 2012; Muller et al., 2013). Document analysis is a kind of research method to
review and evaluate published or electronic documents on the purpose of extracting a new
meaning or increasing an understanding (Rapley, 2007). According to Atkinson et al. (2001),
documents are social facts which are produced, shared and used by social organizations.

The phases of the research process are presented in Figure 1.

The details of resources and data collection process are given in Table I.

Content analysis helps to assess qualitative data (texts) in a detailed manner and allows
the examination of the verbal and written materials in an objective and systematic manner
(Falkingham and Reeves, 1998; Tavşancıl and Aslan, 2001). The research has yielded data
from resources and that are then organized into three major themes and 27 key subjects
specifically through content analysis. The content of all interviews and documents has been
analyzed through the extraction of meaning (interpretation), basic viewpoints, arguments
and grounds for both parties. A sample of content analysis as applied to verbal and written
texts are provided in Table II.
4. Results

4.1 The strategic planning and development process of Istanbul’s grand airport

The year 2002 was a breaking point for the political history of Turkey. Justice and Development Party (the AK Party) which describes itself as “conservative democrat” came into power alone with a 34.28 percent vote rate after Turkey’s 12-years period of coalition governments and the year 2001’s severe local financial crisis. Under the leadership of Recep Tayyip Erdogan, the AK Party applied a tight fiscal policy and took economic measures for the first three years to remove the negative effects of the local financial crisis on the national economy. The successful application of these measures brought a partial economic stabilization and welfare to the country (Eroglu, 2009).

Istanbul’s new international airport project as an idea was initially shared with general public in 2005 which is the first year of Turkey’s economic stability and prosperity. The Prime Minister Erdogan declared that “Istanbul’s existing airports have difficulty in meeting the demand so the city needs a new giant international airport. Instructions have been given to the Ministry of Transportation to start a search to find the best location for Istanbul’s new airport” (Erdogan, 2005, p. 1). After two-years research, the Ministry of Transportation published a special technical report which was entitled “Transport Infrastructure Needs Assessment for Turkey” in 2007 (Mueller, 2007). Istanbul’s huge need for a large international airport was documented openly, officially and perceptibly with quantitative analysis and calculations in this report. The report predicted that Istanbul’s present airports would reach their maximum capacity so they would be inefficient to meet prospective airway passenger and load demand in ten years’ time.

Two airports serve domestic and international flights in Istanbul at present. Atatürk Airport was constructed at the European side of Istanbul in 1953 and planned to serve max. 38 million passengers per year. Sabiha Gökçen Airport was opened in 2009 at the Anatolian side of Istanbul and planned to serve max. 25 million passengers per year. Table III shows the number of passengers used Istanbul’s airports between 2008 and 2015. The numbers confirm the prediction of the technical report published by the Ministry of Transportation in 2007. Both of Istanbul’s airports face with demand over their maximum capacities (Figure 2). The airports are located inside the city and surrounded by residential settlements so their capacity cannot be increased anymore (DHMI, 2016; SGH, 2016).
<table>
<thead>
<tr>
<th>Major themes</th>
<th>Research methods</th>
<th>Number of documents scanned/number of people interviewed</th>
<th>Date/period</th>
<th>Research terms/key subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Megaproject's management organization</td>
<td>News and press statements published on mass media (National newspapers and online news portals)</td>
<td>51 News, 12 Press statements</td>
<td>2005–2016</td>
<td>Istanbul’s third airport, Istanbul 3rd airport, Istanbul new airport, Leadership, Vision, aim and objective, Management and organization, Distribution of roles, Values and strategy, Planning and development process, Agreements and partnerships, Participation and transparency, Economy, policy and politics, Resources and power, Schedule and stages</td>
</tr>
</tbody>
</table>

In-depth interviews

| 4 public actors: Ministry of Development, Ministry of Environment and Urbanization, The Istanbul Metropolitan Municipality, Housing Development Administration of Turkey, 3 private actors: Aecom, IGA Company, Vakifbank |
|----------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|

Focus group interviews

| Public/private actors: The Istanbul Metropolitan Municipality Department of Transportation (2), Aecom (1) |
|----------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------|

Megaproject's planning and development process

| News and press statements published on mass media (National newspapers and online news portals) | 84 News, 20 press statements                                                    | 2005–2016                                               | Planning and design process, Development model, Vision, aim and objective, Value and strategy, Public participation and transparency, Finance capital and tender, Cost and benefit |

(continued)
<table>
<thead>
<tr>
<th>Major themes</th>
<th>Research methods</th>
<th>Number of documents scanned/number of people interviewed</th>
<th>Date/period</th>
<th>Research terms/key subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic articles</td>
<td>23 academic papers: EBSCO (4), Scopus (7), Google Scholar (3), Tübitak Ulakbim (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposing organizations’ activities</td>
<td>News published on mass media (National and international newspapers and online news portals)</td>
<td>245 News</td>
<td>2011-2016</td>
<td>Reasons of opposition Aim and objective Values and strategy Critical arguments Partners and allies Economy, policy and politics National activities International activities Legal actions Street demonstrations and protests Challenges Public support</td>
</tr>
</tbody>
</table>

(continued)

Table I.
<table>
<thead>
<tr>
<th>Major themes</th>
<th>Research methods</th>
<th>Number of documents scanned/number of people interviewed</th>
<th>Date/period</th>
<th>Research terms/key subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media sharing (Facebook and Twitter)</td>
<td>~128,000 Tweets</td>
<td></td>
<td>April 2017</td>
<td>Focus group interviews, TMMOB Chambers of Urban Planners (2)</td>
</tr>
<tr>
<td>Institutional websites (Information gateways)</td>
<td>~45,000 Sharing</td>
<td></td>
<td></td>
<td>Focus group interviews, TMMOB Chambers of Urban Planners (2)</td>
</tr>
<tr>
<td>Technical reports</td>
<td>32 official websites</td>
<td></td>
<td></td>
<td>Focus group interviews, TMMOB Chambers of Urban Planners (2)</td>
</tr>
<tr>
<td>Technical reports</td>
<td>6 reports: BETAM Report, NFD Reports (2), TEMA Report, TEPAV Report, TMMOB report</td>
<td></td>
<td></td>
<td>Focus group interviews, TMMOB Chambers of Urban Planners (2)</td>
</tr>
<tr>
<td>In-depth interviews</td>
<td>4 private actors: Istanbul Chamber of Architects, Istanbul Chamber of Urban Planners, The Northern Forests Defense, TEMA</td>
<td>April 2017</td>
<td></td>
<td>Focus group interviews, TMMOB Chambers of Urban Planners (2)</td>
</tr>
<tr>
<td>Focus group interviews</td>
<td>Public/Private Actors</td>
<td>May 2017</td>
<td></td>
<td>Focus group interviews, TMMOB Chambers of Urban Planners (2)</td>
</tr>
</tbody>
</table>
Turkey’s economy grew at an annual average rate of 6.82 percent between 2002 and 2007. Although the 2008 global mortgage crisis had affected the Turkish economy negatively, the national economy continued to grow in the following years. With the power of economic relaxation, the Turkish government published “Turkey’s 2023 Strategic Vision Paper” in 2008. The national vision was built based on the idea of “Great Turkey Once Again.”

Under the title of “Economy,” “transportation and logistics” are chosen as the strategic sector for Turkey. Very important macro policies were adopted by the national government “to take

<table>
<thead>
<tr>
<th>Code</th>
<th>Example</th>
<th>Extraction of meaning/interpretation</th>
</tr>
</thead>
</table>
| Values | President Erdogan: “We want to go back to the days when Turkey was a brand in the world. Do you understand? Those days will come back. The year 2023. We will work hard and we will do it […] The new airport will provide 22 billion euros to the state. But there are those who cannot digest it. Despite everything we continue our way, we hope to open the first phase of this airport in 2018.” News – June 8, 2014 | Great Turkey Once Again
High Financial Income
(Turkey’s 2023 Economic Vision)
The realization of mega project as planned on schedule |
| Transport and Communications Minister Lütfi Elvan: “In the new airport project there will be no slightest damage to the state or a situation against the state!” News – December 26, 2014 | |
| Nihat Ozdemir, Member of the Board of Directors of IGA, conveyed that they did all operations under the control of the State Airports Authority (DHMI) and that they had done what was necessary for the opening of the airport construction to be completed without any gouge. News – December 25, 2015 | |
| Prime Minister Binali Yildirim noted that the new airport’s initial stage construction period was set at 42 months and that a delay of 5,000 euros per day was foreseen at construction delays. News – February 9, 2016 | |
| The Northern Forest Defense prepared a 100-page comprehensive report on the new airport project and shared it with the public through a press conference held at the BayükKent Branch of the Chamber of Architects. The 100-page report will be presented as evidence in new lawsuits filed for the cancellation of the new airport development plans and the Environmental Impact Assessment Report. The report, translated into English, will be sent to international institutions that are interested in airport development. News – March 28, 2015 | Strategy to stop the mega project through legal means
Strategy to create an international public opinion against the mega project |
| CHP Istanbul deputy Aylut Erdogdu announced that they will present a lawsuit to the Council of State today for the cancellation of the 3rd airport bid to Istanbul. News – July 1, 2013 | |
| “The [airport] and the [bridge] going through the northern forest is a natural crime,” Demirtas says. “It’s an incision in the lungs of Istanbul. That will leave a scar.” City Lab – An international online platform on cities – July 25, 2016 | |

Source: Produced by the author

Table II. Sample of content analysis as applied to verbal and written texts
Turkey to the level of contemporary civilizations and to carry Turkey on the highest position in the developed countries list” in the vision paper (Sensoy, 2008, p. 1). The Turkish government considers Istanbul’s new airport project as the first and most important step to reach Turkey its 2023 economic goals (Baş et al., 2018). In this context, the Istanbul new airport project was set as a strategic target for the 2007-2013 national development plan (DPT, 2006).

In line with the new national vision, the Turkish government started detailed research, analysis and plan studies for the development of a new international airport in Istanbul. The research and planning process of Istanbul’s new airport continued about three years. The Prime Minister Erdogan organized an official press conference which was entitled “Turkey is Ready, Vision 2023” at the April 27, 2011. The Prime Minister declared that “a special team inside the government is working finicky on several mega transportation projects in Istanbul (such as a new bridge project on Bosphorus, the North Marmara Highway Project, the Marmaray Sub-sea Tunnel Project and so on) for a long while and a new international airport project for Istanbul is now ready to start” (Erdogan, 2011, p. 1). The Prime Minister in his speech emphasized strongly that the planning works of Istanbul’s new international airport project was carrying out in strict confidence to stop prejudiced attacks toward it:

I will continue to keep the location and cost of Istanbul’s new airport project secret to stop possible negative attacks against it because I know that there will be so many unfair attacks to this project when we start to give information about it. The location and cost of the project is only known by us now. The planning works will go on about two years approximately (Erdogan, 2011, p. 2).

<table>
<thead>
<tr>
<th>Year</th>
<th>Atatürk Airport</th>
<th>Sabiha Gökçen Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>28,553,132</td>
<td>4,281,193</td>
</tr>
<tr>
<td>2009</td>
<td>29,812,888</td>
<td>6,517,486</td>
</tr>
<tr>
<td>2010</td>
<td>32,143,819</td>
<td>11,189,678</td>
</tr>
<tr>
<td>2011</td>
<td>37,394,694</td>
<td>13,124,670</td>
</tr>
<tr>
<td>2012</td>
<td>45,091,962</td>
<td>14,686,052</td>
</tr>
<tr>
<td>2013</td>
<td>51,297,790</td>
<td>18,521,762</td>
</tr>
<tr>
<td>2014</td>
<td>56,685,166</td>
<td>23,494,646</td>
</tr>
<tr>
<td>2015</td>
<td>61,322,729</td>
<td>28,265,578</td>
</tr>
</tbody>
</table>

Table III. Passenger traffic at Istanbul’s airports by years

Sources: DHMI (2016), SGH (2016)

Figure 2. Passenger traffic at Istanbul’s airports by years (person)

Sources: DHMI (2016), SGH (2016)
Erdogan is a leader who has been exposed to the severe attacks and obstacles of the secular and leftist society in Turkey throughout his political life. Erdogan knew that Istanbul’s new airport project would be tried to be strongly hindered by the same segments of society without looking at its rationale. Being aware of this situation, Erdogan decided to personally manage the planning and development process of the Istanbul airport project with a different organizational structure. Erdogan’s statement gives the first hints of top government hands-on megaproject management concept burgeoning in Turkey. The vote rate of the AK Party increased to 49.83 percent in the 2011 general election which was carried out just two months later after the declaration of prospective mega projects in Istanbul. This result was an important signal that Turkey’s 2023 vision and Istanbul’s new mega projects have been supported and embraced by the majority of the Turkish society. In the 1/100,000 Istanbul Metropolitan Area Master Plan which was approved by the Istanbul Metropolitan Municipality in 2009, “the Silivri-Gazitepe Region” was chosen as a reserve area for a prospective new airport project (IBB, 2009). However, the metropolitan municipality mayor of Istanbul declared in 2011 that the new airport would be developed at “the Corlu Region” rather than at the reserve area shown in the Istanbul Metropolitan Master Plan because the distance between the existing Ataturk Airport and the Silivri-Gazitepe Region was too short and this situation might increase the air miss risk (Topbas, 2011). As an important detail, rising land prices due to speculation in such locations have strengthened the possibility of facing over budget, over time and under benefit problems regarding the new airport project. Following an unusual but legal path, the Turkish Council of Ministers took a quick cabinet decision to develop Istanbul’s new international airport at “the Arnavutköy Region” near the Black Sea on the August 13, 2012. The total size of the project area is 7,700 ha and 80 percent of the land belongs to the national government (IGA, 2017).

After the clarification of new airport’s location, the Ministry of Transportation, Maritime and Communication started a comprehensive research in the project area to assess the possible environmental impact of the mega project. The technical research was completed and an Environmental Impact Assessment Report that allows the building of the new airport into the selected area was published on the first of April, 2013 (Ak-tel, 2013). The Turkish Government then went out to tender for the new airport project by Build-Operate-Transfer model with the aim of maintaining public finance reserves and dropping public debts. The tender was made by sealed bid method on the second of May, 2013. The IGA Company, which was established by the consortium of five local development companies, won the tender (IGA, 2017).

Istanbul’s grand airport has been designed in structural and architectural terms alternatively by nine worldwide known architectural firms (IGA, 2017). For the start of airport’s construction, private properties which cover the 20 percent of the project area had to be expropriated so the Turkish government, again following an unusual but legal path, decided to expropriate private properties in the project area rapidly by Housing Development Administration of Turkey (TOKI) with Decision No. 5768 on January 17, 2014 (Official Gazette, 2014). The Istanbul Metropolitan Municipality then approved 1/1000 Implementary Development Plans for the new airport project on the February 17, 2014.

“Building a new grand airport in Istanbul,” “developing Istanbul into an international hub for airway passengers/loads” and “making Istanbul an international center of attraction for transit air cargo transportation” are taken place as strong proposals and strategic targets both in the ninth (2007–2013) and the tenth (2014–2018) national development plans (Ministry of Development, 2013). A regional plan for Istanbul that covers 2014–2023 was also prepared by Istanbul Development Agency in the process. One of the most important strategic goals in this plan is “to develop Istanbul into an international airline interchange
and maintenance center through building of a new grand airport” (ISTKA, 2014). It is understood that all institutions in the megaproject organization strongly adhered to Turkey’s 2023 economic vision and showed high effort to rapidly complete all bureaucratic procedures for the realization of the megaproject. Thus, the planning process of Istanbul’s grand airport was completed.

The Prime Minister Erdogan laid the foundation of the mega project with a great ceremony at June 7, 2014. According to the schedule, the first stage of the mega project is going to be finished at October 29, 2018 and will provide service to 90 million passengers per year and 2,000 aircrafts per day. When the second and the third stages are completed in 2039, the passenger capacity of the airport will reach 150 million per year. An logistic center with 6 million ton cargo capacity per year is going to take place in the project area (IGA, 2017). The new airport has a growth and expansion opportunity in spatial terms thanks to empty lands surrounding the project area (Ak-tel, 2013).

According to a technical report which is titled “Economic Impact Assessment Report for Istanbul’s New Airport” published by the cooperation of “Istanbul Economy” and “Research Centre for Economy and Foreign Policy (EDAM)” as independent think-tank organizations, the contribution of Istanbul’s grand airport to the national economy will be about US$20bn in 2025 referring to the 4.9 percent of Turkey’s gross national income. The airport will offer an employment opportunity to 225,000 persons at least when it is finished (Ulgen and Ozbek, 2016). The mega project organization imposes an obligation to all enterprises operating in the airport of having a LEED (green business) certificate in order to make Istanbul’s grand airport world’s first green airport (Akcayoglu, 2016a).

4.2 A special design for megaproject’s organizational structure

As the most strategic megaproject of Turkey, a special organization for the management and execution of Istanbul’s grand airport has been set up by the Turkish government (Table IV). Role shares inside the organization are given below. The megaproject starts and continues under the leadership and control of Recep Tayyip Erdogan (as the Prime Minister and later on as the President) in individual terms from beginning to the end. The Ministry of Development sets a strategic goal to build a new grand airport in Istanbul in the ninth and the tenth national development plans. The Ministry of Environment and Urbanization is responsible for the site selection and upper-scale plan-making processes. The Ministry of Transport, Maritime Affairs and Communication draws the motorway and metro link projects which are necessary for the airport. The Istanbul Metropolitan Municipality is responsible for lower-scale plan-making processes. General Directorate of State Airports Authority which operates under the Ministry of Transport, Maritime Affairs and Communication puts the project out to tender with a Build-Operate-Transfer Model. Housing Development Administration of Turkey which operates under the Prime Ministry completes land expropriation works in the project area. The structural/architectural project is designed by nine international private companies which are Nordic Office of Architecture, Grimshaw, Arup Associates, Haptic Architects, Perkins+Will, Scott Brownrigg, Fonksiyon Mimari, TAM+Kiklop and Pininfarina+Aecom. IGA Company which is established as a joint initiative by five local real estate construction, development and investment companies (Cengiz, Mapa, Limak, Kolin, Kalyon) wins the tender paying 22 billion 152 million Euros to the State. The construction and development cost of Istanbul’s new international airport is 10 billion 247 million Euros (Hurriyet, 2013). The project is funded fully by private sector finance. In total, 16-year credit agreements are signed between the IGA Company and local/foreign banks (Ziraatbank, Halkbank, Vakifbank, Denizbank, Garantibank and Finansbank) (Milliyet, 2015). The IGA Company which bear the construction and development cost has the right to run the new airport for 25 years. It has to pay 1 billion 46 million Euros rent per year to the Turkish Government (IGA, 2017).
Some features make megaproject’s organization special and interesting. Istanbul’s grand airport was born as a strategic Turkey project and adopted by the top organizations of the State (The Presidency and the Prime Ministry of the Republic of Turkey) in institutional terms. There is no such a mega project like this that is adopted by the State in history of the Republic. The mega project starts and progresses under the leadership of Recep Tayyip Erdogan in individual terms as being Prime Minister at first and then the President. Erdogan designed megaproject’s organizational structure and managed the planning process himself from beginning to the end. It is not very common that a politician suggests a mega project idea in a country; adopts it for 12 years; wins four democratic general elections so keeps his leadership and power in the megaproject organization; and ensures the completion of the project successfully in the end. Thanks to strong adoption of the megaproject in institutional and individual terms, a gap has not emerged in the organizational management and the project has progressed in accordance with the Turkish government’s strategic plans. The organizational structure of the megaproject has been designed based on trust and high harmony and in a body for struggling to overcome all obstacles that stand in front of the megaproject.

Since Istanbul’s grand airport is a strategic national project, the top organizations of the central government (The Presidency, The Prime Ministry and Ministries) take the most active role in the megaproject organization. The project runs only by top-departments of the chosen three Ministries (Ministry of Development, Ministry of Environment and Urbanization, Ministry of Transport, Maritime Affairs and Communication). The organization, as a small and strictly controlled group, runs the planning process by leaving the megaproject out of State’s settled institutional structure and mechanisms.
It is seen that the megaproject progressed as planned in the schedule and protected itself from all kind of negative internal and external interventions in this way.

The organization gives great importance to ensure local economic development, to run the planning process in strict confidence, to protect national interests, to remove all project risks and hazards early as much as possible and to finish the project successfully at all costs. Nine worldwide-known architectural firms which have grand airport development experience and international awards have been involved in the megaproject organization (IGA, 2017). The organization worked with these firms separately and kept the design process ultra-confidential. This choice shows that the organization sought perfection in airport’s structural and architectural design and intended to reach the highest and best international airport development know-how. The final design of the project were shared with the general public when it was maturated and reached an ideal solution in every sense after long running, rigorous and detailed studies behind the closed doors. The structural and architectural design of the project was granted awards from International Architecture Awards 2016 and World Architecture Festival 2016 (Chicago Athenaeum, 2016; WAF, 2016).

IGA Company has been employed by the organization for the construction of the megaproject. This new company was born especially for the realization of the megaproject by a consortium of Turkey’s five leading local development companies. For keeping the IGA Company always local, the sell and transfer rights of its shares to any other company/person is tied to the official permission of Ministers. In total, 16 companies, which are experienced on airport developments, bid for the construction of the megaproject in the tender. Being a debt-free local consortium which is resilient and invulnerable against local and global economic crisis, having finance capital stock larger than other bidding companies, being non-dependent on foreign resources in financial terms and making commitment to pay a higher rent to the Turkish government for the operation of the airport for 25 years are main factors that help the IGA Company won the tender. The tender specification was prepared following the principles of the best national interest seeking to ensure local economic development and to develop leading local development companies into global companies (Akcayoglu, 2016b).

Six banks have been involved as funders in the megaproject organization. Three of them (Ziraatbank, Halkbank, Vakifbank) are public banks with local capital and the others (Denizbank, Garantibank, Finansbank) are private banks with foreign capital. The 70 percent of financial borrowings is financed by public banks and the rest 30 percent is financed by private banks for the realization of the megaproject (Milliyet, 2015). In this way, financial risks decreased at the lowest level and the possibility of experiencing a slowdown or breakdown because of a financial problem in megaproject’s construction process largely disappeared. As a result of this financial structure, cost and benefit is shared among public and private banks which all display activity in Turkey. More importantly, the banking sector of Turkey gains strength; and the financial future of the mega project are not given into foreign creditors.

4.3 Determined and multifaceted opposition against Istanbul’s grand airport

Opposing organizations consist of multiple independent bodies which display activity in varied tracks. Istanbul’s grand airport project is subject to a determined and multifaceted opposition since its declaration to the public. Many social organizations which display activity independently in varied tracks came together and objected to the megaproject because of varied reasons (Table V).

The first opposition of opposing organizations was expressed in general and local democratic elections. The megaproject was declared to the general public as ruling party’s strategic Turkey project in 2011 (AK Party, 2011). Therefore, the 2011 and 2015 general
elections sealed the fate of the megaproject because it might be canceled if the government was overthrown as a consequence of huge vote loss. Opposition political parties CHP and HDP in the Grand National Assembly of Turkey has not embraced this project in general and openly criticized it during the electoral processes (Gudu, 2012; Tanrikulu, 2015). The discourse of these parties included both anti-megaproject and anti-Erdogan opposition. The Turkish society was unsure whether the megaproject criticism was real or as a result of Erdogan’s opposition. However, AK Party only focused to technical and visionary aspects of the megaproject and tried to persuade Turkish society about the importance of the megaproject for the future of Turkey during the electoral processes so won the 2011 and 2015 general elections and remained in power taking more than the half of Turkish voters. AK Party also won the mayoralty of Istanbul in the 2014 local election (YSK, 2017). AK Party’s victories at general and local elections opened a door to put the megaproject into practice.

Besides expressing opposition at elections, opposing organizations expected to stop the megaproject through legal means. About 16 legal actions were brought against the megaproject after its declaration to the general public (NFD, 2015a). Especially the issues of site selection, planning process, environmental impact assessment report, land

<table>
<thead>
<tr>
<th>Type of organization</th>
<th>Prominent representatives of the social organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opposition political parties</td>
<td>Republican People’s Party (CHP)</td>
</tr>
<tr>
<td>Professional chambers</td>
<td>People’s Democratic Party (HDP)</td>
</tr>
<tr>
<td>Istanbul Chamber of Environmental Engineers</td>
<td></td>
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<tr>
<td>Istanbul Chamber of Architects</td>
<td></td>
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<tr>
<td>Istanbul Chamber of Urban Planners</td>
<td></td>
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<tr>
<td>Istanbul Chamber of Civil Engineers</td>
<td></td>
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<tr>
<td>Istanbul Chamber of Electrical Engineers</td>
<td></td>
</tr>
<tr>
<td>Istanbul Bar Association</td>
<td></td>
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<tr>
<td>Istanbul Medical Chamber</td>
<td></td>
</tr>
<tr>
<td>Council of Socialist Engineers and Architects</td>
<td></td>
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<tr>
<td>Non-governmental organizations</td>
<td>The Northern Forests Defence</td>
</tr>
<tr>
<td>Environment and Ecology Movement</td>
<td></td>
</tr>
<tr>
<td>The Taksim Solidarity Platform</td>
<td></td>
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<tr>
<td>Greenest</td>
<td></td>
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<tr>
<td>Istanbul City Defence</td>
<td></td>
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<tr>
<td>Suriyer City Solidarity</td>
<td></td>
</tr>
<tr>
<td>The Ecologist</td>
<td></td>
</tr>
<tr>
<td>The Global Anti-Aerotropolis Movement</td>
<td></td>
</tr>
<tr>
<td>Foundations, associations, unions</td>
<td>TEMA Foundation</td>
</tr>
<tr>
<td>WWF Turkey (Foundation for the Protection of Natural Life)</td>
<td></td>
</tr>
<tr>
<td>CEKUL (Foundation for the Protection and Promotion of the Environment and Cultural Heritage)</td>
<td></td>
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<tr>
<td>Turkish Association of Foresters</td>
<td></td>
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<tr>
<td>Istanbul METU Alumni Association</td>
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<tr>
<td>Gaziosmanpasa Lawyers’ Association</td>
<td></td>
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<tr>
<td>DISK (Confederation of Progressive Trade Unions of Turkey)</td>
<td></td>
</tr>
<tr>
<td>KESK (Confederation of Public Employees Unions of Turkey)</td>
<td></td>
</tr>
<tr>
<td>Media (newspapers and televisions)</td>
<td>Cumhuriyet Newspaper</td>
</tr>
<tr>
<td>Sozcu Newspaper</td>
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<tr>
<td>Aydinlik Newspaper</td>
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<tr>
<td>Birgun Newspaper</td>
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<td>Evrensel Newspaper</td>
<td></td>
</tr>
<tr>
<td>IMC TV</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Produced by the author

Table V. The type of opposing organizations and their prominent representatives in Turkey
Expropriation and tender process are in dispute. Besides institutional ones, many individual lawsuits were filed against the project (Ocak, 2014). Non-senior MPs brought all claims alleged in these lawsuits up to the agenda of the Turkish Grand National Assembly in the form of verbal and written parliamentary questions (Erdogdu, 2013). In this way, they put support behind the opposing organizations and tried to mold a public opinion against the megaproject. However, all parliamentary questions were refused by the majority votes of MPs in the Turkish Grand National Assembly. If the AK Party did not have the majority of parliamentarians in general elections, the opposition could achieve a successful outcome from this strategic initiative. Professional chambers mostly followed this strategy to utilize Turkey’s legal system to stop the progress of the megaproject. The megaproject organization, as a strategic achievement, makes a special effort to ensure that every step it takes is legal and based on strong justifications for acceptance by the Turkish society. For this reason, opposing organizations have failed to succeed in the cases they have opened. Opposing organizations won only one lawsuit which is about the valuation of a private property located inside the project area. As a result of this lawsuit, TOKI, a member of the megaproject organization, was obliged to pay more expropriation price to the private property owners (Koc, 2014).

Scholars, experts and professionals from opposing organizations made also a systematic and constant effort to create a negative public perception toward the megaproject. They produced several technical reports and released them to the public via mass and social media. Opposing organizations’ negative perception creation strategy is built on these arguments: “the megaproject causes a natural disaster,” “private actors/companies derives unfair and unearned financial benefit from the megaproject,” “the project gives a severe economic damage to the public sector,” “the realization of the megaproject as planned on schedule is impossible from every angle,” “decisions regarding the megaproject are permissive and unscientific” (BETAM, 2013; TEPAV, 2013; TEMA, 2014). In addition, the opposing organizations worked hard to create an international reaction to the megaproject through publishing reports, bulletins and manifestos (NFD, 2015b). They sent collective e-mails; opened new websites; produced propaganda videos and shared them on social digital networks (such as Twitter, Facebook and YouTube); and made verbal/written statements to the international press (Ecologist, 2015; GAAM, 2016). The Turkish government and Istanbul’s grand airport project were criticized strongly at international platforms. Non-senior MPs, journalists, scholars, the members of professional chambers, non-governmental organizations, foundations, associations and unions used this strategy to take the support of international actors and institutions in their struggle. The megaproject organization responded to opposing organizations’ strategy of negative perception creation by executing the strategy of positive perception creation using the mass media power. While the opposing organizations are mainly focused on shaping the perception of international public opinion using social media, the megaproject organization is focused on shaping the perception of the national public opinion using the mass media (national TVs and newspapers). The strategy followed by the megaproject organization has enabled the AK Party to win local and national elections.

Journalists, authors, artists and celebrities from the opposing organizations also followed a denigration strategy in the process and started a smear campaign toward private sector actors who joined in the megaproject organization. Especially the constructors, developers and investors of the megaproject, the engineering company who prepared and approved megaproject’s environmental impact assessment report, experts and the creditor banks became the target of the opposing organizations. Wearing and negative news took place on the mass and social media to damage these private actors’ reputation, public image and success. The news covers these claims: “investors are not eligible and powerful enough to finance the megaproject,” “the construction of the megaproject is problematic and may not
be completed on schedule,” “the architectural and structural design of the megaproject is incorrect,” “the layout plan of the airport is not proper for aircrafts to take-off and land in technical terms,” “the constructors of the megaproject do not apply health and safety codes so many workers died in the work accidents,” “workers and engineers are not happy to be a part of the megaproject,” “experts who are in charge at lawsuits about the megaproject are subjective” (Birgun, 2016; Evrensel, 2016). This strategy of the opposing organizations was unsuccessful because the allegations were not supported by evidence-based documents that would convince the Turkish society. Again, the fact that almost every actor and almost every decision in the project was criticized with a pessimistic view was not credible by the society.

Opposing organizations then expected to stop the megaproject through street demonstrations and protests. “Gezi Park Protests” began in May 2013 in Istanbul right after the start of the application of the megaproject. A bevy of people gathered at Taksim Square and started to protest the ruling government (BaskaHaber, 2013). Protestors established a social platform which is named “Taksim Solidarity.” The street demonstrations which contain violence continued about two weeks. The Taksim Solidarity declared its demand and expectation to the general public and to the Turkish government through verbal and written press statements. The first request of the Taksim Solidarity from the Turkish government is the cancellation of all mega projects including the new airport project in Istanbul:

Beginning from Istanbul’s new airport, the new bridge on Bosporus and the Canal Istanbul, […] all mega projects in Istanbul must be cancelled in an instant (Taksim Solidarity, 2013, p. 1).

The opposing non-governmental organizations also held many street demonstrations against the project between 2013 and 2016 in Istanbul (NFD, 2017). They aim to create a social environment of resistance and objection regarding the megaproject through inviting ordinary people into squares and the project site for protests. The government is accused of conspiring to rig bids on megaproject’s tender process, making post facto changes on tender specifications, providing personal gains to the private actors/companies and giving an economic damage to the state at the street demonstrations (TMMOB, 2014). Opposing organizations’ use of violence and their revolt against the democratically elected government has led to the rapid withdrawal of support from these organizations by the social groups that are in favor of continuing social peace in Turkey.

It is seen that the basic element which brings opposing organizations together and helps them to move in line with the same purpose is of standing against the ruling party and Erdogan so the social conflict experienced in the case of Istanbul’s grand airport covers a political and ideological aspect that goes beyond the technical and professional aspects of the megaproject.

4.4 Values, strategies, successful and failed steps

The megaproject organization and opposing groups acted with different values and strategies in the planning and development of Istanbul’s grand airport (Table VI).

Findings show that 84 percent of the values of both parties are similar; 16 of the 19 values that the parties hold separately are largely the same. The differentiated values of the megaproject organization are “modern conservatism,” “localism” and “globalization/great Turkey once again” while the differentiating values of opposing organizations emerge as “contemporary modernism,” “westernism” and “nationalism.” This difference is largely similar to the political difference between the ruling and opposition parties in Turkey. Therefore, it is understood that the opposition to the megaproject was not only built on a scientific, technical and rational basis, but also on the opposition of Erdogan and the ruling party. The strategies followed by the parties differ in the process. In the study, it was
determined that the megaproject organization and the opposing organizations followed seven different strategies separately. Within the framework of these strategies, the parties have taken some successful and unsuccessful steps in the process. The findings revealed that the megaproject organization had nine successful and six failed steps. Opposing organizations have three successful and five failed steps in the process. This reveals that the strategies implemented by the megaproject organization are more successful than the strategies of opposing organizations (Table VII).

The most important success of the megaproject organization is to create a suitable legal and organizational environment for the realization of the mega project and to foresee all difficulties which opposing organizations may rise against the megaproject correctly in advance. The most important failure of the opposing organizations is their subversive and non-peaceful opposition to the state and their ideological action.

5. Conclusions
Findings show that a top level of organizational management can be attained in the state in order for the mega projects with high national strategic importance to survive without problems
and with high performance. Istanbul’s new airport could be realized by creating the highest level of organizational management within the state in Turkey’s years of socio-political conflict. The study reveals that this top government organizational structuring:

- reduces complexity, risks and uncertainties in the megaproject management;
improves the performance and quality of megaprojects;
- reduces the risks associated with all actors within the organization;
- increases harmony among megaproject actors; and
- increases the capacity and capabilities of local institutions and companies.

However, the structuring also increases centralization and decreases transparency and direct public participation in decision-making processes of urban planning and development.

The organization model, which was implemented for the first time in the Istanbul grand airport, was successful. Therefore, it may be possible to come across megaproject organizations, in which the heads of state themselves take the weight of the decision-making process on mega projects rather than professional managers or experts; and the heads of state themselves struggle with the problems encountered in megaproject development processes. It seems that this kind of megaproject management has taken away from the technical and scientific ground and carried the megaproject discussions to a strong political ground. If this type of top government hands-on megaproject organization and management style is adopted and maintained in prospective megaprojects, it is likely that the organizational structuring will become permanent and will eventually change the institutional structure within the state.

The findings confirm that a government is targeting a lot with a mega project at the same time. However, the main objective is still to achieve great financial benefits and to stand out in the global economic race. A megaproject which the state has taken strategically, clearly reveal the vision of that country’s future. A mega project achieves success if it seeks the interests of the state and society together, and the support of large segments of society who believe in the importance of the project. Democratic local and general election results determine the fate of a megaproject. Therefore, it is clear that not only the city society in which a megaproject is built but also the society of the country need to be convinced of the necessity and importance of that megaproject.

A megaproject may create consensus while increasing social conflicts in a society. A favorable environment is emerging in the planning and development process of a mega project which increases solidarity and harmony within the opposing organizations. Conflict is also increasing among communities who support and oppose the megaproject.

The study also has some educational results for groups against megaprojects. When opposing organizations are respectful to the law and they are legally bound, they use scientific and technical language that does not detach from rationality and act with universal values; they can take the support of society and make a positive contribution to the decisions made about the megaprojects. However, when a destructive, rejectionist and non-peaceful opposition to a mega project are preferred, opposing efforts are often wasted. When the opposing organizations free their criticism from political and ideological discourses, use scientific and technical language, seek social support domestically, and base their claims on convincing concrete evidence, the chances of success are rising.

This empirical research widens and deepens the theoretical foundations of top government hands-on megaproject management over the case of Istanbul’s grand airport. The study, which includes a process analysis, allows us to better understand and explain the nature and dynamics of mega projects. This empirical study examines a successfully completed megaproject in detail. The findings of the study make a new contribution to the experience in management, leadership, values, strategies, conflicts, relations with economy and politics in mega projects that progress in the responsibility of the top-level state. The study acknowledges that megaprojects have come to life in a confrontational environment and the success of a mega project is addressed through the values and strategies of the conflicting parties.


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Managing the unexpected in megaprojects: riding the waves of resilience

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Abstract

Purpose – Risk management and uncertainty in megaprojects is a flourishing topic in project management, while the unexpected is still a neglected matter. The purpose of this paper is to offer conceptual clarifications of the unexpected based on second-order-cybernetics and systems theory. While transferring findings from organisation theory to project management, the article provides fresh insights into managing the unexpected in megaprojects.

Design/methodology/approach – Being grounded on constructionism and systems theory, the conceptual paper explores selected research approaches from organisation theory: research on high-reliability organising, organisational resilience and organisational improvising, on contributions to managing the unexpected in megaprojects. Using the framework of meaning i.e. the factual, social and temporal dimensions, challenges of handling the unexpected are analysed and (effects of) decision-making structures for such projects are defined.

Findings – This paper argues that classic project management, while neglecting the fundamental distinction between risk, uncertainty and the unexpected, sticks to a planning-and-controlling approach. But the unexpected cannot be planned; however, organisations and managers can prepare for the unexpected. This requests a balance between structure and self-organisation in planning, communication, hierarchy and organisational culture. Understanding the contradictions inherent in managing megaprojects allows for smart decision-making when riding the waves of resilience.

Originality/value – The study adds to the literature on complexity and uncertainty in project management by enhancing the view to include the unexpected. While rejecting the universal applicability of rationality-based risk and controlling conceptions, shifting to second-order cybernetics and integrating elements of resilient organising increases the understanding of handling the unexpected in megaprojects.

Keywords Uncertainty, Resilience, Megaprojects, Project complexity

Paper type Conceptual paper

1. Introduction

With regard to megaprojects, very much has been written on uncertainty (e.g. Sanderson, 2012; Bertolini and Salet, 2007; Giezen, 2013; Daniel and Daniel, 2018) and risk (e.g. Flyvbjerg et al., 2003; Winch and Maytorena, 2012; Irimia-Diégez et al., 2014; William and Kingdom, 2017). In these discussions, the unexpected is usually understood as special shape of uncertainty; sometimes it is even confused with risk and uncertainty.

Referring to observer-based second-order-cybernetics (von Foerster, 1984) and systems theory (Luhmann, 1984, 2000), the research presented here argues, that the unexpected reveals a different quality than risk and uncertainty. While all three conceptions are concerned with future outcomes, and thus information, this paper argues that, given limited information processing capacity and complexity, ambiguity and urgency to act in megaprojects, organisations and project managers are not in a position to anticipate or plan for the unexpected – but the unexpected cannot be avoided.

This paper is based on research within the project “Der Beitrag der Human-Factors-Forschung zum Management von Unsicherheit in projektorientierten Organisationen” (“The contribution of Human factors research for managing uncertainty in project-oriented organisations”) funded by the City of Vienna/Austria, MA 23. A previous version of this paper was submitted to the Special Topic Track on “Managing Major and Mega Projects: The Importance to Broaden Classical Project Management Approaches” at EURAM 2018.
The paper turns to the research question:

RQ1. Can management prepare for the unexpected in megaprojects, and if so, how could that be accomplished.

By transferring insights from organisation theory to project management, in particular from research on high-reliability organising, organisational resilience, organisational improvisation and Human Factors research, research shows that managing the unexpected in megaprojects requests a balance between structure and self-organisation in various fields, such as planning, communication, hierarchy, expertise and organisational culture.

The paper is structured as follows: first the unexpected is re-defined from a constructionist’s view and differentiated from risk and uncertainty. The following section will characterise issues in megaprojects relating to the unexpected using the framework of dimensions of meaning, i.e. the factual dimension, social dimension and temporal dimension. The analysis of decision-making structures in projects will follow structures of expectations based on systems theory and will concentrate on the impact of the unexpected thereon. Finally, the paper lists contradictions to be managed when being confronted with the unexpected in megaprojects.

The study adds to the literature on complexity and uncertainty in project management by enhancing the view to include the unexpected. Furthermore, grounding in second-order cybernetics provides fresh insights into the handling of the unexpected in megaprojects, transcending planning and rationality-based risk and controlling conceptions.

Overall, this conceptual paper suggests that one reason for the difficulty of handling the unexpected in megaprojects lies in the limitations of classic project management methods. However, organisations and megaproject managers can prepare for the unexpected. By understanding the contradictions inherent in managing megaprojects, project managers can adapt their decision-making by finding a unique way for each project and each situation to ride the waves of resilience.

2. The unexpected

The unexpected is that event, that one does not expect – that sounds trivial. Social construction theory (Maturana, 1982; von Foerster, 1984) informs us that the expected (and the unexpected) are not entities in themselves, but are “produced” by and from the perspective of an observer, either an organisation, an employee or a team. Referring to an observer has significant consequences, as this turn draws attention away from the object, the cause of surprises, to the observer or decision maker (Tywoniak and Bredillet, 2017). Inspired by Daniel and Daniel’s (2018, p. 193) reflection on knowledge the unexpected “is a subjective construction, not an objective reflection of reality, which means that the emphasis should shift from the apparently objective system around us to the cognitive and social processes by which we construct our subjective models of those systems”.

The unexpected is unavoidable: one can try to narrow down the area of the unknown, or make conjectures about the unknown, but “producing” knowledge will inevitably “produce” sources of the unexpected in other fields (Douglas and Wildavsky, 1983). Whenever we observe, we draw a distinction between objects in the “world”, and we indicate (denote) one side of the distinction, leaving the other side undeclared (Spencer Brown, 1969/1997; Baecker, 1999b). We can definitely cross the distinction and mark the other side – but not at the same time. We can only mark the distinction we have employed to observe “the world” by leaving the actual level of observance – and thus will not be able to observe the distinction and indication at the same time – leaving us with an inherent and unavoidable blind spot. Not least, the concept is also applicable to the observer himself: The distinction that the observer applies in order to observe himself cannot be observed by himself in the moment in which he applies it (von Foerster, 1993; Luhmann, 1999). The observer who observes himself is thereby his own blind spot.
The unexpected depends on the distinctions in use. If project managers monitor stakeholders, legal issues might surprise them, if they concentrate on technical concerns, they might be jolted by team disagreement, and so forth. With megaprojects being complex enough, it is impossible to monitor all developments in all relevant fields simultaneously. Project managers are forced to select what to concentrate on, and at the same time risk to overlook important developments in other areas. Luhmann (1993, p. 310, English translation) concludes: “All information, and therefore the lack of information, all certainty and uncertainty, is a system-intrinsic construct and depends on the distinctions with which a system observes the world”.

A brief overview of the history of decision-making reveals that since the invention of modern management the concept of action is dominated by the idea of rationality based on a reductionist epistemology with a clear-cut object-subject differentiation (Coleman, 1992; Trigg, 1993). The special kind of targeted, benefit-oriented and predictable rational action in organisations is best expressed in the (neo-)classical concept of rational choice (Vanberg, 1994; Elster, 1989). Rationality is synonymous to an optimal choice of optimal procedures by employing (statistical) decision analysis.

The unexpected in the rationalist’s perspective is then a mere deficit in the quality of management. Good managers will always be able to gather enough (relevant) information and to set up appropriate information processing tools to avoid the unexpected by transferring it into calculable expectations about the future. This traditional way of thinking holds true for mainstream project management: Ensuring conformance to time, budget and scope constraints is believed to be best achieved by formalised planning and controlling procedures allowing for a tighter control in order to be successful. In this vein, processes like risk management are supposed to make it possible to transfer threats and opportunities into – basically calculable and therefore decidable – risks.

Traditional project risk management approaches are highly rational and sequential, following a control-and-order logic. The concept of risk seeks to calculate and thereby control risks, even in such situations which are not fully predictable and controllable: “The typical way to incorporate this uncertainty in project modelling is by means of stochastic networks where activity costs and durations are not deterministic but follow certain probability distributions” (Acebes et al., 2014, p. 424). Risk and uncertainty are commonly used interchangeably, which especially for complex projects is a risky endeavour as uncertainty is then “either treated in the same way as risk or ignored” (Sanderson, 2012, p. 434).

Contrary to the rationalist’s view, where the unexpected is usually confused with risk and uncertainty, Gerald et al. (2010, p. 533) differentiate between events that occur surprising, and “outcomes or events that actors have identified as possibly existing, but do not know whether they will take place or not”. In the project management literature, this spectrum of growing uncertainty is frequently known by the labels of known knowns, known unknowns, unknown knowns and unknown unknowns (Winch, 2010; Cléden, 2009; De Meyer et al., 2002). Unknown knowns are events where we lack data necessary to assign objective probabilities but are able to ground expectations in historical practices, known unknowns are incidents that are possible, but we do not know when, where and how they will occur (Sanderson, 2012; Winch and Maytorena, 2012). The conceptualisation of the “unknown unknowns” reflects “the actuality of projects as social processes requiring ongoing construction of the appearance of certainty and clarity in the midst of complex uncertainty and ambiguity” (Atkinson et al., 2006, p. 696). Ultimately, unknown unknowns demark the passage from uncertainty to the unexpected.

The next section argues, that controlling outcomes and steering the organisation rationally and predictably can be met for trivial issues, but in megaprojects, characterised by complexity, ambiguity and urgency, individuals are (usually) unable to make “rational” choices in reaction to unexpected events.
3. Challenges in megaprojects

Megaprojects are often characterised by being large-scale, delivering a substantial piece of infrastructure or a capital asset with a life expectancy of many years, with a client being mostly from the public or governmental sector, and the contractor(s) being mostly from private companies. On the “soft” side, megaprojects are challenged by potentially severe conflicts between the various public and private stakeholder groups, but also by high levels of complexity and risk (Sanderson, 2012). Megaprojects are undoubtedly marked by long duration, high levels of uncertainty and ambiguity, and they are organisationally complex and costly (Saunders and Townsend, 2018). In the same vein, Pitsis et al. (2018, p. 9) portray megaprojects beyond size by identifying characteristics as “reach; duration; risks and uncertainties; widely disparate actors; arenas of controversy such as dispute resolution; and legal and regulatory issues”.

Not going into details of definitional problems and debates, this article identifies issues in megaprojects relating to the unexpected using the framework of dimensions of meaning (Luhmann, 1984, 1997), i.e. factual dimension, social dimension and temporal dimension.

3.1 Factual dimension

The concept of the unexpected (and risk and uncertainty) is concerned with future predictability, and thus closely connected to information and the capacity to process information: Basically, the less information we have, the more difficult are statements about future developments. Herbert Simon (1981, March and Simon, 1958) introduced the concept of limited rationality stressing the limits of information gathering: Limits of knowledge, limits of anticipation, and limits of behaviour choice alternatives. Lenfle (2011) in his seminal paper on the Manhattan project case describes a project dominated by limits of information. In this expeditionary megaproject, neither the project strategy nor operational procedures like the production of fissionable materials or the bomb design were known at the beginning, and it was just until the last phases of the project that a viable solution was found. Though this is an extreme example, project managers and project sponsors are often forced to decide on approaches and methods in an early stage of the projects, when neither enough information is available, nor the system’s characteristics are understood, thus forcing them into making commitments leading to lock-ins or capture in a later stage (Cantarelli et al., 2010; Hetemi et al., 2017).

Literature highlights the inability of an individual to evaluate and choose beyond the bias of one’s own, subjective perception (e.g. Kahneman, 2011; Chabris and Simons, 2013). The “truthful” representation of an objectively given situation is distorted by selective processing of information and the selective memory, by cognitive constructs (such as person schemas, stereotypes and implicit personality theories), by the form of presentation (e.g. positive vs negative) and interactions of the information (e.g. timing and embedding of presentations). Many different factors can contribute to negative biases in decision-making processes in megaprojects: sunk cost effect, reference points, underweighting probable losses or self-justification of decision-makers (Kardes et al., 2013). Broadening the view from individual decisions to decision setting, understanding decisions at the level of megaprojects asks for a thorough consideration of institutional, political and psychosocial processes (Saint-Macary and Ika, 2015; Williams and Samset, 2010).

Contend-related questions we usually raise are concerned with interpretations of causality. Rationality is based on a naturalistic concept of causality (Trigg, 1993): cause and effect are “naturally” linked, and observers are able to trace any effect back to predetermined reasons, more or less completely. Causality is bi-directional, thus prediction is possible, both in simple and complicated contexts (Snowden and Boone, 2007). Even if many thousand components exist this does not change the principle of causality, as long as we have sufficient information and a clear description of the system for an evidence-based conjecture. Thus, for simple and complicated projects, risk management will do.
However, it is a different matter when complexity is inherent. Referring to second-order cybernetics, complexity is a state where more linkages exist than observers (normally) can describe or analyse (Luhmann, 2000). Literature (for an overview see Daniel and Daniel, 2018) distinguishes between perspectives of structural complexity and dynamic complexity. According to Daniel and Daniel (2018, p. 186) these conceptions highlight “the relationship between project complexity and managerial capacity to predict: (1) structural complexity focuses on interactions producing unexpected effects that cannot be explained or deduced; and (2) dynamic complexity focuses on processes that generate unpredictable change in systems”, thus shifting the discussion towards a second-order logic (Tywoniak and Bredillet, 2017).

Complex systems are often characterised by unstable input-output relationships, changing system boundaries over time, and system behaviour that is not (fully) depending on the past (Checkland, 1999; Stacey, 2011). Recursive effects in complex environments can make the rational choice of actions impossible, the chance to observe mutually influencing, simultaneous effects is limited, i.e. if one’s own action has implications for the other’s action, but the other’s action in turn is made up based on one’s own decision. Van Marrewijk et al. (2008) show that complexity in megaprojects is triggered by many interconnected and variable elements, like multiplicity of technological disciplines, the number of participants, multi-nationality, the interests of stakeholders and sponsors, high levels of public attention or political interest and country risk.

In such situations, individuals and organisations are increasingly overwhelmed to describe and process complexity. Given there is no ultimate level or rule of decision-making, different observers will end up with different explanations and dissenting forecasts for the same observations. Ahern et al. (2014, p. 1374) question “[…] if complex projects cannot completely be specified, how can they be completely planned in advance of their delivery?” With long-term outcomes being partly emergent and partly intentional, interventions can be planned, but the outcome cannot be predicted.

3.2 Social dimension
The social dimension refers to the decision on who can decide with whom (what and when). Relationships are selected: for decision-makers, no longer all expectations of all persons are relevant, at least not in the same intensity. Furthermore, by taking into account humans, one has to calculate for a wide range of diverse characters, traits, interests, team constellations and (micro-)political actions.

Megaprojects are hallmarked by ambiguity, the lack of clarity related to any aspect of the project such as requirements, project objectives and project constraints. For one thing, claims from diverse stakeholders including a critical public triggered by social media increase. With projects spanning organisational, cultural and professional boundaries, the diversity within and between organisations is growing (van Marrewijk et al., 2008). Sanderson (2012), explaining megaproject performance from literature, concentrates on processes of social construction: different discourses, cultures and rationalities of the project stakeholders, ambiguous and often highly conflictual, become obvious in day-to-day management practice and can endanger project performance. Clear-cut clues are open to different options of interpretation, everyday, self-evident knowledge is put to the test. With projects and project environments being socially constructed, project actors satisfice in their decision-making by seeking self-interest in the context of differing cultures and rationalities while having incomplete knowledge. Problems are resulting from misaligned or underdeveloped governance arrangements, incapable of handling unforeseen megaproject turbulences (Miller and Hobbs, 2009; Tywoniak and Bredillet, 2017). Given these obstacles, teams strive for acceptable decisions and not so much for “correct” ones, as maintaining social support and social trust is crucial.
Different interests of stakeholders (e.g., Pinto, 2014; Yang et al., 2014) and (micro-)political (Flyvbjerg, 1998; Clegg et al., 2017) or opportunistic behaviour (Chapman et al., 2006) are at the core of the pluralist research on decision-making in projects. Stingl and Geraldi (2017, p. 127) note: “It describes the opportunistic behaviour of individuals and groups, who omit or even falsify information, or exploit information asymmetries and other’s biases to win project business, push personal, pet projects, maintain or better their position, and access resources”. Sanderson (2012) suggests that the main megaproject stakeholders, such as politicians and contractors, systematically and intentionally underestimate project costs and are over-optimistic about project benefits and schedule in order to get the projects approved (Davidson and Huot, 1989). Flyvbjerg et al. (2003, p. 142) conclude that “[…] the problem with megaprojects is mainly one of risk-negligence and lack of accountability induced by project promoters whose main ambition is to build projects for private gain, economic or political, not to operate projects for public benefit”.

Especially when under public pressure project managers and project promoters employ a kind of double standard talk, quite close to Brunsson’s (1989) distinction between action – what really happens in the respective organisation – and talk – addressing the political sphere. The latter is concerned with responding to the inconsistent requirements of the environments and the organisation’s desire to maintain its legitimacy in the face of these requirements. Solution approaches to that argument include various ex ante measures to improve the accountability of project decision-making, such as a limitation of the role of politicians in formulating public interest objectives or thorough management plans.

Megaprojects are often marked by limited knowledge, imperfect technologies, and inconsistent goals and preferences of the changing participants (Steen et al., 2017). Cohen et al. (1972) label this situation “organized anarchies”. Here, decisions result from complex interaction of four independent streams of events put in one “garbage can”: problems, solutions, participants and choice opportunities, shaped by agenda setting, elites with clear-cut ideas at the right time and bureaucracy to enact ideas in practise. Cohen and colleagues show that most solutions, if any are found, are suboptimal by rational measurements; yet, some decision is made which allows the organisation to operate further. “Garbage canning” is common in megaprojects. Gil and Pinto (2018) for example investigated large public infrastructure projects in the UK. They characterize these projects as polycentric organisations, resembling features of organised anarchies: these organisations supplement their internal hierarchy with egalitarian, local structures. While trying to involve partners in the decision-making process to reduce coordination costs, and encourage collaboration and search for mutually consensual solutions, project targets – cost, time – are ultimately relaxed, leading to the public impression of poor performance.

### 3.3 Temporal dimension

The temporal dimension is about the selection of those opportunities, which are suitable to generate expectation pressure. The only thing that is scarce in organisations is time, thus, time generates importance and pressure. Scheduling – planning timeline – is a core mechanism of organising: deadlines terminate decision processes, create urgency, and trigger communication and meetings (Luhmann, 1968).

The proper time of the organisation, the organisation’s “Eigenzeit” (Nowotny, 1989) normally allows for a decoupling from the external expectation pressure, groups can muddle through or wait for the next garbage can, and individuals will sense when the time for decisions (regarding their own interests) has come. Time, or more precisely, postponing deadlines seems to be one of the most important slack resources, especially when negotiating with powerful stakeholders (Gil and Pinto, 2018). However, following the organisation’s or project’s “Eigenzeit” has its price: Reports on megaproject failure or bad performance note that time overrun is common, sometimes doubling or even tripling time to completion (Flyvbjerg et al., 2003; Flyvbjerg, 2011, 2017).
Circumstances change dramatically, once the target deadline cannot be postponed, such as with Olympic Games (Gil and Pinto, 2018). Time pressure leads to increasing error rates. Coordination within the projects decreases, as some will still follow their original schedule and other parts shift deadlines, making (time consuming) rework and restructuring necessary. Organisations, projects and stakeholders usually underestimate time needed, because plans follow the illusion of a smooth and undisputed project rollout. Flyvbjerg (2017, p. 10) notes: “You need to go slow at first (during project preparation) to run fast later (during delivery). But often the situation is the exact opposite”. With time and money as interchangeable resources necessary to resolve disputes, cost will explode towards the end of the project.

Megaprojects are an inherently risky endeavour given the long planning horizons, sometimes spanning decades, leading to temporal complexity and unpredictable developments. Nobody can foresee such large time spans. The longer the time span and the opaquer the future is, the greater is the exposure to so-called “black swans”, i.e., extreme events with massively negative outcomes (Taleb, 2013). Despite the availability of management information and decision support systems, despite the support by big data and data mining, simulations and system dynamics, prediction and thus planning in megaprojects is difficult, if not all but impossible. Charles Lindblom (1959, 1979) summarises that organisations, rather than embarking on grand strategies and major changes, have a tendency to “muddle through”. Decision makers restrict themselves to a small number of goals and merely consider a few alternative policies. While there may well be disagreement about the priority of ultimate aims, a good policy is determined whether different decision-makers can agree on the short-term issues, resembling the learning-and-adapting approach in project management.

Volatile, fast-paced changes in the project environment exert increasing pressure to adapt and make planning even more of a heroic endeavour. Megaprojects emphasise highly flexible and dynamic links across company boundaries; integrated value chains connect information and goods flows in real time across continents. More and more tasks are being joined on a case-by-case and temporary basis, leaving project managers with the widespread feeling of being still too late. Forecasting in long-lasting megaprojects is thus always just preliminary, and plans based on these projections have to be open to changes and learnings (Ahern et al., 2014).

4. Preparing for the unexpected in megaprojects
The unexpected might occur in trivial or in complex, ambivalent situations. In simple situations, megaproject managers can react to the unexpected reasonably, grounded in knowledge and experience. Faced with the need to decide in complex, ambivalent situations, individuals and organisations are (usually) very limited in their ability to make rational decisions. Neither more information nor better algorithms are sufficient to solve complex non-programmed or wicked problems within the rational framework.

While the occurrence of the unexpected is, by definition, independent of timespans, reactions to the surprising event might need either immediate or a long-term action. For unexpected situations that long for a long-term reaction only, organisations will have enough time to search for additional information, calculate by sophisticated analysis methods, and plan in-depth. But given complex situations and the urgency to act, individuals are (usually) unable to make “rational” choices and organisations are not in a position to “plan” for the unexpected. When project management cannot plan for the unexpected, can project management nevertheless prepare for the unexpected?
In organisation theory capabilities to deal with abrupt changes in the environment have been investigated from various theoretical viewpoints, in particular research on high-reliability organising (Weick et al., 1999; Weick and Sutcliffe, 2007), organisational
resilience (Valikangas, 2010; Ortiz-de-Mandojana and Bansal, 2016; Starbuck and Farjoun, 2009; Sutcliffe and Vogus, 2003), organisational improvisation (Barrett, 1998; Kamoche et al., 2002; Moorman and Miner, 1998; Böhle, 2017) and human factors research (Badke-Schaub et al., 2012; Dekker, 2015). Table I summarises basic assumptions and recommendations for each concept.

All these approaches have focussed primarily on organisations whose main preoccupation is "continuously to operate complex, demanding technologies without major failures while maintaining the capacity for meeting intermittent periods of very high, peak production, for example, peak traffic, power demand loads or maximum air operations" (La Porte, 1996, p. 61). However, some of the recommendations and practices react to circumstances given also in unique and complex projects. When comparing basic assumptions of the approaches to the characteristics of megaprojects, some similarities become visible (Table II).

The next section concentrates on those approaches, where the fit is sufficient to suspect recommendations being useful for handling the unexpected in megaprojects, foremost organisational resilience. Some suggestions from the other concepts are of a generic character, valid for project management in general.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Basic assumptions</th>
<th>Recommendations</th>
</tr>
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<tbody>
<tr>
<td>Human factors research</td>
<td>Main source of errors: Humans Errors and the unexpected are unacceptable due to potentially high harm Errors are avoidable – in principle Guidance and training are central Learning based on continuous operation</td>
<td>Strict rules, regulations and standard procedures combined with intensive training (Very) tight control and error-tracing system Shared situation awareness, building on communication and team culture “Error-friendly” culture: Willingness to ask critical questions, promoting contradictory observations and valuing learning</td>
</tr>
<tr>
<td>High reliability organisations</td>
<td>Errors and the unexpected are unacceptable due to potentially high harm Errors are avoidable – in principle Preparation, awareness and training are central Learning based on continuous operation</td>
<td>Attention is focussed on mistakes rather than successes Simplistic interpretations are not desired A fine sense of operational processes is developed Flexibility (especially in decision-making situations and hierarchies) is sought Profound respect for professional knowledge and skills Decision-making responsibility is delegated locally Combination of objectivising and subjectivising action Reproduction on the spot based on well-trained elements Immediate re-action on clues Practical action as a means of insight and knowledge Implicit and explicit shared knowledge Role-switching, authority migrating, and system resetting</td>
</tr>
<tr>
<td>Organisational improvisation</td>
<td>The unexpected is normal and a resource It is a question of perception whether deviations are seen as errors or progress Rules are guidelines and basis for experiments</td>
<td>Reducing the degree of (immediate) control Reducing direct activity and increasing diversity Tasks are not understood as instructions or fixed responsibilities but are formed by coordinating activities Team members are encouraged to question known routines Promoting mindfulness, everyone needs to understand the situation (situation awareness)</td>
</tr>
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Table I. Concepts in organisation theory
With the same intention, Saunders et al. (2016) analysed project management responses to project uncertainty taken from high-reliability practices. In an empirical study based on 47 vignettes of safety-critical civil nuclear and aerospace projects, they found that project managers adopted high-reliability practices for managing uncertainty in projects. However, some of the practices were fragile, with structural factors, such as complex ownership structures or short-term incentive mechanisms, threatening high-reliability project organising. This conceptual paper will address these shortcomings and expand from uncertainty to the unexpected.

While transferring insights from other research fields to project management, the paper does not strive for completeness of recommendations. Rather, it concentrates on those discernments that become obvious when shifting the theoretical lenses to observer-based second-order-cybernetics and systems theory (Luhmann, 1984, 2000).

4.1 Decision-making premises in (mega)projects

The complexity of the world can neither be represented nor managed within the organisation, not even the complexity of life in organisations themselves. Thus, the organisation is forced to restrict the relations, to select. Selectively re-used cascades of decisions build up structures of expectations. They condense "the open complexity of possibilities to connect each element with each other in a tight pattern of "valid", common, foreseeable, repeatable, or however preferred relations" (Luhmann, 1984, p. 74). All social structures are structures of expectations.

One first structuring element in organisations are plans. Planning is the attempt to fix the future characteristics of the system, to formulate expectations of (positive) future state(s) of the organisation and the environment, and attempts are made to determine how to proceed with future alternatives. Plans must be translated into the language of the organisation. This could be done directly by defining all future decisions in the plan, which is a very unstable and cumbersome procedure. Plans can gain speed and stability, when they condense in organisational structures of expectations (Luhmann, 2000).

Within organisations, decision-making premises define what is important and what has to be considered not so important. They lay down (and limit) the scope for decisions, but do not affect the content of the decision (Luhmann, 1988). They are more than the arrangement of positions depicted mostly in organisation charts; generally, all expectations and expectations of expectations, which regulate the decision process – rules, regulations, standards, habits, insights, experiences, frames and models of mind and principles of conduct. Referring to the dimensions of meaning, decision-making premises can be assigned to the factual dimension, the social dimension and the temporal dimension, respectively (see Figure 1).

The most important structures in the factual dimension are decision programmes and budgets, with respect to project management also scope. Budgets are policies cast in

<table>
<thead>
<tr>
<th>Basic assumption</th>
<th>Human factors research</th>
<th>High reliability organisations</th>
<th>Organisational improvisation</th>
<th>Organisational resilience</th>
<th>Characteristics of megaprojects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full planning/foresight</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Errors/unexpected avoidable</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Repeated actions/processes dominate</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes/No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Defined outcome</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
figures – thus close to plans – and scope is a dependent variable of interests. In the social dimension, hierarchy and communication paths are elements that can be designed by the organisation, while persons and organisation culture cannot. Projects select persons, but they may be surprised what they finally get, and culture can be at best only influenced by the organisation. Scheduling and timing are part of the temporal dimension. While scheduling is at the core of project management, timing – being able to wait and sensing the right time to act – is a similar important though mostly overlooked management issue.

4.2 Planning

Only naïve people believe plans to come true, at least that is what we can experience when we go beyond simple and short-term issues. In long term megaprojects, plans have another status: “Project plans are repositories of expectations on which managers build their daily activities and hence there is a logical chain where our expectations about the future guide our actions today” (Söderholm, 2008, p. 81). Plans set aims and thus help selecting means and operations. Plans depict interactions of different actions of divergent actors, and enable people to detect and correct deviating developments. And they focus attentiveness.

One can define the unexpected in relation to plans: The unexpected is then any event without provision in the respective planning. Obviously, this would be a very narrow, technical definition. On the one hand, plans are not the only expectations in organisations; on the other hand, this means that by simply improving planning and controlling the amount of the unexpected could be reduced. However, plans make organisations structurally blind for the unexpected in non-planned areas. Research on high-risk organisations (Perrow, 1984; Dörner, 1989) and on wicked problems (Checkland, 1999) have shown that the advantages of (pre-)structured expectations in organisations make it difficult to handle the unexpected reasonably. While plans are decisions as any other in an organisation, deliberations that led to plans are not involved in the considerations on specific (single) decisions (Luhmann, 2000). Plans thus establish a configuration that is very powerful, as single issue decision makers cannot question the planning decision and at the same time follow the plan. The act of planning is the blind spot of traditional project execution.

Despite scepticism about the effectivity of plans to fulfil traditional expectations of managing the unexpected, planning remains necessary in megaprojects. Planning combines the attention of many people for a deep exploration process, planning forces discussion, demands clarification of views and own positioning, planning defines a collective understanding of the project and differing interests in the project. In sum, the act of planning is more important than the plan. Giezen (2013) introduced the concepts of adaptive and strategic capacity to optimise planning in megaprojects. What he asks for, is active resilience as a way of creating a more open planning process in which the possibility to
adaptation is built into it: “The best way to do that is to bring diverse actors and views into the process – thus organizing your own opposition – and to bring the context into the project, through building into the process a redundancy of actors and knowledge and thus proactive resilience” (Giezen, 2013).

Blomquist et al. (2010), highlight the everyday struggle of keeping projects on track while dealing with uncertainty, and Perminova et al. (2008, p. 74) describe projects “[…] as journeys of exploration in given direction, rather than strict plan-following endeavors”. More recent conceptions of project management like agility (Hobbs and Petit, 2017) weaken the predominance of planned time, budget and scope for project success by concentrating more on client needs and involving stakeholder interests. Following these inspirations, the unexpected requires an open approach less oriented towards plans. This definitely has an effect on the significance of risk and uncertainty for project management, i.e. replacing foresight and avoidance by consciously allowing for uncertainty in favour of a look forward (Drury et al., 2012), and thus also for the unexpected.

Nevertheless, this shift to more open conceptions is very demanding. Decision in projects must be acceptable not only within the organisation but more so beyond the organisation’s boundaries to meet the legitimacy requirements of the environment (Meyer and Rowan, 1977). As long as stakeholders, influenced by a vast body of literature and encouraged by PM standards, understand “good” project management as an application of the appropriate toolset, i.e.: orders, precise and conscientious plans, setting up the right structures, regular controlling, etc., project managers will employ traditional management methods.

4.3 Decision programmes

Decision programmes trying to predefined individual decisions, can take two forms: conditional and target programmes (March and Simon, 1958; Luhmann, 1973).

Conditional programmes, appearing in the form of (clear) instructions, application of standard procedures and programmes, checklists, and so on, resemble the efficiency of a machine. Conditional programming, while at the first glance best suited for quick response, seems to be unable to handle the unexpected, even more so, it can make things even worse when short term reactions are needed. Just because close control models (e.g. checklists), personal expertise and decision-making responsibilities are normally so successful, they prevent facing the unexpected in complex situations. Deadlines force a preference for socially accepted solutions and are thus hostile to innovation. Under pressure only that information is used that is easily accessible, only those decisions are made where routines are available, and established co-operations are preferred, groups and individuals regress to pre-mature states. The dilemma is particularly evident when organisational regulations, which are based on common cases and therefore the expectable, are confronted with individual perceptions in new and complex situations which would indicate countervailing measures (Busby and Iszatt-White, 2015).

Target programming based on definitions of objectives or soft targets, controlled by mission, vision and strategic context, empowerment, and so on, seems to be better suited to react quickly to the unexpected, and it is more open to innovation. Again, the dominance of time leads to but unwanted results: to end up with socially accepted decisions team-work is critical. Reflection work and downtimes must be scheduled; non-cooperative tasks socialized and made to team tasks. And maybe new teams must be formed or the set-up of existing ones be changed, with all the (time-consuming) burden of group-dynamics. As means to meet ends are vague and have to be sought of, time would be needed, but this is a scare resource. Organisations using target programming are more open to limited predictability, risk taking and accepting changes of rules of the game. But confronted with urgency, they still recourse to persons (as experts, leaders, etc.), known communication paths and culture to keep decisions efficient, quick in reaction and controllable.
Smart project management makes use of both conditional and target programming. Project managers must become aware of the inherent complexity of megaprojects and follow “a science of navigation in which there is a balance between opening and closing a process and the content, between the certain and the uncertain, the simple and the complex” (Giezen, 2013). Professional toolsets should include improvisation, understood as an unplanned, occasional regulation. While in good times the possible room to manoeuvre should be agreed upon between different stakeholders, it should be clear in urgent situations where and to what extent improvisation is permissible. Good improvisation lives from creativity, experiences, but also from good preparation, and mutual (blind) understanding and confidence – pointing at the importance of trust, courage in decision-making and a culture of compensation of losses.

While managing the unexpected, project managers need to “exercise the art of managing the unexpected parallel to executing the plan” (Söderholm, 2008, p. 81). Spontaneous governing in projects, partly considered in the “projects-as-practice” approach, emphasises the importance of emergent, non-programmed work activities for an understanding of project development (Hallgren and Söderholm, 2012; Sanderson, 2012). Söderholm (2008) showed that project managers make use of innovative action (by creatively designing action patterns such as re-shuffling of resources or outsourcing), extensive meetings keeping up team commitment and urgency, detachment from other project activities, or negotiation of project conditions to deal with unexpected events. Practices in resilient organisations such as the search for gaps, distancing (both physical and psychological) from the events, shifting of priorities and time-outs, are central to coordination and replace – at least partly – traditional coordination means (Darkow and Geiger, 2017).

In the same vein, Bertolini and Salet (2007) recommend using “strategic incrementalism”. Megaproject managers should be “keeping in mind and frequently testing and actualizing the strategic mission of the project on the one hand and being adaptive, flexible and inventive in muddling through all small steps and daily worries on the other hand” (Bertolini and Salet, 2007, p. 6). What makes that even more difficult, is the variety of different stakeholders, with their different values, interests and power positions, which makes megaproject management a variable subject instead of an “independent variable where all cognitive framing and organized action may sprout off in a sort of shared mission”.

### 4.4 Hierarchy and communication (paths)

Communication paths restrict how information circulates, and which information has binding effects in the system. Hierarchies, closely connected to communication paths, distribute decision-making power, regulate positions and define cooperation. Typically, rules and hierarchies have a relieving effect for both subordinations and supervisors: individuals do not have to care about everything that is going on in the organisation, but they need to take into account those facts only that are within their formal (or informal) discretion (Baecker, 1999a).

Researchers agree that more and open communication is crucial to address the unexpected; especially face-to-face interactions seem to be important to generate intersubjective meaning (Weick and Sutcliffe, 2007). The reasons for that sound obvious, as more communication allows for a better information basis, more ideas about what is “really” going on, different views and more expertise, more commitment to solutions and shared burden in decision and action. However, the tighter the time horizon, the more restricted communication must be to avoid information overflow and allow for quick reaction (Sutcliffe and Vogus, 2003). Communication is very time consuming, and gathering and analysing information together is not acting. Rather, it inhibits fast and necessary (but maybe less sophisticated) action. To gain valuable information in a timely manner and to secure the co-ordinated action in response to
It is important to have a clear picture of one’s (virtual) communication network in advance. The form of communication should be clarified, i.e. when to use one-way or two-way communication, when and how to use feedback loops, the preferred communication channel for which (kind of) information and whom to inform on which aspects, to name but a few. It is equally important to have clear and comprehensive language at hand, i.e. common technical terms and concepts, mutual understanding of the semantic field – which might be a huge challenge in international projects.

Because top management support is necessary, it is important for the project manager to communicate with executives in an efficient and direct way, with oral reporting rather than lengthy reports in written form. Not only project managers should apply interpersonal skills to manage stakeholders’ expectations – building trust, resolving conflicts, active listening and overcoming resistance to change (Littau et al., 2015) – but also the project team needs to engage better with external stakeholders, especially the affected public, environmental groups and regulators (Brookes et al., 2015).

Approaches like agility (Hobbs and Petit, 2017) ask for flat hierarchies and liquid, at least adjustable responsibilities. They promise to be better suited for a complex and fast-changing world with a bunch of daily surprises just because they reduce traditional hierarchies, duties and fixed responsibilities. Project managers should quickly delegate the decision power to the one team member that can contribute the most to solving the problem by knowing the most about the unexpected situation. This asks for a new hierarchical understanding where informal networks are given the competence to act. As Weick and Sutcliffe (2007, p. 160) put it: “When problems occur, let decision-making migrate to the people who have the most expertise to deal with the problem”.

Furthermore, these concepts react to the prevalence of informal structures: not acting against informality but incorporating them can be understood as an intelligent handling of informalized structures. This is by no way surprising: previous research on micro-politics in organisations has stressed the mutual dependency of control and autonomy, formality and informality (Crozier and Friedberg, 1980). In a stressful situation, we cannot always easily draw a clear line between acceptable improvisation and illegal action. Thus, recommending professional improvising, we have to go one step further and tolerate a certain degree of illegality, if this illegality is useful (Luhmann, 1964; Ortmann, 2003). In business, “useful illegality” seems to be widely accepted – and embedded in still clear (formal and informal) structures (Kühl, 2007).

A closer look at flexible or “flat” concepts shows that they do not abolish hierarchy in the original meaning, i.e.: defined area of accountability, functional responsibility and communication flow patterns (Luhmann, 2000). Rather they re-define them away from stable and formal norms to learning and adaptable structures. Even with flat hierarchies and open communication, coordination and common orientation are still necessary. As structures serve as a guide in the minds of the members of the organisation, they must continue to exist particularly in crisis situations, so that the individuals can meaningfully align their actions to it (Weick and Sutcliffe, 2007). Just because the unexpected can disrupt structures, it is even more important to have a clear basis to act on. Reducing the impact of more formal decision-making premises must be balanced by a growing importance of less structured premises for the decision process: these are persons and (organisational, team, project) culture.

4.5 Persons and organisational culture

In organisations, persons are a bundle of expectations. We assume to be able to predict the behaviour of a person based on these expectations, i.e. we ascribe the ability to provide
information in specifically defined areas to experts and we expect leadership from superiors and managers. Persons as organisational members are normally connected to a position in an organisation, and hence in the possession of certain responsibilities, authorised to decide and enact on decision programmes, and controlling a distinct knot in the communication network, we can address them easily, and they can address us directly.

Persons can act in a very timely manner. In this sense, person is the flexible counterpart to plans. However, the advantage of flexible reaction is lost, if persons set existing knowledge, beliefs, expectations, skills and so forth absolute and even do not get aware of their ignorance. Perception is shaped by the perceiver, or to be more precise, by his expectations. If perception is a constructive process, we then should be critical and question, why certain information is communicated redundantly and intensively, while another one is completely overlooked.

In situations of operational hustle and bustle, relevant information tends to be ignored. Then, action is more oriented towards re-acting as quickly as possible, rather than scrutinising issues thoroughly. Reverting to well-known procedures reassures team members and managers in dynamic situations. This threat is especially prominent for experts, but also top management, as others ascribe superior knowledge to them and expect quick answers. Given that limitation, there is a need for slowing down sensemaking and finding mental models that help to portray the conditions appropriately. For once, the “wisdom of doubt” protects persons to apply existing knowledge without reflection to new situations (Weick and Sutcliffe, 2007).

Leaders are expected to convey confidence, trust and openness, and at the same time to promote certain programmes or ideas, allowing to bypassing the difficulty of casting disputed values into binding targets. Barton and Sutcliffe (2017), based on their study of expedition racing teams, emphasise the need for two simultaneous and mutually dependent regulatory processes: drift management as maintenance of a team’s responsiveness to external and physical requirements and meaning management as stabilizing the emotional situation in the team and sensemaking of the (interacting) actions. The maintenance of interaction and engagement is important in order to facilitate the mutual reinforcement of drift and meaning management, while isolation and the feeling of vulnerability have a negative effect on this connection. Resilience is then not a resource but a constant process of relating to the environment through a process of understanding, responding to and absorbing variations.

(Organisational) Culture defines what is understood as self-evident and taken-for-granted matter of course that everyone who is familiar with the organisation understands and accepts. The importance of organisational culture is based on the observation that all other structural elements are interpreted (framed) against the background of (more or less) jointly shared considerations how the world and its events are to be understood. This process of sensemaking is necessarily in need of constant interaction with others. The enacted reality is not random; rather, people in organisations spend much time on negotiating what is considered a decent representation of what is going on and what reality “really” is (Weick, 1995).

Weick (1993) gives us an impressive example of the importance of sensemaking in his famous interpretation of the Mann Gulch disaster. Structure, he concludes, is bound to fail when people do not understand what is going on in their environment and even more so, when they cannot make sense of the other one’s actions. These observations point to the importance of ex ante team building, as there is simply no time left to create a common sense and a collective situation model of what happens during crisis. Ex ante team building efforts and face-to-face interactions in turbulent situations help generate intersubjective meaning and develop a common situational model for action.

Shared situation awareness allows the team to understand the initial situation in a collective image, to make appropriate conjectures and take the actions the new situation
requires (Endsley, 2003; Schaub, 2012). While situation awareness is necessary in dynamic situations, perception in these circumstances will be based on reduced and well-known information only, new data are no longer perceived. It is difficult to have an overview of a complex environment and to recognise the various sources of uncertainty, to align the expected horizons and to create corresponding situation awareness. Based on false perception, comprehension will take the short-cut to well-known and deep-rooted explanations, considering neither diversity nor suitability for new situations. Somewhat contradictory, a better understanding of the unexpected can only be achieved by a diverse team with different views and approaches – and at the same time grounded on a shared view about aims and actions. Therefore, a shared culture supported by governance mechanisms should be consciously created, which encompasses “generic management processes associated with building trust, sense-making, organisation learning, and building an appropriate organisational culture” (Atkinson et al., 2006, p. 688).

Within megaprojects, creating shared situation awareness is probably one of the severest challenges, given the multiplicity of layers, team members coming from diverse backgrounds and stakeholders with conflicting interests. Merkus et al. (2017) conducted a case study research on ways in which members of interorganisational teams collectively make sense of unexpected events and how they decide upon engaging in action. They identified two different kinds of ambiguity in interorganisational teams, being characteristic for megaprojects: intrinsic ambiguity, when urgent unexpected situations arise, which leads to shared collective sensemaking, and constructed ambiguity, which is made up by the team, when collective sense becomes negotiated. In urgent situations, it is important to have a common interpretation of the grade of urgency in order to share the same awareness for the intrinsic ambiguity of the situation to cope with.

To reach out for a reliable project organisation, single loop learning, i.e. simple error corrections, or double loop learning, i.e. development of new working methods or optimising work routines, will not suffice. Deutero-learning means questioning previous patterns, values and strategies (Argyris and Schön, 1978). However, norms, values, beliefs and, above all, organisational culture are normally resistant to learning. Creating a team culture that is sensible for the unexpected is closely connected to a no-blame or just-action attitude, a high transparency of task fulfilment and permanent and joint learning. Learning from the confrontation with the unexpected requires an organisational and team culture that allows talking about mistakes and failures instead of concealing them, and that avoids passing the buck for failure just to avoid being blamed oneself.

### 4.6 Timing

Temporal issues in project management are normally understood as scheduling, PERT and Gantt chart marked the beginning of scholarly research on projects, while timing is mostly overlooked. But timing plays a vital role when handling the unexpected. When being confronted with the unexpected, actions emerge along the timeline of anticipation, coping and adoption.

In the phase of anticipation, individuals, the team and the organisation focus on observation, identification and preparation for the unexpected. This is accompanied by the construction and application of a wide range of observation tools, including weak signals, by the willingness to be surprised and by the reluctance to explain everything with well-known patterns – a mode that is particularly difficult for experts. Focussing on possible misconceptions, on questioning of known routines and on errors in general, various perspectives are deliberately included. Barton et al. (2015) talk about anomalizing, taking proactive steps to become attentive to deviations, to understand them better and more fully, and to be less attached to history. Of importance is to become aware of the contingency of decisions: any opposing decision or action could be equally acceptable in the first place.
The phase of coping starts with accepting the unexpected. While not every unexpected event triggers a crisis, the potentially threatening unexpected that requires a short-term response breaks up the organisation’s normal operations. Especially for stable organisations and strong organisational cultures accepting a serious problem or a potential crisis is difficult. Denying and repressing the need for change are common mechanisms. The core of the second part of this phase, the search for and implementation of solutions, is a combination of sensemaking and targeted action (Barton and Sutcliffe, 2017).

The focus of the final phase is reflection, evaluation and learning from the event. Christianson et al. (2009) differentiate between learning for rare events as result-oriented consideration (lessons learned) and learning through rare events while dealing with the unexpected (experiencing). The second mode addresses the individual’s and organisation’s ability to permanently anchor learning experiences in new organisational structures and structures of mind as well as in actions.

The three phases are interdependent and closely interlinked; in reality, neither the linear sequence nor clear demarcations of the phases are given. Nevertheless, it is helpful to consider the phase transitions in order to be successful. Obviously, different capabilities and mindsets are necessary, both of the organisation and the individuals involved. Initially, attention and empathy for the little things are needed, while later clear and decisive actions and interactions should take place (Barton et al., 2015). The subsequent learning process should again include the entire organisation.

Data from eight vignettes of project-oriented organisations based on a qualitative survey (Nachbagauer, 2018) suggest that project-oriented organisations are more successful in handling sudden events when they respond by making flexible use of hierarchies and responsibilities. Smart project managers used to integrate the team in both the detection and analysis phase and in preparing the decision. Contrary to the rather flat and empowering features in the coping phase, communication about how to proceed after the decision was very efficiently organised and centralised again. Obviously, organisations managed swiftly to adapt their style of management to the needs of the situation.

5. Conclusion
Megaprojects are confronted with a particularly high level of unexpected events due to their high complexity, their long duration and the ambivalence caused by diverse interests. Scrutinising recommendations from other organisational research fields, especially high-reliability organising, organisational improvisation and organisational resilience from a systems theory’s view, however, reveals that reacting to the unexpected in megaprojects is a non-trivial endeavour, not allowing for straightforward instructions. Rather than increasing direct control and reduce trust and transparency when faced with the unexpected OR striving for a high degree of freedom for the parties involved and self-determined choice, megaproject managers have to enact a bunch of equilibria to better face the unexpected:

- While proclaiming the end of planning heroism, plans – even if they do not fix the future – have still a very important function. Especially, planning remains necessary in megaprojects, as it forces discussing and agreeing (or making disagreement visible) on common aims, defining a collective understanding, depicting interactions of different actions of divergent actors and focussing attentiveness. Planning, ex ante team building efforts and face-to-face interactions in crisis situations help generate intersubjective meaning and develop a common situational model for action.

- Intense and fast communication is crucial. To avoid messy communication and information overload, projects need clear communication structures, a shared language and responsive managers when faced with high time-pressure. Thus, communication
should be selective, specific and intense but in an efficient and oral manner according to a predefined communication form for each type of information.

- Intelligently handling formalised structures does not abolish them altogether but redefines them. While both conditional programming (order-command) and target programming (mission-command) have their merits and downsides, smart project managers make use of both conceptions along the timeline of anticipation and detection, analysis and decision-making, and recovery and learning.

- Despite flat and flexible hierarchies, accountability and functional responsibility as guidance and coordination means are still necessary. What is needed are new chains of responsibilities, and few, clear rules which empower teams. This allows the project team to negotiate its way to actions adequate for handling the uncertain situation. Incorporating and respecting, not fighting informal structures is vital, and if necessary, a certain form of “illegality” should be accepted.

- Project managers and experts are central to react to the unexpected, they convey trust and provide knowledge, and can react quickly and flexibly. But in stressful situations, they tend to narrowmindedness, inflexibility and complacency. Personal resilience can be trained, the “wisdom of doubt” sensitises for blind experts and self-confident managers.

- Because the unexpected can disrupt structures, it is even more important to have a clear basis to act on: Vision, aims and culture serve as a guide in the organisation members’ minds, when the organisation’s architecture gets fluid, trust acts as substitute for formal hierarchical power. Megaprojects need a strong organisational culture that at the same time allows for open mindedness and accepts deviating opinions. To manage the unexpected demands the combination of apparently opposites, asking both for a culture of clear decision-making structures and responsibilities and a high degree of flexibility and open communication, combining centralisation with decentralisation. Megaproject managers have to make smart use of both flexible and stable elements of resilient organisational structures. This cannot be solved in an either-or-manner but deserves a unique equilibrium of structure and autonomy for each project.

6. Limitations and further research
With this conceptual paper based on selected publications from various fields, the intention was to advance the theoretical discourse on megaproject management and the unexpected. As the topic is still new, the article does not strive for completeness of literature review, theoretical considerations or recommendations. Rather it concentrated on those discernments that become obvious when shifting the theoretical lenses, hoping to provide fresh insights and disputable hypotheses.

Empirical research is needed to analyse megaprojects’ processes of organising and decision-making in the context of the unexpected, preferably with multi-case studies. Future research may stress the effects of the complex organisational structure, with many different layers and autonomous entities involved. Additionally, the long durance of megaprojects with changing central participants, shifting contextual conditions and dilution of initial project aims, must be tackled if we are to gain a fuller understanding of successfully managing the unexpected in megaprojects.

The empirical research desideration can be preceded by an extensive literature review. While we have a broad body of literature tackling the management of complexity and uncertainty, the unexpected is mostly hidden in various research endeavours. Advancing from our conceptual clarifications on the distinction of risk, uncertainty and the unexpected,
shedding light on potential gaps in our current understanding of the topic and the impact on project management and performance is still needed.

We grounded our research on constructionism and systems theory. While we believe this approach to be especially fruitful to understand the unexpected, we do not hesitate to demand more research based on other theoretical perspectives. At best, comparing and discussing conceptualisations lead to deepening the used concepts, to fresh practical insights and new empirically testable hypotheses.

We did not expand on mindfulness and sensemaking, or connections to more recent conceptions like agile and lean management or design thinking in megaprojects. Given the limits of the article length and the concentration on another argumentative strand, we believe that these issues should be covered in separate papers.

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Managing the unexpected in megaprojects


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Developing the resilient project professional: examining the student experience

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Abstract

Purpose – Resilience development during university can increase the likelihood of positive employment outcomes for project management graduates in what is known as a stressful profession where the prevalence of project failure, job insecurity, and burnout is high. However, a focus on student resilience in project management education is scarce. The purpose of this paper is to address this gap by establishing a baseline profile of resilience for project management students, identifying priority areas of resilience development and exploring the relationship between resilience and well-being.

Design/methodology/approach – In total, 292 Australian students undertaking project management studies completed a survey comprising of the Resilience at University scale, the Short Warwick-Edinburgh Mental Well-being Scale and an item assessing sleep adequacy.

Findings – A resilience profile for undergraduate, postgraduate, male and female project management students was calculated. The resilience profile identified differences according to gender, and between undergraduate and postgraduate students. Mental well-being and adequate sleep were found to be significantly related to resilience.

Practical implications – Findings support the call for a greater emphasis on resilience development in the project management curriculum for undergraduates and postgraduates. One priority area likely to facilitate resilience is the ability to maintain perspective. As well as supporting academic achievement, it will assist graduates to navigate through complex, uncertain and challenging project environments.

Originality/value – This is the first known study of resilience for students undertaking project management studies in higher education.

Keywords Student, Mental wellbeing, Project management, University, Resilience, Soft skills, Work ready

Paper type Research paper

Introduction

In recognition of the growing complexity and uncertainty of the global business landscape, the Project Management Institute (PMI) published an updated skill set, referred to as the Talent Triangle (PMI, 2013). The Talent Triangle goes beyond the focus on technical skills, recognizing that leadership, strategic and business management skills are also critical for the project management practitioner. Arguably, project management practitioners need an additional skill set – the capacity to manage the stress and strain arising from multiple demands in a complex, uncertain and sometimes ambiguous business environment. Project management practitioners are known to experience stress originating from the characteristics of project-based work (Asquin et al., 2010; Pinto et al., 2014), which can lead to poor mental health outcomes. These job features position resilience as an important capability which enables project management practitioners to navigate these stressors, maintain focus and stay healthy.

Resilience, which is the ability to bounce back and adapt, has been recognized as an important capability which enables individuals to manage stress. Resilience is identified as a key capability sought in new graduate appointments (Edgar et al., 2013). There is also growing recognition by educators that resilience is a critical skill that can assist students in their transition to professional life (Grant and Kinman, 2012; Holdsworth et al., 2017).
Furthermore, young professionals (18–25 and 26–35 year age groups) report the highest levels of stress and distress in the workplace (APA, 2017; Casey and Liang, 2014). Helping young professionals to proactively manage their stress positions resilience development at university as an important early preventative measure. It is considered that nurturing resilience during university will increase the likelihood of positive employment outcomes in professions where the prevalence of stress, burnout and job insecurity are high. Given the known stressors associated with the role of project management practitioner (Meredith and Mantel, 2009), resilience is a critical capability that equips students emerging from a project management degree to be work ready with the ability to survive and thrive in this demanding profession. To date, however, a focus on student resilience in the project management discipline is largely absent (Turner, Holdsworth and Scott-Young, 2017).

Aim
The first objective of this research was to establish a baseline profile of resilience for project management students in this under-explored area, and to identify areas for resilience development which can be incorporated into the project management curriculum. Three aims guided the first research objective:

1. establish a resilience profile for project management students;
2. identify differences in resilience profile across the project management student cohort; and
3. identify priority areas of skill development which can be incorporated into the university curriculum.

A critical function of resilience is its capacity to facilitate the management of stress and adversity and thus support well-being. Therefore, the second objective explored the relationship between resilience and well-being for project management students. Two aims guided the second research objective:

1. identify the relationship between resilience and mental well-being; and
2. identify the relationship between resilience and sleep.

Job characteristics of project-based work
An extensive body of research has explored the job characteristics of project-based work to better understand its impact on the health and well-being of workers. Project management practitioners are known to experience stress (Gällstedt, 2003; Sommerville and Langford, 1994) and burnout (Lingard and Francis, 2004; Pinto et al., 2014). The antecedents of stress and burnout for practitioners are time pressures (Zika-Viktorsson et al., 2006) and tight deadlines (Lingard et al., 2010), job uncertainties (Leung et al., 2008), interpersonal conflict (Liu et al., 2011; Brockman 2014) and job insecurity due to the contract-based nature of the profession (Turner and Lingard, 2016). Oertig and Buergi (2006) found that work overload was a common experience of project teams, while Slevin and Pinto (1987) described the project manager’s job as one characterized by role overload and frenetic activity. Project managers are reported to work long hours and have a high level of accountability (Turner and Mariani, 2016), which also contributes to stress and burnout. A further contributor to stress is project failure. The PMI (2017a) reports that organizations are losing an average of $97m for every $1bn invested due to poor project performance. While the PMI (2017a) reports that project success is on the rise, it is a real possibility that project management practitioners will be exposed to project failure across the course of their career.
The outcomes of stress are detrimental for the worker, the worker’s family, and the organization and include depression, substance abuse, chronic health problems, relationship breakdowns, productivity and intention to turnover (Brun and Martel, 2005; Palmer et al., 2003). Therefore, developing the capacity for stress management is identified as one of the most important competencies for project managers (Liikamaa, 2015; Nijhuis et al., 2015).

Resilience
Resilience at work is described as the ability to “manage the everyday stress of work and remain healthy, rebound and learn from unexpected setbacks and prepare for future challenges proactively” (McEwan, 2014, p. 6). Thomas and Mengel (2008, p. 309) refer to resilience as a key factor in the “ability to adapt to change and develop new approaches on the fly,” and this is particularly important for project professionals who work within complex, uncertain and sometimes ambiguous business environments (PMI, 2013). Since resilience has been linked to maintaining physical and psychological health, and having the ability to recover more quickly from stressful events (Smith et al., 2010), this capability is important for project management professionals. Moreover, Müller and Turner (2010) have identified that resilience forms part of the leadership competency profile of successful project managers.

Resilience is a capability that can be developed through carefully targeted initiatives (Fletcher and Sarkar, 2013; Luthar et al., 2000; McAllister and McKinnon, 2009). It is well established that resilience is underpinned by a range of assets and resources within the individual, their life and environment, which facilitate the capacity for adaptation and bouncing back in the face of adversity (APA, 2010; Windle, 2011). The set of key assets and resources undergirding resilience have been identified as strong social support networks (APA, 2010; Grant and Kinman, 2012; Smith et al., 2010; Winwood et al., 2013), flexible coping styles (APA, 2010; Grant and Kinman, 2012), maintaining perspective (APA, 2010; Winwood et al., 2013), moving towards goals (APA, 2010; Winwood et al., 2013) and staying healthy (APA, 2010; Grant and Kinman, 2012; Winwood et al., 2013). Additional assets and resources which have been reported to underpin resilience are taking decisive actions and looking for opportunities for self-discovery (APA, 2010) and well-developed reflective skills and social confidence (Grant and Kinman, 2012).

Importantly, resilience is conceptualized as a capability which can be learned (Windle, 2011; Winwood et al., 2013) and that improves with life experience (APA, 2010). It is known that resilience which is developed in one system (such as university) can be transferred across other systems (such as work) (APA, 2010; Turner, Scott-Young and Holdsworth, 2017). The intentional fostering of resilience development at university can be considered as nurturing a life skill which can be applied at university and beyond, and will enable graduates to survive and thrive (Holdsworth et al., 2017). Moreover, preparing project management graduates to be work ready and robust is especially critical in a project job market that is experiencing a skills shortage (PMI, 2017b).

University education of project managers
Pant and Baroudi (2008, p. 126) argue that “the focus of most project management training, in the context of universities, has been on the technical skills deemed essential to achieve project success, that being primarily the iron triangle of time, cost and quality.” Project management university education has been criticized for focusing on these technical (hard) skills while largely ignoring the interpersonal (soft) skills (Gillard, 2009; Ramazani and Jergeas, 2015; Söderlund and Maylor, 2012; Thomas and Mengel, 2008; Turner, 2016). While there has been less emphasis on developing soft skills at university, in the workplace there is growing recognition of their key importance for the project management profession.
Communication (Ahsan et al., 2013), team building (Ahsan et al., 2013), leadership (Fisher, 2011), emotional intelligence (Müller and Turner, 2010; Waxer, 2012), influencing others, conflict management (Fisher, 2011) and negotiation (Morris and Pinto, 2007) all have been identified as critical soft skills of an effective project manager. Consistent with these identified soft skills, the PMI’s (2013) Talent Triangle outlines conflict management, emotional intelligence, influencing, interpersonal skills, listening, negotiation, problem solving and team building as critical in the ability to articulate a vision and guide or influence others to help achieve project objectives. In the context of hard and soft skills, resilience is largely underpinned by a range of soft skills which individuals draw on to manage stress. Consistent with the notion that soft skills have been given less attention than warranted, research exploring the resilience profile of students undertaking project management studies at university is under-developed.

Methods

Sampling strategy
A purposive sampling strategy was applied to the research. Students studying project management at one large urban Australian university were invited to participate in the research. Undergraduate students studying a Bachelor of Applied Science in Project Management (Honors) and postgraduate students undertaking a Master of Project Management completed a survey during class time as part of a well-being-related learning activity and were invited to submit their completed survey for inclusion in the research. Participation in the research was voluntary and all surveys were coded to ensure participant anonymity. Ethics approval for the research was received from the university’s ethics committee.

Instrument and analysis
In the first semester of administration, the pilot survey was comprised of demographic questions and a resilience measure. Initial results indicated that significant differences existed within the sample, which warranted further investigation. Therefore, mental well-being and sleep adequacy measures were added to the survey and administered in the subsequent semester.

Resilience. The Resilience at University (RAU) scale (Turner, Holdsworth and Scott-Young, 2017), a measure adapted from the Resilience at Work scale (Winwood et al., 2013) was selected because the results can be translated into appropriate skills training through targeted initiatives. The RAU has previously been administered to university students (Turner, Holdsworth, Scott-Young and Johnson, 2017) therefore there is a capacity to consider results in light of previous research. The scale has 20 items and six subscales: finding your calling, interacting cooperatively and living authentically, managing stress, building networks, maintaining perspective and staying healthy. Examples of the RAU items include “when things go wrong with my university studies, they do not overshadow the other parts of my life,” and “I often ask for feedback so that I can improve my university performance.” Instructions given to participants specified that the questions referred to their experience at university, including the time spent at university, as well as the time spent on their studies outside of university. Participants were asked to indicate their agreement with the items on a seven-point Likert scale from “strongly disagree” (0) to “strongly agree” (6). The RAU scale has demonstrated satisfactory internal consistency reliability ($\alpha = 0.81$) (Turner, Holdsworth and Scott-Young, 2017). The data were subjected to principal component analysis (PCA) using varimax rotation and these results will be reported later.

Mental well-being. Since previous research has identified a positive relationship between resilience and student mental well-being and (Turner, Scott-Young and Holdsworth, 2017), well-being was included in the survey to gain a broader understanding of the target population.
The Short Warwick–Edinburgh Mental Well-being Scale (SWEMWBS) (Stewart-Brown et al., 2009) was used to produce an overall measure of positive mental well-being. This seven-item self-report scale has demonstrated good internal reliability (Haver et al., 2015). An example item is “I’ve been feeling optimistic about the future.” The response format is a five-point Likert scale ranging from “none of the time” (1) to “all of the time” (5). The SWEMWBS is scored by first summing the score for each of the seven items and then transforming the total score for each person according to a metric score. Scores range from 7 to 35 and higher scores indicate higher positive mental well-being.

Sleep adequacy. While stress is associated with shortened sleep and sleep fragmentation (Akerstedt, 2006), there has been a lack of research assessing the relationship between sleep adequacy and resilience. Research using a military population suggests that individuals who reported insomnia symptoms were less resilient, while the relationship between resilience and sleep duration was less clear (Seeig et al., 2016). The study revealed a U-shaped association with both short and long sleepers who were considered less resilient than those sleeping seven hours per night. Attaining adequate sleep each day is important for learning and memory (Ellenbogen et al., 2006). Furthermore, lack of adequate sleep affects mood. Sleep and mood are closely connected, as poor or inadequate sleep can cause irritability and stress, while healthy sleep can enhance well-being (Harvard Medical School, 2007). Given that the relationship between resilience and sleep is not well understood in a student context, a sleep-related question was included in the survey. Indication of sleep adequacy was measured by one item using a seven-point Likert scale from “strongly disagree” (0) to “strongly agree” (6): “I make sure I get enough sleep.” The item has previously been used to explore sleep in the context of lifestyle management (Robinson et al., 2008).

Results

Participants

In total, 292 students undertaking project management studies completed the survey. Of these 134 (45.9 percent) participants were undergraduates and 158 (54.1 percent) were postgraduates. The mean age of the sample was 27 years (SD = 6.6), with postgraduates (M = 29.9, SD = 6.9) being slightly older than undergraduates (M = 23.9, SD = 4.4). The majority of participants were male (n = 194, 66.1 percent). A larger proportion of local students were enrolled in the Bachelor program (n = 123, 91.8 percent) when compared with the Master’s program (n = 71, 44.9 percent).

Resilience

The subject-to-item ratio of approximately 14:1 was considered appropriate for factor analysis (Nunnally, 1978), as 292 participants completed the 20-item RAU scale. Furthermore, the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy value was 0.739, exceeding the recommended value of 0.6 (Kaiser, 1970). Bartlett’s Test of Sphericity (Bartlett, 1954) was significant (p = 0.000), and the correlation matrix revealed the presence of many coefficients of 0.30 and above, therefore verifying that the data set was suitable for factor analysis. Principal components analysis (with varimax rotation) yielded a five-factor structure that explained 64.03 percent of the variance. The five-factor solution closely replicated the six-factor structure of the RAU scale as suggested by Turner, Holdsworth and Scott-Young, (2017). The major difference was the grouping of the items from the finding your calling and living authentically subscales onto one factor, and the exclusion of the two-item interacting cooperatively subscale due to cross-loading. Factor 1 had an eigenvalue of 4.28 and explained 25.22 percent of the variance and included all items from the finding your calling and living authentically subscales. Factor 2 had an eigenvalue of 2.07 and explained 12.20 percent of the variance, and included three of the four items from the managing
A seven-item SWEMWBS (mental well-being) demonstrated satisfactory internal consistency ($\alpha = 0.84; \text{CI} 95\% 0.79–0.88$). The mean score for the sample was 23.21 (SD = 3.96), and there was little variation between females ($M = 22.34, \text{SD} = 4.06$) and males ($M = 23.61, \text{SD} = 3.38$). While Australian population norms are yet to be established, these findings are similar with Ng Fat et al. (2017), who report English population norms for females ($M = 25.39, \text{SD} = 3.99$) and males ($M = 23.67, \text{SD} = 3.92$). In this study, males were very close to the population norm, while females were slightly lower than the population norm. While the use of English population norms is limited with an Australian sample, it does provide some context with which to consider the results.

**Relationship between resilience, mental well-being and sleep**

A Pearson product-moment correlation coefficient matrix was computed to assess the relationship between the five resilience factors with the mental well-being and sleep measures. The results are outlined in Table II.
There was a significant positive relationship between all resilience factors and mental well-being. Results showed a large correlation with factor 1 (finding your calling/living authentically), a medium correlation with factor 2 (managing stress), factor 3 (maintaining perspective) and factor 5 (staying healthy), and a small correlation with factor 4 (building networks). There was also a significant positive relationship between all resilience factors and sleep adequacy with the exception of factor 3 (maintain perspective). Results showed a medium correlation with factor 2 (managing stress) and factor 5 (staying healthy), and a small correlation with factor 1 (finding your calling/living authentically) and factor 4 (building networks).

Discussion
This research aimed to establish a resilience profile for project management university students, and identify priority areas for skill development. Differences between undergraduate and postgraduate students were explored to determine whether key areas requiring development differed between these two groups. Of the five resilience factors, two key areas of difference emerged. Postgraduate students had a higher capacity for finding their calling and living authentically than undergraduate students. It is possible that postgraduate students considered that their project management studies were more firmly aligned with their career focus and goals. For these students, undertaking postgraduate studies may have been purposely aligned with either a change in career direction, or with career progress and promotion. In contrast, undergraduate students are often less clear about their career path and related goals, and how their studies will translate into their future professional life (Kinash et al., 2017). Universities can support undergraduate students to find purpose in their studies through curriculum design. Importantly for students, this means a clear translation between project management theory and practice which is reflected in course design and delivery, assessment and feedback (Nerland and Proitz, 2018; Peach and Gamble, 2011). The inclusion of project management case studies into the curriculum is a critical learning tool which can facilitate the application of theory to practice (Mayo, 2004), thereby assisting students to understand how their studies are preparing them for their role as a future project professional. Project management practitioners themselves can also contribute to undergraduates’ sense of purpose by engaging with universities to mentor students and deliver lectures that share “real life” project scenarios. This has been shown to be an effective way of exploring and demystifying professional practice for students, and for enabling meaning and purpose between theory and practice (Wingrove and Turner, 2015).
The second key difference emerging between undergraduate and postgraduate students was on the resilience factor focused on capacity to manage stress, described as the use of routines that help manage everyday stressors, maintain work-life balance and ensure time for relaxation (Winwood et al., 2013). The transition from secondary school to university, navigating university systems, moving into early adulthood, becoming financially independent and preparing for professional life are some of the stressors faced by undergraduate students (Gale and Parker, 2014; DeRosier et al., 2013). For project management students, this time of upheaval, change and adaption may be supported by emphasizing the transferability of basic project management principles learned at university to life more broadly. Scoping, planning and time management may help these students to identify, prioritize and manage study-related tasks so that balance can be attained between university and personal life.

There were no significant differences between undergraduate and postgraduate students for resilience factors related to staying healthy, establishing and maintaining support networks and maintaining perspective. Of concern were the results relating to maintaining perspective, described as the ability to reframe setbacks, maintain a solution focus and manage negativity (Winwood et al., 2013). Maintaining perspective was the lowest scored factor for both the undergraduate and postgraduate cohorts. Having the capacity to maintain perspective is critical in the project management profession given the high rate of project failure (PMI, 2017a), regular deviations from the project plan (Pavlak, 2004) and the uncertain and sometimes ambiguous business environment which the project management practitioner must navigate. Larson et al. (2014) identify that being an optimist is a critical trait of a project manager, which enables and sustains a solution focus in difficult and challenging times. Students can develop their ability to maintain perspective through activities which challenge them to reflect on difficult project scenarios and recommend possible solutions. In the first phase of this type of activity, students can be asked to take on a negative and pessimistic thinking style, while in the next phase they can be asked to consider the same scenario with a positive, solution-focused approach. Such an activity may be prefaced with a session on cognition and thinking style (Zhang, 2002). Through reflection and heightened awareness of their thinking style, students can recognize that a solution-focused and optimistic approach is more likely to lead to positive project outcomes. Project management practitioners can also play an integral role in supporting the development of maintaining perspective. This can be achieved through sharing real-life examples with students which highlight that projects are “routinely” challenging, problems can arise on a daily basis and fail rates are high (PMI, 2017a), thereby emphasizing the criticality of having a positive mindset and staying solution focused in this challenging profession.

The findings revealed three key differences between genders on the resilience factors. Female project management students had a higher capacity for finding their calling and living authentically than male project management students. It is not clear why this significant difference emerged. Results also indicated that male students had a higher capacity for staying healthy and maintaining perspective compared with female students. There are few studies which examine the relationship between gender and resilience, and findings to date are not conclusive. For example, Erdogan et al. (2015) found that male students showed significantly higher resilience than females, a result they attributed to the strictly prescribed gender roles in their male dominated society. In contrast, Hamdan-Mansour et al. (2014) found no significant gendered differences in resilience for students studying in the Health Sciences and the Humanities in Jordanian universities. Further research is needed to understand the relationship between gender and resilience for project management students, and how specific developmental strategies may be targeted to address gender-based differences.

When considering the resilience of project management students in comparison to other disciplines, resilience prevalence across studies cannot be easily compared even when the
populations have shared characteristics. This is due to the absence of an agreed definition of the construct (Windle, 2011) and inconsistency of measures used (Windle et al., 2011). A recent study used the RAU to measure the resilience of Australian construction management undergraduates (Turner, Holdsworth, Scott-Young and Johnson, 2017). In comparing findings, the construction management students were found to have a higher level for finding your calling/living authentically, maintaining perspective and building networks compared with the project management students of this present study. While differences are marginal, further research is required to better understand what determined these differences, be it curriculum design and delivery, student engagement with industry professionals, a clear and purposeful link between university study and career goals, or other factors.

This research also aimed to explore the relationship between resilience and well-being, and the results identified that resilience is positively linked to mental well-being which is consistent with previous research (Rutten et al., 2013; Turner, Scott-Young and Holdsworth 2017). This finding reiterates the importance of resilience, and suggests that resilience development is relevant at both the undergraduate and postgraduate levels. Along with learning foundation principles aligned with the project management body of knowledge (PMI, 2017c), universities should incorporate resilience awareness and training into the project management curriculum. Program managers, responsible for a whole-of-program approach to teaching and learning, may revise the curriculum to include resilience skill development alongside technical skills development. Given that resilience developed in one system (such as university) can be transferred across systems (such as work) (APA, 2010), it is expected that the resilient project management graduate will be equipped to manage the everyday stressors and challenges inherently associated with the role of a project management practitioner. Such capacity will support the success and well-being of these early-career project professionals.

Prior to this study, little was known about resilience and the link to sleep. The results of this study indicate that the more resilient the student, the more likely they are to attain adequate sleep. This is an important finding, as adequate sleep is essential for optimal learning and memory function (Ellenbogen et al., 2006) and for good physical and mental health (Medic et al., 2017).

Conclusion
This research established a resilience profile for project management students, identified priority areas of resilience development and found that resilience is positively linked to well-being. The findings suggest that the ability to bounce back and recover from stressful circumstances is a critical capability for future project management practitioners, which supports health and well-being and positive work outcomes. Nurturing the resilience of project management students will support their transition into professional life and assist them to survive and thrive in the high-stress project management profession. This study highlights the importance of incorporating resilience development into university project management curricula, thus supporting calls for a greater emphasis on soft skill development. The successful project management practitioner shows competence in a combination of well-developed technical and soft skills and this combination should be prominent in the university project management curriculum.

Both educators and project management practitioners have an integral role to play in nurturing student resilience. For educators, course design and delivery, assessment and feedback are central for aligning theory with practice and enabling students to find meaning and purpose in their studies. For project practitioners, actively engaging with universities in the classroom will support students in their transition to becoming successful project professionals. Sharing real-life project case studies, mentoring, and guest lectures will help students to de-mystify project management and become comfortable with challenging
scenarios which mirror everyday project management in the workplace. One priority area likely to support resilience development is the ability to maintain perspective so as to navigate through complex, uncertain and challenging situations. Being prepared and comfortable with project uncertainty, multiple and competing demands and priorities, and possible project failure will help to “normalize” these common project characteristics for future project professionals. Instead of being perceived as stressors, these common characteristics may be re-framed as routine project challenges which require a positive thinking style and mindset.

Findings of this research cannot be generalized across project management programs in other tertiary institutions, as the sample was limited to only one large urban university in Australia. A further limitation is the inability to infer causation due to the nature of cross-sectional research. Given the purpose of the study was to establish a baseline profile of resilience for project management students in this largely unexplored area of research, this does not present as a significant limitation. Further research may seek to replicate this study in other universities that offer project management degrees to consider how university context and country impact on student resilience. Finally, it is recommended that longitudinal research be utilized to examine the role resilience plays in the transition from student to project professional.

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Developing the resilient project professional


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Managing differences, interaction, and partnership quality in global inter-firm relationships

An empirical analysis on offshore IT outsourcing

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Abstract

Purpose – The purpose of this paper is to develop and to empirically test a model that explains how managing differences between an information technology (IT) provider and an overseas client influences partnership quality and ultimately affects the continuity of the relationship.

Design/methodology/approach – A field survey by distributing questionnaires to Indonesian IT providers was conducted over four months, yielding 78 completed responses. These empirical data were analyzed by the partial least squares–structural equation modeling technique to examine the measurement and structural models.

Findings – Managing differences, i.e. cultural, temporal and standards differences, has a positive impact on partnership quality through inter-firm interaction, i.e. information exchange, coordination and participation. Partnership quality, consisting of the dimensions of commitment, trust and integration, has a substantial positive impact on the continuity of the relationship.

Research limitations/implications – This study was limited by the use of a limited number of samples, reducing the precision of the results.

Practical implications – This study suggests that if the IT provider is able to manage the cultural, temporal and standards differences with the overseas client, it increases information exchange, coordination and participation between both parties, which are necessary for establishing a high-quality partnership.

Originality/value – This study is the first empirical examination of how the management of differences between an IT provider and an overseas client influences the continuity of their relationship through interaction and partnership quality.

Keywords Partnership, Critical factors, Project-collaboration quality, IT outsourcing, Project management success

Paper type Research paper

Introduction

Outsourcing is a common practice in many large firms around the world. This practice transfers some functions of a company to external parties for improvement of the firm’s efficiency. Among the most outsourced functions are information technology (IT) functions, such as application development, application management, data center operation, system development and maintenance, web development, and e-commerce development (Nuwangi et al., 2014; Psslak, 2011). An outsourcing practice may involve two parties that come from different countries, which is called offshore outsourcing or offshoring. The practice of offshore IT outsourcing is increasing due to the availability of highly qualified IT providers in developing countries.

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Stettler et al. (2014) stated that India and China are favorite offshore IT outsourcing destinations in the world because they have many highly capable IT providers. Although several Indonesian IT companies have attempted to enter the offshore IT outsourcing business, so far they have not been successful.

Companies that are involved in outsourcing relationships have to understand the critical success factors that increase the likelihood of successful outsourcing. In the context of IT outsourcing, several researchers have identified critical success factors. According to a review of empirical IT outsourcing studies conducted by Lacity et al. (2010), IT outsourcing success is influenced by relationship-related factors, client and supplier capabilities, contractual governance, transactional attributes and decision characteristics. The most highlighted factors that determine IT outsourcing success in previous studies are relationship-related factors (Lacity et al., 2010). Qi and Chau (2012) suggested that the IT provider and its client should build a close relationship to achieve successful IT outsourcing because IT outsourcing relies on human resources (Qi and Chau, 2012).

An inter-firm relationship, such as between a buyer and a seller, tends to be integrative, where both parties cooperate to achieve mutual goals (Grover et al., 1996). Lee and Kim (1999) argued that the nature of the inter-firm relationship in outsourcing changes it from a contractual relationship to a partnership relationship. The study by Rai et al. (2009) suggests that offshore IT outsourcing project management should focus not only on managing the formal contract but also on achieving a supportive relationship between provider and client (Rai et al., 2009). The study by Muller and Martinsuo (2015) showed the positive contribution of relational norms, including informality, flexibility, information sharing and mutual interests, to achieve successful IT projects. Due to the importance of partnership quality in inter-firm relationships it is essential to study partnership quality in the context of IT outsourcing.

Most of the previous studies considered partnership quality from the perspective of the client (e.g. Chakrabarty et al., 2008; Chen et al., 2017; Goles and Chin, 2002; Gupta and Sushil, 2014; Lane and van der Vyver, 2005; Lee, 2001; Lee and Kim, 1999; Ren et al., 2010; Swar et al., 2012). Because IT outsourcing is a relationship between two parties, not only the client but also the provider determines its success. Therefore, the study of the partnership’s quality from the provider’s perspective is also important. However, only a limited number of studies on partnership quality from the provider’s perspective have been conducted (e.g. Gupta and Sushil, 2014; Lahiri and Kedia, 2009; Raman et al., 2013). Hence, the present study aimed to investigate partnership quality from the provider’s perspective.

The parties involved in an inter-firm relationship have to make an effort to build partnership quality. It is therefore necessary to understand the determinants of partnership quality. However, only a limited number of studies have investigated these determinants. Previous studies identified internal factors, interaction factors and contextual factors as determinants of partnership quality. Internal factors encompass those aspects that are essential for the smoothness of the working relationship and that are developed internally in the organization, for example, management support, outsourcing readiness and reputation (e.g. Gupta and Sushil, 2014; Lee and Kim, 1999; Ren et al., 2010). Interaction factors encompass aspects related to the process between both parties, such as information sharing, coordination and joint action (e.g. Chou et al., 2015; Goles and Chin, 2002; Gupta and Sushil, 2014; Lee and Kim, 1999; Swar et al., 2012). Contextual factors encompass environmental aspects that influence the inter-firm relationship, specifically cultural differences (e.g. Gupta and Sushil, 2014; Lee and Kim, 1999; Schoenherr et al., 2015).

Despite these previous studies having investigated the determinants of partnership quality in inter-firm relationships, establishing partnership quality in offshore IT outsourcing is still a challenge due to differences between the partners. In the context of strategic alliance relationships, Rai et al. (1996) stated that differences between companies can be a determining
factor for the successful of the alliance. Those differences include differences in policies, organizational procedures, management orientation, culture and personnel compensation differences. Previous studies on inter-organizational relationships only considered cultural differences as a factor that influences the partnership quality (Gupta and Sushil, 2014; Lee and Kim, 1999; Schoenherr et al., 2015; Swar et al., 2012). In an offshore outsourcing, besides cultural differences, temporal differences between suppliers and clients may affect inter-organizational interactions. The study of Holmstrom et al. (2006) suggested that an IT provider should arrange its project’s team working hours to as much as possible coincide with those of its client’s team in order to reduce the temporal differences. In addition, standard differences that include the compensation and working hours may also affect the relationship quality. A study by Jaarsveld and Yanadori (2011) in a call center offshore outsourcing showed that personnel compensation differences in the supplier affect absenteeism and personnel turnover. Those behaviors lead to a declining performance on the outsourced functions, which, in turn, weaken client’s trust on the capability of the supplier.

Previous studies have not much paid attention to empirically study the impact of such differences on partnership quality. It is important to manage these differences for the success of international projects. For example, the success of the year 2000 (Y2K) projects conducted by many organizations around the globe was achieved by respecting national and organizational differences, trusting self-interest to provide motivation and relying on each group to fix its system (Anbari et al., 2009). Another example is a project involving global teams from France and America. In the beginning, the teams had communication problems which were causing mistrust because members of global teams unconsciously sent the wrong signals with their everyday behavior (Neely, 2015). The teams then realized they were having a miscommunication problem only when they had a face-to-face meeting when the French team visited its colleagues in America. These examples displayed how the differences in international projects could influence the smoothness of the cooperation process. Due to the importance of managing differences in an international project, it is important to study the role of managing the differences in offshore outsourcing. Therefore, this study addressed the following question:

**RQ.** How does managing differences between a provider and an overseas partner influence partnership quality and eventually impact outsourcing success?

This paper is organized as follows. The literature review encompasses descriptions of outsourcing success, partnership quality, interaction and managing differences, as well as an explanation of the construction of the research model. The following section describes the research method and data collection. The results section contains an examination of the measurement and structural models. The following section contains a discussion of the findings and their practical implications. Finally, this paper ends with our conclusions and further research suggestions.

**Literature review**

Relationship characteristics are a critical factor in the success of inter-organizational relationships. The parties involved in a relationship should build the quality of their relationship to ensure that their cooperation runs smoothly. In the context of IT outsourcing, Lee and Kim (1999) have demonstrated that partnership quality affects outsourcing success. The review of IT outsourcing studies by Lacity et al. (2010) shows the importance of relationship characteristics in achieving IT outsourcing success. Relationship characteristics such as knowledge sharing, cultural distance, trust and commitment are the most critical determinants of IT outsourcing success.

The provider and the client in an IT outsourcing relationship must make efforts through interaction to establish good partnership quality. Hence, interaction is an essential
determinant of partnership quality (Lee and Kim, 1999; Gupta and Sushil, 2014). A high degree of interaction enables companies to initiate, implement and monitor inter-organizational relationships (Leischig et al., 2014). The execution of IT outsourcing requires an intensive interaction between the IT provider and its client (Bjarnason et al., 2016). Through interaction, information that is needed for the execution of IT projects can flow smoothly and tasks can be coordinated efficiently.

Offshore IT outsourcing produces challenges related to differences between the provider and the client, such as cultural and temporal differences. The success of global sourcing depends on contextual factors, including geographical position, political and cultural issues (Ai et al., 2012). Contextual factors, such as cultural differences (Lee, 2001; Sangwan et al., 2007) or geographical differences (Paasivaara and Lassenius, 2003; Sangwan et al., 2007), have an impact on the inter-organizational relationship. Multi-cultural interaction and geographical distance pose a large challenge on global software development (Layman et al., 2006). Therefore, how a firm manages the differences with its partner determines the extent of interaction between both companies.

According to the explanation above, we propose that partnership quality, interaction and how companies manage their differences determine the success of IT outsourcing projects. We developed a research model to explain how these factors influence IT outsourcing success. In the research model, managing differences affects outsourcing success through the interaction process and partnership quality. We view partnership quality as a second-order construct that consists of three first-order dimensions. Figure 1 displays our research model and the hypothesis testing results. Detailed explanations of each construct are given later in this paper.

![Figure 1. The research model and hypothesis testing results](image-url)

**Notes:** **, ***Significant at the 0.05 and 0.01 levels, respectively
Outsourcing success

Outsourcing is a type of inter-organizational relationship that involves a client company and a provider company. Both parties have their own objectives or benefits that they want to obtain through the outsourcing. The extent of benefit achievement from outsourcing can be considered an indicator of outsourcing success (Grover et al., 1996). Provider and client have different outsourcing success criteria (Shenhar et al., 2001). In this study, outsourcing success was defined as the extent to which the IT provider achieves benefits or goals from the IT outsourcing.

Outsourcing success for the provider can be identified from various perspectives. Atkinson (1999) determined outsourcing success from two project stages, i.e. the delivery stage and the post-delivery stage. The dimensions of outsourcing success in the delivery stage focus on the process ("doing it right") and include cost, time and quality criteria. The dimensions of outsourcing success in the post-delivery stage focus on the system ("getting it right"), including system quality, information quality, user criteria and benefits ("getting them right"), such as strategic goals and professional learning criteria.

Baccarini (1999) proposed outsourcing success from the perspective of objective hierarchy, consisting of project goal, project purpose, project output and project input. Project goal and purpose identify strategic objectives, which include meeting strategic organizational objectives, satisfying user needs and satisfying stakeholder needs. Project outputs and inputs determine operational goals, i.e. time, cost and delivery criteria. Shenhar et al. (2001) identified project success criteria from an operational perspective, including efficiency and contract fulfillment; and a business perspective, including profit and market share increase.

This study took a specific outsourcing success criterion that is related to strategic organization benefits, namely, the continuity of the relationship with the client. A long-term relationship with a business partner is characterized by the willingness of both partners to continue the cooperation. Biong (1993) stated that customer retention represents customer loyalty, which is an essential factor in long-term relationships. Loyal clients are far more profitable than price-sensitive clients and a committed relationship has substantial advantages because it is hard to imitate by competitors (Day, 2000). Homburg et al. (2003) conceptualized customer loyalty as the intention to develop and maintain a committed relationship.

Relationship continuity denotes the success of the provider in retaining the client through recurrent projects from the same client. Because the continuity of the relationship represents the loyalty of the customer, we define this outsourcing success criterion by adopting a definition of customer loyalty. Biong (1993) defined customer loyalty as the degree to which a retailer wants to continue to use the company as a supplier in the future. Homburg et al. (2003) defined customer loyalty as the intention of a buyer to maintain the purchasing relationship with a supplier and to expand the quantity and volume of this relationship. In this study, the continuity of a relationship is defined as the intention shown by the client to continue and increase the level of cooperation with the provider.

Partnership quality

Partnership is viewed as a strategic relationship between independent firms through sharing goals, cooperating to achieve shared benefits and having mutual dependency (Mohr and Spekman, 1994). The partnership as a working relationship between firms reflects a long-term commitment, a sense of cooperation, shared risks and benefits (Grover et al., 1996). The success of a partnership depends on the quality of the partnership (Lee and Kim, 1999; Lee, 2001; Lahiri and Kedia, 2009; Ren et al., 2010; Swar et al., 2012; Gupta and Sushil, 2014). Partnership quality is a complex concept with no single accepted definition. Lee and Kim (1999) defined partnership quality as the degree to which the delivered outcomes match the
participants’ expectations. Goles and Chin (2002) defined partnership quality as inherent characteristics that contribute to the functionality of a relational exchange. The present study defines partnership quality as the intrinsic characteristics that contribute to a long-term relationship.

The complexity of partnership quality makes this concept a multi-dimensional concept. Morgan and Hunt (1994) identified two dimensions of partnership quality, namely, trust and commitment. Trust is a central factor in inter-organizational relationship success, where committed partners possess the confidence that the working relationship is valuable enough to be preserved. Lee and Kim (1999) included dimensions of trust, commitment, business understanding, benefit and risk sharing, and conflicts into their concept of partnership quality. Goles and Chin (2002) viewed trust, commitment, consensus, cultural compatibility, flexibility and interdependence as the dimensions of partnership quality.

The present study will determine dimensions of inter-organizational relationship quality based on the Activity–Resources–Actor (ARA) framework that was developed by Hakansson and Snehota (1995). This framework characterizes the inter-organizational relationship using three elements, namely, activity links, resource ties and actor bonds. Activity links are related to how two associated partners adapt their activities to each other. An inter-organizational relationship can affect the way allied companies perform their operations. Consequently, the internal activities of each company need to be adapted. An integrated relationship characterizes excellent partnership quality. A service provider can build a long-term relationship with its clients by delivering value to the client. This value creation can be supported through the integration of both parties (Goles and Chin, 2002). Schoenherr et al. (2015) stated that integration relates to mutual internal process adaptation and is an effort to reduce uncertainty in an outsourcing relationship. Therefore, we see integration as an essential dimension of partnership quality. Narayan et al. (2011) defined integration as the degree of interdependence between the process of the service provider and that of the client. Schoenherr et al. (2015) defined integration as adaptation to each other’s internal processes in an outsourcing relationship. The present study defines integration as the degree of internal process compatibility of cooperating parties in an outsourcing relationship.

In outsourcing, the allied companies bring their resources into the relationship. Some of the resources of the two parties are brought together, confronted and combined (Hakansson and Snehota, 1995). Two related companies should commit to providing the resources needed by the relationship. Henderson (1990) suggested that the participants’ commitment is a primary determinant of relationship continuity. Committed partners will make an effort to balance short-term problems with long-term goals, thus a high commitment to the relationship is associated with relationship success (Mohr and Spekman, 1994). Commitment is defined as the willingness of trading partners to exert effort on behalf of the relationship (Mohr and Spekman, 1994). Another definition of commitment, as proposed by Morgan and Hunt (1994), suggests that commitment is shown when exchange partners believe that the continuation of their relationship is so significant that it warrants maximum effort to maintain it. The present study defines commitment as the degree of effort exerted by both cooperated parties to ensure the continuity of their working relationship.

The inter-firm relationship enables persons in each company to develop a bond. This bond affects what the parties know about each other and what they can exchange. In this relationship, the two parties get to know each other, which will increase mutual trust. Trust is a vital partnership quality in a long-term relationship. A long-term inter-organizational relationship requires trust from both parties involved in the relationship. In the context of a buyer–seller relationship, the study of Homburg et al. (2003) showed that trust is a crucial determinant of the relationship’s strength. From the vendor’s standpoint, building client trust can determine the continuation of the relationship. The study of Ashnai et al. (2016)
shows that trust influences the client’s intention in establishing a long-term partnership with the provider. Moorman et al. (1992) defined trust as the willingness to rely on an exchange partner in whom one has confidence. Morgan and Hunt (1994) defined trust as one party’s confidence in an exchange partner’s reliability and integrity. We define trust as the degree of certainty of being able to rely on the partner in an outsourcing relationship.

Based on the ARA framework explained above, we embrace three partnership quality dimensions for long-term relationships that lead to outsourcing success, namely, integration, commitment and trust. The study of Raman et al. (2013) demonstrates that partnership quality has a positive relationship with project performance. Furthermore, the study of Leischning et al. (2014) in the context of strategic alliances shows that the quality of the relationship has a positive influence on relationship success.

According to the explanations above, we posit the following hypothesis:

\[ H1. \text{ Partnership quality positively influences the continuity of the relationship.} \]

**Interaction**

Goles and Chin (2002) divided inter-organizational relationships into two components, namely, attribute and process. The attribute of a relationship is related to a characteristic or property of the relationship that contributes to the functionality of the relational exchange. We consider this component a partnership quality, as has been explained in the previous part. The process component, however, is related to how the exchanges between the partners develop the attributes of the relationship. This study views the process component of the relationship as an interaction factor. We define the interaction factor as an essential aspect that the IT provider should maintain in cooperating with its partner during the execution of the project. We identify three processes of interaction, i.e. information exchange, coordination and participation.

An essential process in IT outsourcing is information exchange between the provider and the client. According to Paulraj et al. (2008), information exchange encourages the inter-organizational learning process, facilitates knowledge development, increases trusts and reduces conflicts. Inter-organizational information exchange is formal as well as informal sharing of meaningful and timely information between firms (Anderson and Narus, 1990). Goles and Chin (2002) extended the previous definition of inter-organizational information exchange by emphasizing the proactive process of formal and informal sharing of information between firms. We define information exchange as the sharing of valuable information between cooperating parties.

Inter-organizational communication is an essential determinant of trust (Anderson and Narus, 1990). A close inter-organizational relationship requires open and honest information exchange, as suggested by Mohr and Spekman (1994). Communication influences trust by assisting in resolving conflicts and aligning perceptions and expectations (Morgan and Hunt, 1994). Communication enables participants in the relationship to obtain better information about their partners. Thus, the confidence in the inter-organizational relationship and willingness to continue the relationship will increase (Lee and Kim, 1999). Apart from that, frequent communication can build trust, which is important for a better relationship (Mao et al., 2008).

In IT outsourcing, extensive communication enables the provider company to obtain not only knowledge of the client’s technical requirements but also a broader understanding of the client’s business process, business environment and business plan (Lee and Kim, 1999). This more comprehensive and more complete knowledge about the partner makes the integration between the company and its partner much more manageable. In the context of a supply chain, inter-organizational information exchange can support partnership success.
and strengthen a long-term cooperative relationship, which is necessary for the integration of the supply chain (Lin, 2014).

Based on the descriptions above, we posit the following hypothesis:

H2. Information exchange positively influences partnership quality.

Another important process in the interaction between an IT provider and its client is coordination. In an IT outsourcing project, each party has its tasks and responsibilities (Koh et al., 2004). Coordination is required to ensure that task interdependence is well managed such that each activity is accomplished on time (Espinosa et al., 2007). We adopt the definition of coordination proposed by Goles and Chin (2002), who defined coordination as managing the interdependencies between cooperating parties in an outsourcing relationship to accomplish agreed-upon tasks.

Inter-organizational coordination is one of the essential processes in the interaction between the provider and the client in IT development projects. A successful partnership is characterized by coordinated actions to achieve mutual objectives (Anderson and Narus, 1990). According to Lee and Kim (1999), inter-organizational coordination enables a company to know and support what the client wants, including new requirements that are identified when the project is being executed. Routine aspects of IT outsourcing execution can be conducted through mechanistic coordination. Meanwhile, uncertain elements such as requirement changes can be conducted through organic coordination (Espinosa et al., 2007).

Inter-organizational coordination establishes a consensus about task division, inter-partner dependence and standard operating procedures of task execution (Leischnig et al., 2014). Routines and rules of managing inter-organizational collaboration enable the interaction to run smoothly. In the context of inter-organizational technology transfer alliance, coordination has an impact on inter-organizational relationship quality (Leischnig et al., 2014).

Based on the explanations above, we propose the following hypothesis:

H3. Coordination positively influences partnership quality.

The relationship between the provider and the client needs active participation from both parties. In the context of IT outsourcing, Paasivaara and Lassenius (2003) stated that joint problem solving can contribute to achieving IT project success. Participation in an inter-organizational relationship enables both parties to find more innovative solutions and to take actions more responsively (Sharma and Kearins, 2011). Lee and Kim (1999) defined participation as the degree of willingness to enter into and to participate in activities between partners. Homburg et al. (2003) viewed participation as the engagement of parties in a relationship in combined decision making and problem solving. We define participation as the proactive involvement of cooperating parties in planning, problem solving and decision making.

Working together with a partner increases each firm’s perceptions of its compatibility with its partner (Anderson and Narus, 1990). It enables mutual expectations to be established and cooperative efforts to be built (Mohr and Spekman, 1994). The active involvement of a company in the cooperation with a partner provides an opportunity for the company to have a thorough knowledge of the client’s business. All client-related knowledge, that the provider possesses, assists the provider in integrating its processes with the client’s processes. The study of Han et al. (2008) showed that in IT outsourcing settings, collaborative participation, which represents business understanding and managerial problem solving, has an influence on trust.

Joint working between partners strengthens the bond that ties both parties together (Homburg et al., 2003). A strong bond between both parties will foster the trust they have in each other. Joint working gives the client a sense of co-ownership of the process and will
promote the commitment to the relationship (Homburg et al., 2003). Paasivaara and Lassenius (2003) stated that in an IT outsourcing context, joint problem solving can lead to the IT project success.

According to the explanations above, we posit the following hypothesis:

H4. Participation positively influences partnership quality.

Managing differences

Two companies involved in offshore outsourcing face challenges related to differences between them. The companies should manage these differences to alleviate negative impacts they may have. We refer to managing differences as an essential aspect that should be prepared by a company before execution of offshore outsourcing. We consider three differences that should be managed, namely, cultural differences, temporal differences and standards differences.

Each company has its own culture, which can be different from that of another company. Global inter-organizational cooperation is challenging with regard to cultural differences. A cultural understanding is deemed necessary in inter-cultural relationships. The study of Rai et al. (2009) shows that cultural differences between provider and client can hinder both parties in reaching outsourcing success. Cultural differences create different values that inhibit trust building (Anderson and Weitz, 1989). The inability to adapt to the partner’s culture induces misunderstandings in the inter-cultural relationship. The participants of an inter-organizational relationship who have a similar culture are likely to have more trust in their partners (Lee and Kim, 1999). Similarity in culture, policies and management style supports the smoothness of cooperation (Johnson et al., 1996). This similarity between the participants of an inter-organizational relationship creates closeness in the relationship, which facilitates mutual understanding and reduces conflicts. The study of Kedia and Lahiri (2007) showed that cultural differences have a negative impact on inter-organizational relationships in an international business setting. A firm should be able to understand and adapt to the partner’s culture. We call this ability managing cultural differences.

Culture has an impact on the way people interpret and react to a particular situation. The ability of an organization to understand and adapt to the partner’s culture strengthens the communication effectiveness in an international alliance that is needed for trust building (Johnson et al., 1996). In contrast, a lack of cultural sensitivity brings misunderstandings into the inter-organizational relationship. Furthermore, the effectiveness of communication increases when companies understand and bridge cultural differences in an international relationship. Cultural differences and cultural insensitivities thus have impacts on inter-cultural cooperation (Kumar, 2008).

According to the explanations above, we posit the following hypothesis:

H5. Managing cultural differences positively influences information exchange.

Another challenge in offshore outsourcing is related to the temporal difference between the provider and the client. This difference can reduce the work time overlap between the provider and the client that is needed for conducting direct interaction. In the execution of an IT project, direct interaction is required for discussing the client’s requirements and IT design (Herbsleb et al., 1995). Firms can alleviate negative impact of the temporal difference by building work practices and providing supporting infrastructures. We call this managing the temporal difference.

Managing the project team, such as by arranging working time flexibility or adjusting the working time of the project team to the working time of the partner, can reduce the impact of the temporal difference. Conformity of working time enables direct interaction between a company and its partner. Direct interaction facilitates direct communication and
therefore information flow increases. According to the study of Holmstrom et al. (2006), managing the project team influences the interaction between the project team and its partner. The objective of managing the project team is to increase the working time overlap between the project team and its partner so that the opportunity to have direct interaction increases.

The use of communication technology is another way to alleviate the temporal difference (Sarker and Sahay, 2004). A company that uses a technology such as a project office tool enables its client to monitor all processes of IT development (Oza et al., 2006). The use of synchronous communication and coordination technology facilitates a higher degree of interaction (Kumar, 2008). This direct interaction enables both sides to discuss the whole project so that both parties can coordinate the execution of the project smoothly or solve arising problems fast. Direct interaction also enables both parties to exchange more information and reduces misunderstandings.

The explanations above lead us to posit the following hypotheses:

H6. Managing the temporal difference positively influences information exchange.

H7. Managing the temporal difference positively influences coordination.

In an inter-organizational relationship, a company will encounter differences in standards with its partner. Rai et al. (1996) stated that a company should understand and deal with issues that are related to differences in standards, such as compensation standard differences and working hour standard differences. The ability in dealing with compensation standard differences and working hour standard differences should be considered necessary. We call this ability dealing with standards differences.

A company should be concerned about working standards, such as compensation standards or working hour standards, offered to its employees. Lallemand et al. (2004) argued that the attitude of the employee to his/her job can be influenced by his acceptance of a different compensation standard. Leung (2014) stated that an employee may compare the compensation he/she takes to the standard (performance-based distributive justice) or to that of other employees who work in a similar job at other companies (comparative distributive justice). An employee who is assigned to an outsourcing project may compare his/her working standards to his/her counterpart's working standards. Standards experienced as fair by an employee tend to motivate the employee to have a customer-service-oriented behavior, such as assisting or listening to the client's needs carefully (Cropanzana et al., 2007). The difference in compensation standard is associated with negative attitudes of an employee who feels unfairness, resulting in an unwillingness to cooperate with other groups (Leung, 2014).

According to the explanations above, we propose the following hypothesis:


Research methodology
This study used a survey method to examine the proposed model. The unit of analysis was the relationship between the vendor and the client because the study aimed to examine inter-firm partnership quality, its determinants and implications.

Survey instrument development
The questionnaires were developed based on various publications to measure the variables of the model. The questionnaire for measuring the continuity of the relationship was adopted from Homburg et al. (2003) and Bharadwaj et al. (2010); the questionnaires for measuring trust and commitment were adopted from Lee and Kim (1999) and Goles and Chin (2002);
the questionnaire for measuring integration was adopted from Schoenherr et al. (2015); the questionnaire for measuring information exchange was adopted from Swar et al. (2012); the questionnaire for measuring coordination was adopted from Goles and Chin (2002) and Leischning et al. (2014); the questionnaire for measuring participation was adopted from Lee and Kim (1999); the questionnaire for measuring managing cultural differences was adopted from Johnson et al. (1996) and Ang and Inkpen (2008); the questionnaire for measuring managing the temporal difference was adopted from Sarker and Sahay (2004) and Holmstrom et al. (2006); and the questionnaire for measuring dealing with standards differences was adopted from Leung et al. (2011). The Appendix shows the list of indicators for each questionnaire. We used a seven-point Likert scale to allow the respondents to express how much they agreed or disagreed with a particular statement.

Samples and data collection
Data collection was conducted through an online and offline survey by distributing questionnaires to Indonesian IT companies over four months. An eligible respondent was a representative of a company who understands the execution of offshore IT outsourcing projects, such as a project manager or a chief information officer. The unit of analysis was the relationship between the IT company and its foreign client. Each company could have more than one overseas client company, thus we could obtain more than one response from each company. We collected 99 responses from 40 companies, out of which 78 responses were complete.

To ensure that non-response bias did not occur in this study, we conducted a comparative analysis of respondents and non-respondents. We compared the differences in company size and offshore IT outsourcing experiences between the companies of early and late respondents. Non-response bias estimation was conducted through comparing early and late respondents under the assumption that late respondents have the same characteristics as non-respondents (Armstrong and Overton, 1977). We divided the respondents into two groups, with each group encompassing half of the total respondents. A t-test was used to compare both groups and the result showed that there was no significant difference between early respondent’s company size and offshore IT outsourcing experiences and those of the late respondents. Therefore, we concluded that there was no non-response bias.

We also examined common method bias to ensure that there were no measurement errors (Podsakoff et al., 2003). Harman’s single-factor test was used to address the issue of common method bias. If a single factor emerges from the factor analysis or one general factor accounts for the majority of the covariance among the measures, common method bias is present. The result of Harman’s single-factor test showed that one general factor accounted for 48.55 percent variance; therefore, we concluded that common method bias was not present.

Most IT companies involved in this study were small- and medium-sized enterprises with less than 100 employees. Their clients came from developed countries such as the USA, European countries, Japan and Australia. Most of the offshore clients of Indonesian IT companies were larger IT companies. They dealt mostly with small projects of which the project value was below Rp. 500m (around $50,000) and the project team size was between three and five people. Table I displays the profiles of the respondents.

Results
We used the partial least squares–structural equation modeling (PLS–SEM) technique to examine the model because the objective of this research was to predict the continuity of the working relationship and the research involved new variables, namely, managing the temporal difference and dealing with standards differences in the partnership quality model.
As stated by Gefen et al. (2000), PLS-SEM is suitable for analyzing a predictive model and a new theory. The technique can examine a model with a small number of samples and non-normal data (Falk and Miller, 1992). A rule of thumb suggests that the minimum number of samples should be ten times the maximum number of arrowheads pointing at a latent variable (Hair et al., 2014). The maximum number of arrows that point to a latent variable in our model was three arrows. Therefore, the minimum number of samples needed was 30 samples. We had 78 samples, so we had an adequate number of samples.

Measurement model examination

The examination of the model comprised two stages: the first stage examined the measurement model, and the second stage examined the structural model. We used this two-stage approach because the research model contains a second-order construct, i.e. partnership quality, which encompasses three first-order dimensions, i.e. trust, commitment and integration. Indicator loadings, composite reliability, average variance

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</tr>
<tr>
<td></td>
<td>&gt; 100 people</td>
<td>15.00</td>
</tr>
<tr>
<td>2</td>
<td>Client’s country of origin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>America (USA and Mexico)</td>
<td>16.67</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>21.79</td>
</tr>
<tr>
<td></td>
<td>Europe (The Netherlands, England, Germany, Croatia, Spain, Sweden)</td>
<td>17.95</td>
</tr>
<tr>
<td></td>
<td>Asia (Hong Kong, India, Japan, Qatar)</td>
<td>12.82</td>
</tr>
<tr>
<td></td>
<td>South East Asia (Malaysia, Singapore)</td>
<td>30.77</td>
</tr>
<tr>
<td>3</td>
<td>Client’s business</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creative industry</td>
<td>15.38</td>
</tr>
<tr>
<td></td>
<td>Primary industry</td>
<td>3.85</td>
</tr>
<tr>
<td></td>
<td>Service industry</td>
<td>21.79</td>
</tr>
<tr>
<td></td>
<td>Manufacture industry</td>
<td>8.97</td>
</tr>
<tr>
<td></td>
<td>Government</td>
<td>3.85</td>
</tr>
<tr>
<td></td>
<td>Information technology</td>
<td>46.15</td>
</tr>
<tr>
<td>4</td>
<td>Project duration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 3 months</td>
<td>25.64</td>
</tr>
<tr>
<td></td>
<td>3–6 months</td>
<td>25.64</td>
</tr>
<tr>
<td></td>
<td>6 months–1 year</td>
<td>23.08</td>
</tr>
<tr>
<td></td>
<td>&gt; 1 year</td>
<td>25.64</td>
</tr>
<tr>
<td>5</td>
<td>Project value (Rp.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 250m</td>
<td>38.46</td>
</tr>
<tr>
<td></td>
<td>250m–&lt;500m</td>
<td>14.10</td>
</tr>
<tr>
<td></td>
<td>500m–1bn</td>
<td>21.79</td>
</tr>
<tr>
<td></td>
<td>&gt; 1bn</td>
<td>25.64</td>
</tr>
<tr>
<td>6</td>
<td>Project team size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3–5 people</td>
<td>62.82</td>
</tr>
<tr>
<td></td>
<td>6–8 people</td>
<td>25.64</td>
</tr>
<tr>
<td></td>
<td>&gt; 8 people</td>
<td>11.54</td>
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<tr>
<td>7</td>
<td>Project type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infrastructure</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>Software</td>
<td>79.49</td>
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<td></td>
<td>IT consulting</td>
<td>8.97</td>
</tr>
<tr>
<td></td>
<td>Software R&amp;D</td>
<td>8.97</td>
</tr>
</tbody>
</table>

Table I. Respondent profiles
extracted (AVE) and Fornell and Larcker values for the first-order construct of partnership quality were first evaluated. The results indicated that all indicator loadings of integration, trust and commitment, as first-order constructs of partnership quality, were above the threshold of 0.7. The results also showed that each scale of the first-order constructs had composite reliability scores and AVE greater than 0.70 and 0.50, respectively. Table II displays the loadings, composite reliability scores and AVE of the first-order constructs, while Table III shows the result of discriminant validity, where the values of the square root of AVE of each construct were higher than the correlations between constructs. Therefore, we concluded that the measurement model of the first-order constructs of partnership quality was reliable and valid.

In the second stage, we evaluated the remainder of the measurement model. We found that the factor loading of indicator DSD4 was below 0.5 so that we had to revise the measurement model by eliminating this indicator from the model. After that we re-evaluated the revised model. The result of the revised measurement model examination showed that all indicators had factor loading above 0.7, except indicator DSD2, but we retained this indicator because the value of factor loading was near the threshold value of 0.7. Tables IV and V report factor loading, composite reliability, AVE and discriminant validity, respectively. The composite reliability and AVE scores for all scales were higher than 0.7 and 0.5, respectively. Therefore, the convergent validity was acceptable. Scores of the square root of AVE of each construct were higher than the correlation between the constructs so the discriminant validity was also acceptable.

Structural model examination
The examination of the structural model used data that came from a reliable and valid measurement model. We first examined the issue of multicollinearity to ensure that it was not present, because multicollinearity can boost standard errors and reduce the ability to detect relationship significance (Hair et al., 2014). The result of the multicollinearity examination showed that there was no indication of multicollinearity presence.

<table>
<thead>
<tr>
<th>First-order construct</th>
<th>Indicators</th>
<th>Loadings</th>
<th>Composite reliability</th>
<th>Average variance extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration (Int)</td>
<td>Int1</td>
<td>0.869</td>
<td>0.915</td>
<td>0.745</td>
</tr>
<tr>
<td></td>
<td>Int2</td>
<td>0.909</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Int3</td>
<td>0.875</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commitment (Com)</td>
<td>Com1</td>
<td>0.808</td>
<td>0.903</td>
<td>0.653</td>
</tr>
<tr>
<td></td>
<td>Com2</td>
<td>0.705</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Com3</td>
<td>0.881</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Com4</td>
<td>0.906</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Com5</td>
<td>0.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>Trust1</td>
<td>0.876</td>
<td>0.942</td>
<td>0.803</td>
</tr>
<tr>
<td></td>
<td>Trust2</td>
<td>0.901</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trust3</td>
<td>0.935</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trust4</td>
<td>0.870</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table II. Factor loading, composite reliability and AVE of the first-order constructs of partnership quality

<table>
<thead>
<tr>
<th>Integration</th>
<th>Commitment</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.884</td>
<td>0.532</td>
<td>0.808</td>
</tr>
<tr>
<td>0.532</td>
<td>0.762</td>
<td>0.896</td>
</tr>
</tbody>
</table>

Table III. Discriminant validity of the first-order constructs of partnership quality
where all values of the variance inflation factor (VIF) were below the threshold of 5. Table VI displays the VIF values.

The structural model was evaluated based on the criterion of path coefficient significance and determination significance. The path coefficient significance was obtained from bootstrapping by involving 5,000 subsamples. The results showed that most of the relationships were significant except for the participation–partnership quality relationship. The results indicated that there was a positive and significant relationship between partnership quality and the continuity of the relationship with $\beta = 0.813$ and $p < 0.01$, thus $H1$ was supported. Information exchange and coordination had a significant positive impact on partnership quality with $\beta = 0.172$ and $p < 0.01$ and $\beta = 0.714$ and $p < 0.01$, respectively,
thus $H2$ and $H3$ were supported. Participation had no significant effect on partnership quality, thus $H4$ was not supported. The results also show that managing cultural differences and managing the temporal difference had a positive and significant association with information exchange with $\beta = 0.424$ and $p < 0.01$ and $\beta = 0.297$ and $p < 0.02$, respectively, thus $H4$ and $H5$ were supported. Managing the temporal difference also had a significant effect on coordination with $\beta = 0.585$ and $p < 0.01$, thus $H7$ was supported. Another result showed that dealing with standards differences significantly affects participation with $\beta = 0.55$ and $p < 0.01$, thus $H8$ was supported. Table VII gives a summary of the hypothesis testing.

The model has a substantial predictive accuracy degree for partnership quality with an adjusted $R^2$ value of 0.718, a moderate predictive accuracy degree for the continuity of the relationship and information exchange with an adjusted $R^2$ value of 0.656 and 0.445, respectively, and a weak predictive accuracy degree for coordination and participation with an adjusted $R^2$ value of 0.333 and 0.299, respectively. Table VIII shows the $R^2$ and adjusted $R^2$ values. The study also found the total effect of independent variables on the continuity of the relationship. Coordination had the highest total effect on the continuity of the

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Path coefficient</th>
<th>t-statistics</th>
<th>p-value</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$</td>
<td>Partnership quality $\rightarrow$ the continuity of the relationship</td>
<td>0.813</td>
<td>13.150</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H2$</td>
<td>Information exchange $\rightarrow$ partnership quality</td>
<td>0.172</td>
<td>2.503</td>
<td>0.006</td>
<td>Supported</td>
</tr>
<tr>
<td>$H3$</td>
<td>Coordination $\rightarrow$ partnership quality</td>
<td>0.714</td>
<td>7.893</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H4$</td>
<td>Participation $\rightarrow$ partnership quality</td>
<td>0.032</td>
<td>0.423</td>
<td>0.336</td>
<td>Not supported</td>
</tr>
<tr>
<td>$H5$</td>
<td>Managing cultural differences $\rightarrow$ information exchange</td>
<td>0.424</td>
<td>3.362</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H6$</td>
<td>Managing the temporal difference $\rightarrow$ information exchange</td>
<td>0.297</td>
<td>2.097</td>
<td>0.018</td>
<td>Supported</td>
</tr>
<tr>
<td>$H7$</td>
<td>Dealing with standards differences $\rightarrow$ coordination</td>
<td>0.585</td>
<td>5.756</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>$H8$</td>
<td>Dealing with standards differences $\rightarrow$ participation</td>
<td>0.555</td>
<td>4.490</td>
<td>0.000</td>
<td>Supported</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td>0.342</td>
<td>0.333</td>
<td></td>
</tr>
<tr>
<td>Information exchange</td>
<td>0.460</td>
<td>0.445</td>
<td></td>
</tr>
<tr>
<td>The continuity of the relationship</td>
<td>0.661</td>
<td>0.656</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>0.308</td>
<td>0.299</td>
<td></td>
</tr>
<tr>
<td>Partnership quality</td>
<td>0.729</td>
<td>0.718</td>
<td></td>
</tr>
</tbody>
</table>
relationship of 0.580, followed by managing the temporal difference with a total effect of 0.373, information exchange with a total effect of 0.140 and managing cultural differences with a total effect of 0.048. Table IX displays the total effect of the determinants.

**Discussion and implications for practice**

In this study, we theoretically contribute in developing the outsourcing relationship model that embraces the impact of the ability of an IT provider to manage differences with an overseas client on the continuity of the relationship as an outsourcing success factor. Our study focused on managing cultural differences, managing the temporal difference and dealing with standards differences as variables of managing differences. We employed a cross-sectional study to examine the influence of managing differences on relationship continuity from the provider’s perspective. The developed model provides an insight on how to manage the offshore outsourcing relationship to reach the outsourcing success.

Most of the hypotheses have strong supports from the empirical data, except for the relationship between participation and partnership quality. These findings elaborated the current knowledge of the direct relationship of managing the differences with the partnership quality by explaining how to manage the differences influence the partnership quality. Previous studies considered that managing the differences has a direct impact on the partnership quality, e.g. Johnson et al. (1996) in the context of international cooperative alliances; Kumar (2008) and Rai et al. (2009) in the context of offshore outsourcing of IT; and Raman et al. (2015) in the context of international outsourcing. Lee and Kim (1999) and Gupta and Sushil (2014), however, displayed insignificant direct relationships between managing the cultural differences and the partnership quality. The results of our research reveal that managing cultural differences and managing the temporal difference influence partnership quality through the interaction factor, which includes information exchange, and coordination.

The path of significant impacts of managing cultural differences on relationship continuity is through information exchange and partnership quality. Moreover, managing cultural differences has a significant direct impact on information exchange. The level of managing cultural differences, which include the confidence of top management/project management in working together with a partner from a different culture, dealing with the stress of working together with a client from a different culture, mastering partner-used language expertise, concerning the cultural differences and adapting verbal and non-verbal behavior, positively influences the level of information exchange between provider and client. This result is consistent with the study of Saleh et al. (2014), which demonstrated a significant relationship between communication and cultural similarity between an importer and an overseas supplier. This finding also confirms the results from case studies by Moe et al. (2014), which found that the provider inability to adapt to client’s culture would

<table>
<thead>
<tr>
<th></th>
<th>Original sample</th>
<th>Sample mean</th>
<th>SD</th>
<th>t-statistics</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination → the continuity of the relationship</td>
<td>0.580</td>
<td>0.567</td>
<td>0.087</td>
<td>6.699</td>
<td>0.000</td>
</tr>
<tr>
<td>Dealing with standards differences → the continuity of the relationship</td>
<td>0.035</td>
<td>0.043</td>
<td>0.042</td>
<td>0.832</td>
<td>0.203</td>
</tr>
<tr>
<td>Information exchange → the continuity of the relationship</td>
<td>0.140</td>
<td>0.148</td>
<td>0.058</td>
<td>2.435</td>
<td>0.007</td>
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<tr>
<td>Managing cultural differences → the continuity of the relationship</td>
<td>0.048</td>
<td>0.051</td>
<td>0.029</td>
<td>1.656</td>
<td>0.049</td>
</tr>
<tr>
<td>Managing the temporal difference → the continuity of the relationship</td>
<td>0.373</td>
<td>0.371</td>
<td>0.090</td>
<td>4.133</td>
<td>0.000</td>
</tr>
<tr>
<td>Participation → the continuity of the relationship</td>
<td>0.025</td>
<td>0.030</td>
<td>0.061</td>
<td>0.413</td>
<td>0.340</td>
</tr>
</tbody>
</table>

Table IX. Total effects
obstruct information sharing between both sides. This result of this study provides an insight for practitioners to make an effort to understand behaviors, norms and values of their clients and to make adjustments to client’s culture.

Managing the temporal difference had two significant paths in influencing relationship continuity, i.e. through information exchange and partnership quality, and through coordination and partnership quality. The level of managing the temporal difference, which includes adjusting the direct interaction schedule to fit the client’s working time, arranging the working time of the project team in order to have a number of overlapping hours during a workday and providing synchronous and visual technology, has influence on the level of information exchange and coordination between provider and client. These findings align with the results from case studies by Holmstrom et al. (2006), where managing the project team influenced the interaction between a project team and its partner in a global software development context; and the results from case studies by Moe et al. (2014), which found that managing the temporal difference by assigning the team from both sides at the same location would improve the coordination and communication. The practical implication for these findings is that various efforts are needed to be established to overcome the temporal differences, such as using Skype technology to facilitate a direct interaction, or inviting the representatives of the client, or sending the team to the client’s location to work together at the same location.

Dealing with standards differences, however, does not affect relationship continuity because its path to relationship continuity was not significant. Although dealing with standards differences influences participation, this interaction variable had no significant impact on partnership quality. The ability of the provider to establish standards perceived as fair by its employees tends to motivate the employees to serve the client sincerely, for example, to collaborate with the client with a positive attitude and to aid the client in solving problems. This finding is consistent with the result from Leung (2014), which demonstrated a significant association between difference in compensation standard and inter-group cooperation.

We found an unexpected result of insignificant relationships between participation – a variable of interaction – and partnership quality. This finding is contrary to the results of previous study by Lee and Kim (1999) in the context of IT outsourcing between an end-user client and an IT provider. The results of our study are also different with the results of study by Ren et al. (2015) in the context of supply chain which have demonstrated the significant impact of active involvement among parties in value co-creation on the partnership quality. This unexpected result was influenced by the blending of data samples from IT client companies (the client company of the provider was another IT company) and end-client companies (the client company of the provider came from a non-IT industry, such as the creative industry or the manufacture industry). In the context of the IT client samples, clients usually provide clear and complete requirements of a project to the IT provider company because they know what they need. The provider can execute the project without conducting many discussions with the client so that in this context less participation is required. A project that comes from a non-IT client tends to have less precise and technical requirements, so the provider needs to have further discussions with the client to understand what the client needs. The client may have no idea what the best IT solution for the project is, so that active involvement of the provider in the project can deliver a better project.

This study showed the expected relationship between two other variables of interaction and partnership quality. Information exchange between the company and its client can have a positive influence on partnership quality. Information exchange enables both sides to obtain better information that is required for executing the project and solving the problem effectively. Both sides can reduce misunderstanding problems that induces mistrust through information exchange. This result is similar to the results from previous studies.
The study of Lin (2014) showed that information exchange had a positive impact on partnership quality and the study of Gupta and Sushil (2014) showed that information exchange positively influenced inter-organizational relationship quality. The result of the present study also demonstrated that coordination in the working relationship can positively impact partnership quality, which also aligns with previous studies. The study of Leischning et al. (2014) showed that inter-organizational coordination is an essential part of alliance management capability, which has a significant impact on interaction quality. The study of Gupta and Sushil (2014) demonstrated a similar result, where coordination had a significant effect on relationship quality. Through coordination, the provider can understand the tasks that must be done and when those tasks must be completed, so that the provider can ensure to finish the tasks in the client’s expected time. The ability to meet client’s expectation can convince the client that the provider is dependable and trustworthy.

This study demonstrates that partnership quality can be considered a multi-dimensional concept that consists of three dimensions, namely, trust, commitment and integration. This study also underscores the importance of partnership quality for the continuity of the relationship. The level of trust, commitment and integration positively influence outsourcing success regarding relationship continuity. This result aligns with previous studies that have demonstrated a significant relationship between partnership quality and outsourcing success. The study of Raman et al. (2013) showed that partnership quality had a significant impact on project performance. The result of Leischning et al. (2014) demonstrated that interaction quality had a significant positive effect on inter-organizational relationship success.

The result of this study further indicates that coordination has a large impact on the continuity of the relationship, followed by information exchange, as displayed in Table IX. These processes should be supported by capabilities of the IT provider in managing the temporal difference and the cultural differences. These findings provide managers with insights that are valuable for building a successful partnership. This study recommends project managers to coordinate with the client in executing a project. Managers should coordinate and align all project activities with the client’s interest. In this process, activities of the project and the interrelationship of those activities should be established with the client so tasks and milestones of the project become clear for all project team members. The project team should regularly report the progress of the project to the client. This regular reporting enables the client to monitor and control the project and creates transparency, which can affect the client’s trust.

Based on the discussions explained above, Table X displays the summary of research contribution to the outsourcing relationship model.

**Conclusions**

We studied how the ability of IT providers to manage differences with an overseas client influences partnership quality and outsourcing success. IT providers can achieve outsourcing successes by establishing a trusting, committed and integrated relationship with their partner. This requires interaction processes to make the relationship reach a high degree of quality. Based on our research findings, the IT provider should exchange information and coordinate the tasks of the project with the client. The interaction process can be supported by the ability of the IT provider to manage the differences with the overseas client. Managing cultural differences enables more efficient and effective information exchange. Managing the temporal difference can support information exchange and smoothen coordination. Dealing with standards differences motivates the project team personnel to be actively involved in the execution of the project.

This study contributed to the theoretical development of the literature on outsourcing by building a theoretical model to understand how abilities of IT providers in managing differences with overseas clients impact partnership quality and outsourcing success. To our knowledge, this is the first study to theoretically specify and empirically test the impact of managing differences on outsourcing success through a process approach.
This study gives recommendations for the IT provider on how to build a high-quality relationship with overseas clients as the primary determinant of the continuity of the relationship. The IT provider should facilitate the interaction between the project team and the client as a means to establish a trusty, committed and integrated relationship. The project team must conduct information exchange and coordination for improving the partnership’s quality.

The study also suggests that the IT provider should understand and adapt to the client’s culture, manage the working hours of the project team and install communication technologies. We consider partnership quality a second-order construct that influences offshore IT outsourcing project success. Due to this consideration, this study, however, does not provide knowledge about the contribution of a first-order construct to outsourcing success. Although common method bias was not present in the result, the explained variance by one factor was slightly less than 50 percent. The high degree of variance by one factor may originate from the same respondent filling out the questionnaires for independent and for dependent variables. The ideal situation is when the clients respond to the outsourcing success questionnaire. Another limitation of this study was the limited number of samples, which reduced the precision of the model parameter estimation.

References


<table>
<thead>
<tr>
<th>Table X. The summary of research contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution</td>
</tr>
<tr>
<td>Adding the findings of previous studies</td>
</tr>
<tr>
<td>Confirming previous studies</td>
</tr>
<tr>
<td>Challenging previous studies</td>
</tr>
<tr>
<td>Previous studies made direct relationships between managing differences, particularly managing the cultural differences with partnership quality (Johnson et al., 1996; Lee and Kim, 1999; Gupta and Sushil, 2014; Kumar, 2008) or project success (Rai et al., 2009), and between managing institutional differences with international outsourcing success (Raman et al., 2015)</td>
</tr>
<tr>
<td>Previous studies found significant relationship, i.e. managing cultural differences with information exchange (Moe et al., 2014; Saleh et al., 2014), managing temporal differences with information exchange and coordination (Holmstrom et al., 2006; Moe et al., 2014), dealing with standards differences with participation (Leung, 2014), information exchange with partnership quality (Gupta and Sushil, 2014; Lin, 2014), coordination with partnership quality (Leischig et al., 2014) and partnership quality with outsourcing success (Raman et al., 2013; Leischig et al., 2014)</td>
</tr>
<tr>
<td>Previous studies found a significant relationship between participation and partnership quality (Lee and Kim, 1999), and between value co-creation and partnership quality (Ren et al., 2015)</td>
</tr>
</tbody>
</table>


Further reading


Appendix. Measuring instrument

The continuity of the relationship (CR)

1. The client gives a signal that it will continue to work together with our company (CR1).
2. The client states that it will continue to work together with our company (CR2).
3. The client states that it will expand the relationship with our company (CR3).

Trust

1. In the working relationship, our company and the client make beneficial decisions to both parties (Trust1).
2. In the working relationship, our company and the client show sincerity (Trust2).
(3) In the working relationship, our company and the client can be trusted to behave justly (Trust3).

(4) In the working relationship, our company and the client can be trusted not to take advantage of the other (Trust4).

**Commitment (Comm)**

(1) In the working relationship, our company and client perform agreements well (Comm1).

(2) In the working relationship, our company and client provide support each other (Comm2).

(3) In the working relationship, our company and client always keep promises (Comm3).

(4) In the working relationship, our company and client committed to the working relationship (Comm4).

(5) In the working relationship, our company and client provide resources to support the working relationship (Comm5).

**Integration (Int)**

(1) Our company ensures a high degree of compatibility of the internal process with that of the client (Int1).

(2) Our company and client have a mutual understanding of each internal process (Int2).

(3) Our company adjusts the internal process to fit the internal client process (Int3).

**Information exchanges (IE)**

(1) In the working relationship, our company and client exchange information (IE1).

(2) In the working relationship, our company and client share business knowledge (IE2).

(3) In the working relationship, our company provides information to support the client business execution (IE3).

(4) In the working relationship, our company and client share information regarding the business environment and technical change that affect each other’s business (IE4).

**Coordination (Coord)**

(1) In the working relationship, our company and client coordinate activities well (Coor1).

(2) In the working relationship, our company and client synchronize tasks effectively (Coor2).

(3) In the working relationship, our company and client always interact to make a joint decision (Coor3).

**Participation (Par)**

(1) In the working relationship, our company participates in client business with a positive attitude (Par1).

(2) In the working relationship, our company and client are interested in each other’s problems (Par2).

(3) In the working relationship, our company and client encourage each other to solve business problems (Par3).
Managing cultural differences (MCD)

(1) Top management team/project managers possess confidence in working together with the business partner from different cultures (MCD1).

(2) Top management team/project managers possess confidence in dealing with the stresses of working together with the client from different cultures (MCD2).

(3) Top management team/project manager possess client-used language expertise (MCD3).

(4) Top management team/project managers are aware of cultural differences when interacting with the client from a different culture (MCD4).

(5) Top management team/project managers adapt their verbal behavior when cross-cultural interaction requires it (MCD5).

(6) Top management team/project managers adapt their non-verbal behavior when cross-cultural interaction requires it (MCD6).

Managing the temporal difference (MTD)

(1) Our company adjusts the direct interaction schedule to fit with client’s working time (MTD1).

(2) Our company arranges working time to have the number of overlapping hours during a workday (MTD2).

(3) Our company provides synchronous and visual technology to support the interaction with the client (MTD3).

Dealing with standards differences (DSD)

(1) Our project personnel think that the difference between the salaries of client’s personal and our company’s personnel is reasonable (DSD1).

(2) Our project personnel accept the difference between the salaries of client’s personal and our company’s personnel (DSD2).

(3) Our project personnel think that the difference between the working time standard of client’s personal and our company’s personnel is reasonable (DSD3).

(4) Our project personnel accept the difference between the working time standard of client’s personal and our company’s personnel (DSD4).

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Governing major transformation portfolios in practice: illustrations from the UK central government

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Abstract

Purpose – The purpose of this paper is to examine major transformation portfolio governing practices. Previous research focuses on the structure of project portfolio governance and is relatively silent on micro-practices of governing. This paper intends to respond to this gap.

Design/methodology/approach – This qualitative case study draws upon practice approaches and the theoretical lens of organisational routines. The empirical inquiry is conducted across six major transformation portfolios in two UK central government departments. The data are collected through conducting semi-structured interviews and gathering documentary reports and analysed by adopting an abductive approach.

Findings – The findings highlight that two governing practices that have not been previously discussed in the literature: structuring the policy relationship and structuring the business relationship. These practices can be associated with the complex ownership system of the UK central government. The findings also show that in complex ownership systems owners may have different governing and supporting orientations. The micro-dynamics of these governing practices illustrate that the ecology of governing practices is complex, both in terms of the co-existence of complementary and competitive relationships between practices, and in terms of bundles of practices enacting different control regimes.

Research limitations/implications – This qualitative case study supports further inquiry into major transformation portfolio governing and complex ownership systems.

Originality/value – The paper adopts a governance-as-practice approach and examines governing major transformation portfolios.

Keywords Governance of projects, Government projects, Practice studies, Projects portfolio

Paper type Research paper

1. Introduction

This paper explores major transformation portfolio governing practices in the UK central government. Although project management literature focusing on governance has provided significant insights into structures of portfolio governance, relatively little is known about the micro-practices of portfolio governing. This gap is particularly important for major project portfolios, since previous studies suggest that major portfolio governance tends to be highly complex (e.g. Müller, 2012). This paper intends to contribute towards filling this gap by exploring the question: how is major transformation portfolio governing accomplished in the UK central government?

The UK central government can be characterised as a complex context in terms of its complex ownership system for major project portfolios constituting of multiple political and civil service owners. The ongoing reforms have also been shifting civil service governance structures, in terms of centralising professional resources in specialised functions and promoting active leadership. Since previous research shows that complex contexts characterised by distribution of power, knowledge and goals can be particularly problematic for governance (e.g. Aubry et al., 2014; Locatelli et al., 2014), and the promotion of active leadership in public sector contexts can produce tensions between structure and agency (e.g. Newman, 2005; Ospina, 2016), this empirical site is well suited for exploring the research enquiry.

The study focuses on what the UK central government refers to as the major transformation portfolios: policy-driven portfolios aimed at changing how the government provides services to the public. According to the NAO (2016, 2015), these portfolios tend to present the greatest risks...
of failure. In the UK central government these portfolios are often referred to as programmes. However, they typically constitute of independent projects contributing towards specific strategic goals and therefore tend to relate to the concept of portfolios rather than programmes discussed in the literature (e.g. Blomquist and Müller, 2006). This paper, therefore, refers to such programmes as portfolios for purposes of conceptual consistence.

The study draws upon the practice approach (e.g. Bourdieu, 1990; Schatzki, 2001) and the theoretical lens of organisational routines (e.g. Feldman and Pentland, 2003). Previous research highlights the importance of examining governing as a multi-level and dynamic phenomenon (e.g. Müller, 2009; Lundin et al., 2015; Brunet, in press). The approach taken in this study is well suited to do this, as it provides opportunities for examining the interplay between structure and agency, and stability and change in the everyday practice of project portfolio governing.

2. Literature review

Within the project management literature, governance has been conceptualised in various ways. Müller (2012) identifies three different yet complementary perspectives in the corporate governance literature that have been influential within the project management literature: first, transaction cost economics (TCE) focusing on optimising governance structures to minimise transaction costs; second, agency approaches focusing on the relationship between the project owner and their agent for providing services (e.g. project manager); and third, trust and control: building on and expanding TCE and agency approaches by focusing on the organisational view of trust and control.

Various contributions drawing upon the concepts of programmes and portfolios suggest that governing project portfolios require specific attention not only as they are concerned with governing multiple projects rather than a single project, but also because portfolio governance tends to diverge from programme governance in its concern for accomplishing the portfolio value and effectiveness (e.g. Blomquist and Müller, 2006; Müller et al., 2008; Müller, 2009). Reflecting the wider movement within the project management literature emphasising the context (e.g. Engwall, 2003), various scholars have also examined the relationship between the different levels of governance. For example, Müller (2012, 2017) highlights that the corporate level activities shape the governance paradigm for projects and how organisations relate to their projects (e.g. Müller, 2012; Müller, 2017), and Lundin et al. (2015), show that the relationship between organisational governance and project governance tends to be dynamic and contextually situated.

Together, the contributions within this stream of literature provide significant insights into ex ante design of portfolio governance. For example, Müller (2009) defines governance paradigms by mapping shareholder and stakeholder orientation of firms to Ouchi and Maguire’s (1975)’s notions of two modes of organisational control: behavioural control focusing on process compliance and outcome control focusing on measurement of outputs. Based on this mapping Müller (2009) defines four governance paradigms: first, conformist paradigm (shareholder orientation/behavioural control) focusing on maximising the return on investment; second, flexible economist paradigm (shareholder orientation/outcome control) focusing on optimisation of management of projects; third, agile pragmatist paradigm (stakeholder orientation/behavioural control) focusing on to maximising collective stakeholder benefits; and fourth, versatile artist paradigm (stakeholder orientation/outcome control) focusing balancing the requirements of stakeholders. In addition, various studies detail portfolio governance roles and activities as shown in Table I (based on Blomquist and Müller, 2006; Crawford et al., 2008; Unger et al., 2012; Aubry et al., 2012; Müller et al., 2017; Mosavi, 2014).

Moreover, some contributions also focus on major project governance, a governance context that tends to be particularly complex (Müller, 2012). For example, Klakegg and Olsson (2010) propose an ownership framework to describe the complex system of ownership roles in major public projects constituting of strategic ownership roles that can
<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of directors</td>
<td>Highest level of management where governance originates. Focusing on:</td>
<td>Activities associated with the governance of projects: determining type,</td>
</tr>
<tr>
<td></td>
<td>Governance of projects: business execution by projects</td>
<td>scope and quantities of projects required to implement strategy</td>
</tr>
<tr>
<td></td>
<td>Governance of project management: determining the capacity and capability of</td>
<td>Activities associated with the governance of project management:</td>
</tr>
<tr>
<td></td>
<td>project management</td>
<td>determining the quality and quantity of PMOs, communication channels,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>project management resources and sponsors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling activities depending on responsibilities may include enforcing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>project management standards controlling compliance with set standards,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>evaluating project performance, and sometimes assessing of employee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>performance and career promotion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Serving activities: providing operational support through training,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>consulting, and specialized task execution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partnering activities: engages in equal knowledge sharing, exchange of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>expertise, lateral advice giving and joint learning with equal level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>stakeholders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Governing activities: identifying and justifying the need based on the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>business case, convincing others, holding the budget getting sign off for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>investment proposals (front-end phase), ensuring processes are followed,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>assuring delivery, intervening when issues emerge, scoping the project and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>developing its strategy, making sure the business case is solid from a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>business point of view</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supporting activities: securing resources, influencing stakeholders,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>managing difficult stakeholder issues, motivating the team</td>
</tr>
<tr>
<td>Project Management Office</td>
<td>Three base roles (at top-level PMOs controlling role tends to be emphasised):</td>
<td></td>
</tr>
<tr>
<td>(PMO)</td>
<td>Controlling: monitoring and evaluating projects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Serving: providing services to project management stakeholders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partnering: leading knowledge sharing between project management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>stakeholder groups</td>
</tr>
<tr>
<td>Owner/sponsor</td>
<td>Receiver of the outcome benefits. Accountable to the organisation for the</td>
<td>Governing activities: representing the interests of the organisation</td>
</tr>
<tr>
<td></td>
<td>project, bridging between the project and the organisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dual role:</td>
<td>Supporting: representing the interests of the project</td>
</tr>
<tr>
<td></td>
<td>Governing: representing the interests of the organisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supporting: representing the interests of the project</td>
<td></td>
</tr>
<tr>
<td>Steering group</td>
<td>Extension of the owner role to a group, accountable for success/failure.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three roles in portfolio management (one of the three roles may be more</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dominant):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication and consolidation: communicating mandated projects and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>consolidating decisions for other projects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negotiation: trading off between interests</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decision making: constructing a feasible portfolio</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Portfolio manager                         | Accountable for the achievement of business outcomes and the achievement of projects and programmes | Prior to project/programme execution:  
Effectiveness-related activities: business planning, selecting projects  
Coordination-related activities: planning and procuring resources  
Efficiency-related activities: reviewing the plan  
During project/programme execution:  
Effectiveness-related activities: identifying bad projects  
Coordination-related activities: steering group participation, prioritising, collecting and aggregating reports  
Efficiency-related activities: Initiating reviews, handling issues, improving processes, coaching project managers |
| Project portfolio management office (PPMO) | Three roles:  
Coordinating: steering the portfolio as mandated by senior management, facilitating collaboration  
Controlling: managing information to inform decision making in steering committee  
Supporting role: providing services | Coordinator role activities: appraising and selecting projects, providing cross-project support, coordinating across departments, managing resource conflicts  
Controlling role activities: gathering, preparing and providing information, suggesting corrective measures  
Supporting role activities: providing services to projects during implementation (e.g. planning, preparing reports), cultivating portfolio standards and knowledge sharing |
be associated with the financial sponsor and owner roles in the literature, but also of five tactical ownership roles: the controlling party and the broker operating on behalf of the financial sponsor, the planning, execution and operating parties that respectively own defining the project, executing the project and realising benefits.

However, relatively little is known about how this \textit{ex ante} design is enacted in the everyday practice of portfolios. Indeed, Sanderson (2012) highlights that this stream of literature often neglects the situated practices of governing. In response to this gap, various researchers have been adopting what Brunet (in press) refers to as “governance-as-practice” approach to explore the governance practices of major projects (e.g. Van Marrewijk and Smits, 2016; Brunet, in press). Yet, these studies tend to focus on a single project in construction contexts. Thus, how governing is accomplished in everyday practices of major transformation portfolio remains an open question. This paper intends to contribute to responding to this question.

3. Methodology
This study addresses the research question from a practice perspective (e.g. Bourdieu, 1990; Schatzki, 2001). As practice approaches give the ontological attention to “becoming” (Tsoukas and Chia, 2002), it becomes possible to explore the dynamic processes of organising. Since practice approaches view situated social activities as constituted through knowledge, meaning, discourse, materiality and power (Schatzki, 2001), they are well suited to examine the socio-material, symbolic and discursive activities that previous research suggests play a key role in the context of transformation projects (e.g. Buchanan and Boddy, 1992; Endrissat and Von Arx, 2013) and governing major projects (e.g. Van Marrewijk and Smits, 2016).

This study adopts the theoretical tradition of routines. This study takes the position of viewing routines as “a repetitive, recognizable pattern of interdependent actions, involving multiple actors” (Feldman and Pentland, 2003 p. 96). This view builds on the literature arguing that rules are never fully followed; but rather tend to be interpreted in practice (e.g. Wittgenstein, 1953; Suchman, 1987). Feldman and Pentland (2003), building on the organisational routine literature highlighting that routines can be both a source of continuity and change in organisations (e.g. Nelson and Winter, 1982; Teece et al., 1997; Eisenhardt and Martin, 2000), and following Giddens (1984) and Bourdieu (1990), suggest that the duality between structure and agency constitute routines. They propose the terms “ostensive” and “performative” aspects of routines to refer to the rules and the “situated action” (Suchman, 1987) that mutually constitute routines. Thus, this perspective lends itself well examining the interplay between structure and agency, and stability and change. In addition, this perspective enables exploring the “intertwined field of practices” (Schatzki, 2001) constituting social order. Indeed, drawing upon the notion of “the ecologies of routines” (e.g. Nelson and Winter, 1982; Birnholtz et al., 2007) various researchers have been examining what Feldman and Pentland (2003) refer to as the “tangled webs of interdependence” between routines (e.g. Turner and Rindova, 2012; Spee et al., 2016).

The research strategy is qualitative and based on a case study consisting of semi-structured interviews and secondary sources of data collected in the form of documentary reports and information published. The empirical enquiry was conducted in six major transformation portfolios that are embedded across two UK central government departments. The selection of these two departments is purposive, in terms of service delivery being a significant activity for these departments. All of the portfolios are included in the government major projects portfolio (GMPP) constitutes of the most complex and strategically significant projects and portfolios across government. Three informal interviews have been conducted with participants from the Infrastructure and Projects Authority (IPA) and Major Projects Leadership Academy (MPLA). The formal interviews
have been conducted with 15 participants (see Table II). The documentary reports and information have been collected from various UK central government bodies (e.g., Departments studied, HM Treasury, Cabinet Office, IPA, Civil Service, Public Accounts committee and National Audit Office) and departments for the case study based on their relevance for project delivery. Only documentary reports and information from 2012 to 2018 were collected because within this period there have been significant changes in relation to major portfolios governing (e.g., in 2012 MPLA was launched, in 2014 the Osmotherly rules were published).

Gathered data were coded through the qualitative analysis software NVivo. The analytical approaches took an abductive orientation (Agar, 1996) and was underpinned by the key principles suggested by Alvesson and Kärreman (2011): continuous interplay between pattern seeking and fragmentation seeking, interpreting in novel ways, problematizing the taken for granted, engaging with broad “interpretive repertoires” and continuous reflexive critique. Following Gioia et al. (2013), the first step focused on coding activities and aggregating them to practices, and the second step focused on explaining emerging patterns through continuous reflection on the debates in the literature and the practices emerging from the empirical data. This second step focused on identifying ostensive and performative aspects of practices, interactions across institutional, departmental and portfolio levels and connections between practices. Iterative cycles have been conducted between within-case analysis and cross-case analysis (Yin, 2003).

4. The UK central government context
Governance in the UK central government is mutually constituted through three key regimes: public administration (PA), new public management (NPM) and new public governance (NPG) (Osborne, 2010). Table III highlights the key aspects of these regimes. The organisational structure of the major transformation portfolios has increasingly been reflecting this mutual constitution of PA, NPM and NPG regimes.

As Figure 1 illustrates the political and civil service contexts of the UK central government are integrated through a chain of accountabilities. Within the civil service, each central government department, led by a permanent secretary, is structured as functions. Policies sponsored by ministers tend to be developed within the policy function and then handed over to the project delivery function for implementation. The project delivery

<table>
<thead>
<tr>
<th>Department</th>
<th>Role</th>
<th>Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department 1</td>
<td>Project team member</td>
<td>Portfolio 1</td>
</tr>
<tr>
<td>Department 1</td>
<td>Portfolio manager</td>
<td>Portfolio 1</td>
</tr>
<tr>
<td>Department 1</td>
<td>Project manager</td>
<td>Portfolio 1</td>
</tr>
<tr>
<td>Department 1</td>
<td>Project manager</td>
<td>Portfolio 1</td>
</tr>
<tr>
<td>Department 1</td>
<td>Project manager</td>
<td>Portfolio 1</td>
</tr>
<tr>
<td>Department 1</td>
<td>Head of the PMO function</td>
<td>Portfolio 1</td>
</tr>
<tr>
<td>Department 1</td>
<td>Change resource manager</td>
<td>Departmental portfolio</td>
</tr>
<tr>
<td>Department 1</td>
<td>Capability lead</td>
<td>Departmental portfolio</td>
</tr>
<tr>
<td>Department 1</td>
<td>Portfolio manager</td>
<td>Portfolio 2</td>
</tr>
<tr>
<td>Department 1</td>
<td>Portfolio manager</td>
<td>Portfolio 3</td>
</tr>
<tr>
<td>Department 2</td>
<td>SRO</td>
<td>Portfolio 4</td>
</tr>
<tr>
<td>Department 2</td>
<td>Portfolio manager</td>
<td>Portfolio 4</td>
</tr>
<tr>
<td>Department 2</td>
<td>SRO</td>
<td>Portfolio 5</td>
</tr>
<tr>
<td>Department 2</td>
<td>Portfolio manager</td>
<td>Portfolio 5</td>
</tr>
<tr>
<td>Department 2</td>
<td>SRO</td>
<td>Portfolio 6</td>
</tr>
</tbody>
</table>

Table II. Formal interviews
function tends to consist of major multiple transformation portfolios that typically also include business efficiency and effectiveness improvement projects and programmes sponsored by the departmental business functions. For the major transformation portfolios, typically the operations functions are the recipients of the intended change and a senior leader from the operations is appointed as the senior responsible owner (SRO).

As the governance roles and their description summarised in Table IV shows the SRO role constitutes part of a complex ownership system with this context.

The corporate centre of the civil service acts as the financial sponsor and plays a key role in establishing the governance structures for major transformation portfolios. The IPA, formed through a merger of Major Projects Authority and Infrastructure UK in 2016, performing the corporate PMO role for the civil service, has been playing a key role in promoting quality standards and facilitating leadership learning and leadership

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>Focus</th>
<th>Key elements</th>
<th>Value base</th>
<th>Resource allocation mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public administration (PA)</td>
<td>The political system: policy making</td>
<td>Dominance of rules</td>
<td>Public sector ethos</td>
<td>Hierarchy</td>
</tr>
<tr>
<td>New public management (NPM)</td>
<td>Organisation: Management of organisational resources and performance</td>
<td>Central role of bureaucracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learning from the private sector management</td>
<td>Efficacy of competition and the marketplace</td>
<td>Markets and classical or neo-classical contracts</td>
</tr>
<tr>
<td>New public governance (NPG)</td>
<td>Organisation and its environment: Negotiation of values, meanings, relationships</td>
<td>Control and evaluation and cost management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Growth of the use of markets</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table III. Governance paradigms, based on Osborne (2010)

![Organisational structure of the UK Central Government relevant for major portfolios](image)

Figure 1.
<table>
<thead>
<tr>
<th>Governance institution</th>
<th>Description</th>
<th>Associating with the roles in the literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Centre of the Civil Service</td>
<td></td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>Head of the Civil Service</td>
<td>Leading the efficiency programme</td>
<td></td>
</tr>
<tr>
<td>Civil Service Board</td>
<td>Strategic leadership of the civil service, chaired by the CEO of the civil service and supported by the permanent secretaries</td>
<td>Board of directors, providing governance of projects and governance of project management</td>
</tr>
<tr>
<td>HM Treasury and Cabinet Office joint project delivery boards</td>
<td>Responsible for scrutinising major portfolio and project business cases for deliverability, affordability and value for money, and providing approval</td>
<td>Financial sponsor</td>
</tr>
<tr>
<td>Infrastructure and Projects Authority</td>
<td>Civil service centre of excellence for infrastructure and major projects. Formed on 1 January 2016 through the merger of Infrastructure UK and the Major Projects Authority</td>
<td>PMO of the civil service, responsible for controlling, serving, and partnering roles discussed in the literature</td>
</tr>
<tr>
<td>Political bodies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parliament</td>
<td>Examines the work of the government and makes new laws</td>
<td>Ultimate owner on behalf of the public</td>
</tr>
<tr>
<td>National Audit office (NAO)</td>
<td>Conducting value for money audit</td>
<td>Controlling party</td>
</tr>
<tr>
<td>Public Accounts Committee (PAC)</td>
<td>A parliamentary select committee providing public scrutiny. Conducting public hearings based on NAO reports</td>
<td>Controlling party</td>
</tr>
<tr>
<td>Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minister</td>
<td>Political owner in terms of defines policy and makes political decisions on priorities for the department</td>
<td>Ultimate decision maker role</td>
</tr>
<tr>
<td>Permanent Secretary (Accounting officer)</td>
<td>Head of the department, responsible for the department’s expenditure and management</td>
<td>Financial sponsor (delegated authority from HM Treasury)</td>
</tr>
<tr>
<td>Departmental boards</td>
<td>Supporting the permanent secretary by providing advice on strategic and operational issues, and for scrutinising and challenging policies and performance</td>
<td>Board of directors for the department, supporting the financial sponsor (permanent secretary)</td>
</tr>
<tr>
<td>Policy Development Owner</td>
<td>Advising and supporting ministers on current and future policies</td>
<td>Planning party</td>
</tr>
</tbody>
</table>

Table IV.
Portfolio governance roles in the UK central government

(continued)
development through the MPLA programme. The corporate centre of the civil service has also become a market of professional resources for departmental project portfolios after the re-structuring in 2015 creating functions within the corporate centre as centres of excellence.

5. Findings
The analysis highlights nine intertwined major transformation portfolio governing practices: funding, enacting ministerial sponsorship, prioritising, assuring quality, resourcing, supporting, structuring the portfolio, structuring the policy relationship and structuring the business relationship.

5.1 Ostensive (i.e. institutionalised) aspects of the governing practices
As Table V illustrates the ostensive aspects of the governing practices tend to give primacy to the PA and the NPM regimes.

Figure 2 demonstrates the relationship between the ostensive aspects of these practices tend to be complementary, in terms of one practice being a pre-requisite for another practice or facilitating the accomplishment of another practice.

5.2 Enacting the governing practices
5.2.1 Funding. For portfolios, the lengthy and effort-intensive nature of the formal processes, rooted in a concern for scrutinising the use of public money, tends to conflict with
| Practices       | Activities                                  | Focus                                                                 | Temporal aspects                                                                                                                                                                                                                                                                                                                                 | Governance regimes                                                                 | Processes and socio-material artefacts                                                                 | Key roles and their responsibilities                                                                                                                                                                                                 |  |
|-----------------|---------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|  |
| Funding         | Portfolio budgeting                         | Scrutinising compliance to budget, informing spending reviews        | Continuous activity that may intensify in relation to the bi-annual spending reviews conducted by HM Treasury                                                                                                                                                                                                                                                                                                                                 | PA regime: Dominance of the bureaucratic rules Elements of the NPM regime: finance function providing expertise to the process PA regime: dominance of the bureaucratic rules Elements of the NPM regime: scrutinising the efficiency and effectiveness of investments Elements of the NPG regime: stakeholder sign off on the business case | Based on the portfolio’s approved business case. Interlocked with spending review processes in terms of informing these processes with annual budget forecasts Based on the gateway review processes and the business case preparation guidelines for each phase of the review set by the corporate centre of the civil service and defined in the HM Treasury Green Book. Following approvals, the funds for the period until the next gate are released | Portfolio manager: responsible for the activity Departmental finance partners: providing advice and oversight SRO: If approval needs to be requested from HM Treasury for additional budget |  |
| Focus           |                                             |                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                 |                                                                                                                                                                                                                                                                                                                                                       | Portfolio board: scrutinising and approving Departmental boards performing desk review and potentially requesting formal departmental board approval The project, programme and portfolio stakeholders sign off the business case |  |
| Financial scrutiny and control | Approving project/programme funding | Scrutinising the business case of projects and programmes that have been prioritised into the portfolio and releasing funds to them | Continuous activity at a portfolio level but a front-end activity for projects/programmes. Frequency of portfolio board meetings regulating the pace of approvals                                                                                                                                                                                                                                                                  |                                                                                 |                                                                                                                                                                                                                                                                                                                                                       |  |  |
| Enacting ministerial sponsorship | Responding to ministerial demands | Responding to ministerial policies, timeline and policy implementation demands | Continuous activity for portfolios, projects and programmes with volatile pace (e.g. suddenly emerging policies, ministerial change intensifying pace)                                                                                                                                                                                                                                                                                                                             | PA regime: Hierarchical authority and accountability of ministers and the institutionalised command and control relationship with ministers | Based on civil service norms for relating to ministers in terms of providing impartial advice and political governance artefacts (e.g. ministerial statements) | SRO/Portfolio manager: prioritising policies, and getting change not initiated by policy approved Project/programme manager (for ministerial priority projects/programmes): Accommodating ministerial demands |  |

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<td>Keeping ministers up-to-date on portfolios and their priority projects and programmes</td>
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<td>SRO/Portfolio manager: providing written or face-to-face updates Project/programme manager (for ministerial priority projects/programmes): producing ministerial statements with updates, responding to stakeholder escalations to ministers</td>
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<tr>
<td>Prioritising Focus: aligning to political direction, achieving public value</td>
<td>Determining the projects and programmes constituting the portfolio</td>
<td>Accepting new projects and programmes into the portfolio and determining their relative priorities</td>
<td>Continuous activity based on the frequency of portfolio board meetings</td>
<td>PA regime: dominance of bureaucratic rules and the hierarchical authority of boards Elements of the NPM regime Functional delivery partners</td>
<td>Portfolio manager: managing the pipeline of projects and programmes to be prioritised SRO: reviewing and improving the prioritisation rules Portfolio boards: accepting/rejecting new projects/programmes, deciding relative priorities</td>
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<td>Assuring quality Focus: protecting the interest of the permanent organisation</td>
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<td>Based on the gateway review processes (see funding practice for more details), IPA’s normative targets (i.e. delivery standards) and assurance processes e.g. developing an integrated assurance and approval plan at the front-end phase of</td>
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<td>Independent assuring the quality of the portfolio</td>
<td>Independent scrutinising of portfolios for their ability to deliver within timescales, cost and quality requirements</td>
<td>Regular activity informing the annual GMPP portfolio report produced by the IPA</td>
<td>Programme meetings. Emerging issues may further intensity the rhythm</td>
<td>Providing expert assurance in their areas</td>
<td>Projects and programmes, departmental and functional assurance frameworks (e.g. departmental integrated assurance strategy)</td>
<td>the business case Functional delivery partners (including PMO); advising and providing oversight of compliance to their relevant areas Departmental audit function (for high risk deliveries); producing assurance plans IPA: coordinating the PAR review, agreeing the terms of the review with the SRO SRO: organises efforts towards the review in the portfolio</td>
</tr>
<tr>
<td>Scrutinising value for money through political bodies</td>
<td>Independent assurance of value for money</td>
<td>Episode activity based on parliamentary activities</td>
<td>PA regime: dominance of bureaucratic rules and the hierarchical authority of the corporate centre of the civil service over portfolios Elements of the NPM regime: assessing professional performance</td>
<td>Based on the Project Assessment Review (PAR) process whose rules, and templates is established by IPA Evaluating performance against the most recent formally approved mandating document (e.g. business case, project initiation document). The report produced through the review is made available to HM Treasury, IPA and the department</td>
<td>Normative targets for public value based on criteria defined by NAO: economy (i.e. spending less), NAO: conducting a value for money study and consequently Public Accounts Committee (PAC): conducting hearings based on NAO findings or</td>
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<tr>
<td>Resourcing</td>
<td>Allocating portfolio resources to projects and programmes</td>
<td>Appointing the right people with the right skills</td>
<td>Volatile rhythm and tempo (e.g. urgent policies requiring resources, resource attrition)</td>
<td>Overlaying the PA regime over the NPM regime: Market of central resources managed through prioritising conducted by the boards</td>
<td>Efficiency and effectiveness.</td>
<td>Other requests made to the parliament SRO; giving evidence at PAC hearings</td>
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<td>Portfolio board prioritising as response to portfolio resource capacity issues</td>
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Table V. Major transformation portfolios in practice (continued)
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<td>Providing advice, influencing portfolio board members for issue resolution and support Portfolio PMO: Providing support</td>
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<td>Structuring the portfolio management and project management</td>
<td>Structuring portfolio management and project management</td>
<td>Improving the efficiency and effectiveness of execution</td>
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<td>Based on project management processes (e.g. portfolio board meetings, contracting, change control management, stakeholder management, risks/issues management, dependency management, stakeholder management processes)</td>
<td>Portfolio manager: continuously improving frameworks and principles for portfolio and project management Portfolio board: approving changes to portfolio management and project management frameworks and principles</td>
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<td>Structuring projects and programmes</td>
<td>Setting up, re-structuring, stopping projects/programmes to achieve efficiency and effectiveness</td>
<td>The temporal rhythm tends to vary, depending on project and programme phase and issues emerging</td>
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<td>Portfolio manager: Selecting project/programme methods, planning response to project/programme risks and issues</td>
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<td>Structuring the policy relationship</td>
<td>Improving structures policy hand-over</td>
<td>Ensuring deliverability of policy for policy-initiated projects and programmes</td>
<td>More intense at the front-end of projects and programmes in terms of receiving new policy</td>
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<td>Linked to the policy development processes defined within the civil service and departments. Rooted in institutional, departmental norms for relating to policy. No formal process is defined for hand-over</td>
<td>Departmental head of the profession: driving collaborations with policy</td>
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<td>Elements of the NPG regime: collaborating at the front-end phase of projects/programmes</td>
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<td>Structuring the operations</td>
<td>Benefits realisation</td>
<td>Establishing, monitoring and improving mechanisms for benefits realisation</td>
<td>Relatively more intense at the front-end and back-end of projects and programmes</td>
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<td>Draws upon project management discourse for benefits realisation and the IPA guidelines for front-end of projects (e.g. suggestions in the IPA initiation route-map requirements module)</td>
<td>SRO: ensuring benefits are owned Portfolio manager: identifying new projects with business, supporting business to implement benefits tracking Project/programme manager: defining benefit realisation strategy, adapting business case to changes Benefits owner: Implementing/monitoring benefits realisation mechanisms User/expert: providing advice on the new service delivery processes</td>
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<td>relationship</td>
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Table V.
the normative targets of achieving efficiencies in project delivery. Despite this conflict, the institutional gateway review processes are typically reproduced in the local portfolio contexts for funding project and programmes, since what is at stake tends to be significant. As a portfolio team member explained: “[…] it’s value for money. You know that if something goes wrong all our heads be it”. In some local portfolio contexts, the bureaucratic processes may be further enriched in enacting the portfolio sponsor role. For example, a portfolio manager explained coping with delivery uncertainty through phased delegation of funds: “[…] what they do [the portfolio board] is, they say that a percentage of that budget is confirmed, and a percentage is retained. So, you have to go back to portfolio board to basically demonstrate that you’ve got further down the track in terms of the maturity of your plans to get that retained element of the budget released to you”. However, improvisational performances may emerge in situations not regulated by the formal processes. For example, a project manager explained that existing funds, in terms of slack resources, were used to pilot a service delivery processes improvement project idea that had been identified during a previous project, and once idea was found to be feasible formal funding processes were enacted.

At a departmental level, the enactment of funding practices also tend to be joined in translating the financial sponsorship structures to the local departmental context and relying on prioritising practices for coping with financial constraints. For example, in Department 2, an SRO pointed out that the approved portfolio funds could be reduced in relation to complexities emerging from the political contexts impacting departmental funding and said: “These things [unforeseen, major events] come in, and with the existing funding in place, we have to allocate money to those initiatives. So suddenly we have to find, 10, 30 million quid for that purpose. You know, that means, somebody else is gonna have to give it up”. This SRO explained relying on prioritising to cope with such budget cuts: “[…] you’re constantly prioritising the work that’s being done. So, you know where the lower priority items are that you can then stop. And you need to be constantly refreshing your kind of business case, so the benefits realisation point”. In Department 1, at the time of the interviews the departmental board authority and
accountability was changing, and a portfolio team member said there was a departmental cross-portfolio prioritising exercise and said: “[…] the department has a very, very tight settlement and it needs to police much better what is coming onto the portfolio and should be”. As these illustrative examples highlight, in enacting financial sponsorship at a departmental level the hierarchical authority of departmental boards over portfolios tends to be reproduced. Although the portfolio manager performances are typically oriented towards complying with the hierarchical authority of the financial sponsors, some performances may also intend to produce reciprocal influence. Although these improvisational performances vary, they tend to draw upon elements of the project delivery discourse in the civil service such as the competency of influencing others and performing impact analysis. For example, a portfolio manager said: “Being able to influence that [functional] management board is significant. They own the funding, I’m accountable for delivery”, and explained that producing a common outcome relied on developing inter-personal relationships. And another SRO explained: “That [producing deterministic plans] puts you in a position then when someone comes and says you know you were planning to spend 10 million next year, you’ve only got 6. You can go back and say, ok these things will have to change. You are either not gonna get the capability you wanted, or more likely you’re going to get it later”.

5.2.2 Enacting ministerial sponsorship. For portfolios, responding to the policy direction provided by ministers tends to be a key activity since ministers, as political sponsors, provide a link to the political governance processes. For example, a portfolio team member said: “[…] at the end of the day they’re your driving force […].” Portfolios tend to respond to the ministerial demands associated with emerging policies through a structured approach that involves prioritising and resourcing practices. For example, a portfolio team member said: “So, we have to be quick to react to that [emerging policy] and make sure we’ve parachuted in the right people with the right skills.” While performances oriented towards reporting portfolio progress to ministers tend to diverge in terms of the nature of ministerial interactions, they tend to be joined in reproducing the hierarchical authority relationship as they focus on receiving ministerial approval. Thus, enacting ministerial sponsorship tends to reproduce the hierarchical authority of the ministers. However, some locally situated performances also focus on establishing informal mechanisms for reciprocal influence by connecting with ministerial functions. For example, a portfolio manager said: “[…] you know, having the right informal relationships with the private office to make sure that the informal things are happening in the right way […].”

For projects and programmes with strong ministerial interest, translating ministerial demands into the local portfolio context tends to be a critical activity in enacting this practice. In situations where these translations are problematic, various improvisations tend to be performed for influencing the ministers. For example, a project manager said: “I think in an ideal world they [the ministers] would’ve liked it [the project delivered] yesterday; but it is about putting all of those steps out, now whilst they really wanted, I have still got to, one secure the funding, and go through governance”. This project manager explained presenting a plausible story to the ministers with alternative delivery timeline options. In another example from the same portfolio, a portfolio team member explained: “[…] it’s really important that you understand those [ministerial demands about new service delivery processes] fully, in order to make sure that the project and programme, you know the vision is consistent with those. And if, if it can’t be that, you know, that you can’t just go off and make something that looks vaguely similar to it; but you know how to work with strategy and policy colleagues to get ministers on the side, so that, that’s one of the elements I think”. As these illustrative examples highlight, the locally situated performances may draw upon the civil service norm of providing
impartial advice to ministers or project delivery discourse of collaborations to facilitate the strategy/policy groups influencing ministers.

For projects and programmes with strong ministerial interest another key concern tends to be ministerial change. These projects and programmes tend to establish preparation mechanisms. For example, project manager, explained that the project team focused on reinforcing ministerial commitments by enacting facilities of political governance, such as ministerial statements. In another example, a participant referring to a previous publicly controversial project explaining significant opposition explained that alternative plans were developed in line with various party manifestos. As these examples show, despite their divergences, the established mechanisms tend to be joined in relying on with political governance artefacts.

5.2.3 Prioritising. Prioritising tends to be of central concern for departments and portfolios. This emphasis on prioritising can be linked to the need for coping with emergence associated with political volatility and IPA promoting departments to conduct cross-portfolio prioritising for achieving alignment with departmental strategy (e.g. Public Accounts Committee, 2016). For example, an SRO explained that new policy demands may arrive from ministers or from different areas of the business and are prioritised through formal processes: “[...] And the way they [the portfolio prioritisation board] do that is against an agreed set of criteria which have all been driven out of the mission statements”. Indeed, in both departments, the continuous accomplishment of prioritising is based on formal rules and processes established by the departments and their portfolios.

However, the continuous accomplishment of this practice does not always produce stability. In Department 1, the ongoing intervention changing the departmental board authority and accountability for funding had produced a cross-portfolio prioritisation activity. Various project managers said that the lengthy duration of this activity produced slow-downs for projects, and projects revised their execution structures, by for example focusing on planning activities rather than implementation. This ongoing intervention had also produced disruptions for portfolio board prioritising, as the departmental rules for prioritising was being changed. The head of the portfolio PMO function explained responding to the ambiguity of rules during the transitioning period by making visible assumptions and sharing them with the portfolio stakeholders: “Saying if you can’t tell us what we need to do, we’re going to do x, y, and z, does that cause you any problems? We’ll do it you know collectively, collaboratively with you. And then, they [the senior leaders implementing intervention] are like, oh no, that’s really helpful, this is a really good test case for us”. This participant also added: “So actually I’ve, I’ve stood up to the plate and said, ok we need to run a workshop for a representative from every [portfolio]; and because I said we needed to do it they’ve asked me to lead it”. These illustrative examples suggest that in situations where interventions produce ambiguities for portfolios, portfolio actors may draw upon the NPG ideas of plurality to both accomplish continuity of this practice and to influence the outcome of the intervention.

5.2.4 Assuring quality. Assuring quality practices tend to be rooted in a concern for public scrutiny over project delivery failures. For example, the most recent IPA (2018) report says that the independent assurance reviews aim to: “[...] ensure that more government projects deliver their benefits to time, cost and quality, with a lower level of avoidable failure”. An SRO explained that the public perceptions of failure are typically based on a very low margin of error: “[...] your tolerance for getting things, the risk and or your tolerance for failure are very, very narrow. And therefore, we will look like we have failed more often than perhaps we should do because we’ve kind of exceeded our tolerance by 1% or something”. Since perceived failure tends to be associated with wasting public money, assuring quality tends to be tightly coupled with funding practices in terms of releasing of funds based on assured quality.
In enacting this practice, portfolio actor performances typically reproduce the formal assurance processes defined by the department in local portfolio contexts. Despite this broad convergence in enacting departmental processes, performances associated with the independent assurance tend to be diverse. While some accounts focus on producing continuity, others suggest an orientation towards change. For example, a portfolio manager explained enacting PAR reviews contributed to maintaining confidence with stakeholders. Alternatively, another SRO explained that PAR reviews could produce disruptions in the portfolio execution: “[…] we had a PAR review at the beginning of the year, we’re coming back for a PAR review in September and I just went, oh my god. So, I’m now gonna turn my top team from delivering”. This SRO also added that typically these reviews recommended changing governance structures and said: “And that continual changing and flexing of the governance layer sends massive shockwaves through the programme”. This SRO explained that in response bringing in a non-executive director as “outside eyes” to the board had contributed towards reducing the frequency of the PAR reviews, but also generated continuous confidence at the corporate level. This improvisation, based on the NPM discourse and translating the departmental role of the non-executive director into the local portfolio context, can be viewed as oriented towards improving the efficiency and effectiveness of independent assurance by establishing continuous assurance mechanisms.

Some accounts also suggest that the effortful accomplishment of assuring quality may be constrained by the socio-material artefacts that these assurance activities rely on. For example, a portfolio manager explained that translating the complexity of the portfolio to the standard red, amber, green status was limiting and said: “Where do you then get the qualitative narrative that goes with the colour coding, so you actually really understand what’s happening?”. This portfolio manager explained presenting GMPP reports to the portfolio board with a narrative before they are sent through. Similarly, the head of a portfolio PMO also suggested that translating project complexities into reports could be problematic and said: “But there are times when we do bring things to the board just to get a feel for, you know how they see the wind is blowing […].” This participant also highlighted that the relatively lower seniority of the PMO team members could produce constraints in the continuous assurance activities for projects and programmes. This participant explained responding to this constraint by organising senior grades to coach these individuals. As these illustrative vignettes show, although improvisational responses formal assurance process design constraints tend to vary, they are often joined in reproducing the institutionalised hierarchical power and knowledge relationships.

5.2.5 *Resourcing.* The re-structuring of the corporate centre of the civil service and the shift towards professionalisation within departments have been creating a market place of professionals for appointing and securing resources to portfolios. Within both departments, the hierarchies of boards enact their authority by allocating project delivery resources. In situations where there are resource pool constraints, these boards often rely on prioritising. However, in situations where ministerial demands produce pressures, improvisational activities may be performed. As a portfolio manager explained: “And if ministers want a whole load of stuff done, you know, who’s going to be the one to say we can’t do it for resource reasons”. For example, in Department 1, the departmental resource manager explained that they often borrow resources from operations, as the operations resources are considered to be knowledgeable on the processes that are being changed. In situations where such improvisational performances produce suboptimal resourcing, departments may support portfolios by providing training and mentoring for closing competency gaps or portfolio actors may themselves provide support to these resources. This is not to say, however, that portfolios do not have any control over resourcing. For example, the departmental resource manager said: “the good people are kept within
and not released” and explained that this produced ineffective resourcing at a portfolio level. Interestingly, at the time of the interviews there was a departmental intervention linked to the professionalisation of project delivery roles to move from appointing resources for the duration of the portfolio towards the task-based appointment of professional roles. Arguably, this intervention can be viewed as strengthening the departmental control over portfolios in accomplishing this practice.

Securing resources from other professions, on the other hand, enact horizontal governance mechanisms. In doing so, a key concern for portfolios tends to be securing the “right” resources for producing effectiveness. In situations where the secured resources are viewed as suboptimal, portfolio managers tend to perform various improvisations to negotiate with functional leaders. For example, a portfolio manager said: “[…] you know it does need active management of that level of governance and the business at a leadership level. Really actually understanding who are they getting to work on these things and are they identifying their brightest and their best; because they’ll get the business that they want tomorrow if they invest today”. In another example, a portfolio manager explained relying on the interpersonal relationships with functional leaders for responding to inadequate resourcing, but also highlighted that the SRO may also intervene at the board meeting: “And to be frank, you know [the SRO] will force things to happen at board level and you know and we do have the tough conversations”. As these illustrative examples suggest, portfolio managers may draw upon elements of the NPM, NPG or PA regime to accomplish effectiveness of portfolio resourcing.

5.2.6 Supporting. The MPLA programme, established partly in response to the concerns raised by a non-executive about project delivery, has been promoting the view that major portfolios are complex, and that project management process compliance alone cannot produce success. An SRO explained this shift as: “And certainly, I always thought, when my project was going wrong, I always thought if only I had applied Prince 2 harder, then this wouldn’t be happening you know. I thought I was just imperfect from a technical point of view. The thing you realise then is that’s not gonna help”. Thus, in enacting this practice, the focus tends to be on sharing learning. The IPA often facilitates this learning across departments by developing learning communities. For example, an SRO explained: “And I also think some of the stuff that IPA do and some of the transformation peer group work that Cabinet Office have sponsored which sits across departments really does help because it brings together like minded professionals from different departments. And strangely enough, we’ve all got the same challenges so actually those sorts of networks are incredibly powerful”. As such, supporting practices of the IPA can be associated with partnering that has been discussed in the literature. These partnerships often produce enrichments to the normative targets for the profession. For example, a departmental resource manager said: “You know they [the other departments] haven’t actually got the IT to develop all of this stuff, and as the IPA are rolling out [professional resources][…]. So, we’ve been able to offer advice about how to do it and how not to do it as well”.

Within some of the local contexts of the portfolios, PMOs have also been shifting from administering to partnering. For example, the head of a portfolio PMO explained implementing an intervention for achieving such a shift and said: “And now when we have our stand ups they [PPMO team members] tell me about the outcomes, what they’ve achieved […]”. However, in some portfolio contexts the PMO performances continue to reproduce their socio-historical position of administrative work. For example, a portfolio manager said: “[…] what we struggle with is the expertise of the PMO to move beyond secretaria and meetings and really, really focus on the integrated plan for the programme”.

In terms of ownership support, the Osmotherly rules have made the SROs accountable for not only assuring the quality of portfolios, but also for supporting them. Most portfolio
manager accounts mention getting direct support and direction from the SROs for escalating or handling issues that may impact successful delivery. Despite this broad convergence, however, the locally situated performances of supporting tend to vary from a continuum from “light” to “active” support even within the same department. For example, a portfolio manager explained that the SRO acts as primarily a “sounding board”. Whereas another SRO in the same department explained that SROs provided “active” engagement during execution by: “[…] very much shifting much more into stakeholder management and assurance […] But then if it’s not going right then you need to take a more active hands-on role and if your [portfolio manager] isn’t performing then you need to do something about it”. Although the SRO and portfolio manager interactions tend to vary, the performances typically reproduce the institutionalised hierarchical power and knowledge of the SRO.

In situations directly linked to specialisations of professional expertise, the institutionalised power and knowledge relationships also tend to be reproduced. Improvisational performances of portfolio managers often enact functional leader support for accomplishing the normative targets for the relevant professions. For example, a portfolio manager highlighted the controversial nature of the change produced by the portfolio and said: “So, one of my closest confidants and supporters is my [departmental] communications lead who is with the press office. And again, I kind of, I kind of won’t go anywhere without [the communications lead], in terms of thinking about handling and all the rest”.

5.2.7 Structuring the portfolio. Although project management processes tend to be viewed as a core competency for enacting this practice, the emphasis tends to be on accomplishing efficiency and effectiveness in portfolio execution rather than complying with these processes. This concern for outcomes can possibly be linked to the discourse emerging from the MPLA programme in terms of emphasising complexity, and the plurality of professions acting as delivery partners for projects and programmes.

The structuring of projects and programmes is typically accomplished through continuous negotiations ongoing during the life of projects and programmes. For example, one portfolio manager explained that selecting project/programme delivery method was a negotiation with that relied on interpersonal relationship building and said: “I, I think it’s a lot about relationships […] in a conversation with digital colleagues, you know whereby you’re gonna say well you’ve got your methodology, I’ve got mine and, you know, never the two shall meet, somehow you know we have to find a way to get through what’s the right answer for the change that’s needed”. This portfolio manager added: “And I think that’s the greatest leadership challenge; but also, being conscious that the people working at product level, at practitioner level are coming up against that every day. So, you have to find a way of communicating that clear direction with them so that they know it’s not all resolved, there is some uncertainty, but they’re clear about their role and their contribution”. As this illustrative quote exemplifies, portfolio managers attempt to produce normative targets that protect the interest of the portfolio as a basis for multi-level negotiations through discursive performances with functional leaders and also by clarifying role-based expectations with the portfolio team members.

Structuring the relationship with suppliers also tends to be an ongoing accomplishment. Improvisational performances of the portfolio actors often seek to produce effectiveness by what one participant referred to as “getting beyond the contract”, and idea that can possibly be related to the leadership discourse promoted by the MPLA. For example, a portfolio manager explained: “[…] it is very much about partnership working, and if you look at the MPLA curriculum, it’s very much about looking at models where, you know, it’s not that kind of command-and-control commercial I think where you hit people in the head; but it’s more a case of understanding, you know, what works for your supplier”. This idea of partnership tends to be translated to local portfolio contexts in various ways. For example, an SRO explained co-creating a charter with suppliers about ways of working together and another portfolio explained establishing an
overarching ethos with them. Although these improvisational performances tend to diverge, they can be viewed as sharing a common concern for developing normative targets for collaborating that are based on shared values and goals.

Thus, performances concerned with collaborating with the delivery partners and suppliers tend to be linked to the ideas of relationships from the NPG regime and the ideas of effectiveness from the NPM regime. However, portfolio actors, in enacting this practice in relation to projects and programmes, tend to reproduce the institutionalised hierarchical power and knowledge relationships to accomplish the NPM regime ideas of efficiency and effectiveness. Portfolio managers and boards enact the hierarchical authority relationship between portfolio boards and projects/programmes, by for example, deciding to de-risk projects by phasing them, or if there are significant risks or issues by deciding to “reset” them (i.e. change the approach, changing the team or stopping the project/programme). Similarly, departmental boards may enact their hierarchical authority over portfolios in trouble by “resetting” the portfolio.

However, portfolio actors may also perform improvisational performances in situations where this hierarchical authority is not viewed as sufficient for producing effectiveness. For example, a portfolio manager explained collaborating with other portfolio managers to identify benefit interdependencies and said “[…] inevitably they’re [departmental boards] often looking at the generic and the high level and it’s normally won’t help with a specific interdependency. So, you, you often; it’s quite good to have that framework I guess; but normally you end up feeding bi-lateral stuff […].” Another portfolio manager, sharing a similar concern for portfolio interdependencies, however, explained inviting the other portfolio manager to the portfolio board for managing interdependencies. Thus, although sharing a similar concern, these improvisational performances can vary in terms of enacting hierarchical authority and thereby reproducing the PA regime or drawing from the NPG idea of relationships to produce collaborations.

5.2.8 Structuring the policy relationship. The IPA has been promoting the collaboration of project delivery professionals with the policy function within departments to ensure the deliverability of the intended policy before public commitments are made at the front-end of projects and programmes. This idea of collaboration, however, tends to be translated into portfolio contexts in different ways even within the same department. For example, in Department 1, a portfolio team member explained establishing a function within the portfolio for bridging with the policy/strategy function, while another portfolio manager, emphasised “being clear on accountabilities” as a basis for collaborating and explained agreeing terms and conditions for accepting policy with the policy board. As these illustrative examples show, in enacting collaboration, some portfolio contexts establish bridging structures that can possibly associated with the NPG regime ideas of plurality, while others may reproduce the bureaucratic division of labour and thereby the PA regime.

In addition to the front-end phase emphasised by the IPA, within the local departmental contexts there also tends to be a concern for the ongoing translation of policy in designing the new service delivery processes. Indeed, the inclusion of policy leaders in the portfolio board has become a norm in both of the departments. For example, an internal guidance produced in Department 1 suggests that policy leaders may join the portfolio board to ensure policy intent is delivered and provide policy related support. In addition to enacting this portfolio board membership, some improvisational portfolio manager performances also secure policy resources into the portfolio to accomplish continuous translations. These improvisations can be possibly viewed as adopting the departmental business user/expert role to the policy function. Moreover, portfolio managers also negotiate issues emerging in translating the policy on a one to one basis with the policy leaders. For example, a portfolio manager said: “So policy is a fundamental part to us achieving our objective and the, so last night, for instance I had a one to one with
5.2.9 Structuring the business relationship. Since the NAO (2016) report, highlighting that the realisation of intended benefits is critical for accomplishing value for money in projects; but the division of accountability in benefit delivery and monitoring in departments tends to be problematic for evidencing benefits realisation, the IPA and departments have been strengthening the ownership accountabilities for benefits realisation. For example, SROs have been made formally accountable for benefits realisation and departments have been promoting the business owner role.

In enacting this SRO accountability for benefits realisation, portfolio actors have been implementing interventions for evidencing benefits realisation. For example, a portfolio manager said: “You know, and an awful lot of my focus is on benefit realisation […]. So, now we have some things that this portfolio didn’t have before”. This portfolio manager explained establishing a control group for monitoring the benefits realisation and said: “[…] we stay with things in a formal sense beyond go live more than what we did before. I’m not saying they didn’t; but there wasn’t the formality and focus and cultural attention on this is what we do as projects. If you come in and say what we do is shovel it into operations, you can then, your mind and the mind of the programme is not actually holding the hand and understanding what’s happening in go live several months after it’s landed”. Alternatively, an SRO mentioned establishing a specific board for tracking benefits realisation and said: “So, where there’s a clear statement of outcome, for each project and there’s a clear statement of output and those, they track against plans and business case and outputs essentially. So, that’s you know that’s really powerful for having business people in the room and taking accountability for those”. As these illustrative examples demonstrate, although the established structures for evidencing benefits realisation may differ and the discursive performances may emphasise the NPG regime ideas of plurality and relationships, these improvisations typically rely on bureaucratic processes and thereby reproduce the PA regime.

Some improvisational activities concerned with volatilities in the business context that may disrupt the business case commitments to benefits also draw upon the PA regime ideas of bureaucratic rules. For example, one SRO explained that the business function had clear rules about which continuous improvement changes could and could not be made locally by the business. Alternatively, however, in another portfolio context, a project manager explained relying on continuous translation in everyday interactions with the users/experts to identify and respond to locally implemented business changes that may impact commitments to benefits, and said: “So, it is again it’s back to that communication, it’s, it’s really keeping your ears to the ground, talking to those people and saying, anything happening?” As this example illustrate, in business contexts without clear rules of engagement with portfolios, the locally situated improvisations may establish mechanisms for detecting change in their everyday interactions with business users/experts.

Moreover, portfolio actor improvisations often draw upon ideas of partnerships in enacting the business owner and user/expert roles to translate the intended change to recipients of change and to the new service delivery processes. However, they tend to diverge in how they accomplish these translations. For example, a portfolio manager explained facilitating the business owners to hold regular events with their functions to inspire them about the intended change, whereas another SRO explained that business owners and portfolio managers shared responsibility for continuously reaching out to the business to promote the change. Similarly, designing the new service delivery processes often diverge in their ways of enacting the user/expert role. For example, a project manager explained having a business resource, as an expert on the processes, embedded in the
project and a portfolio manager said that for agile projects and programmes there were continuous interactions with users. Similarly, the portfolio manager improvisations at the front-end phase of projects and programmes concerned with shaping the intended change also often draw upon ideas of partnerships in enacting the business owner and user/expert roles; but diverge in their approaches. For example, a portfolio manager explained bringing someone in from operations at the front-end of projects to define “what good will look like at the end”, while another portfolio manager mentioned visiting various business sites with the business owner to collaboratively “get to the bottom of what’s the real nub of the issue”. However, partnerships may not always be sufficient for producing commitments to translations. For example, for policy-initiated change, negotiating benefits at the front-end of projects and programmes may be problematic. A portfolio manager explained: “Being in between the policy and the operation, means you are constantly trying to get the business to admit just what an impact this thing you are doing is have”. This portfolio manager said that although negotiations may produce agreements, formal agreements at portfolio board meetings were required to ensure the continuity of business commitments to benefits. Thus, the hierarchical authority structures may be enacted to protect the interests of the portfolio.

6. Discussion
6.1 The complex system of ownership
The findings show that within the complex system of ownership, different ownership actors tend to have varying orientations of governing and supporting. Ministers (i.e. political sponsor) and the departmental financial sponsors tend be oriented towards governing rather than supporting. This is not to say that these roles do not provide support, but rather that in enacting these roles the primacy tends to be given to protecting political or departmental interests rather than that of the portfolio. The SRO role can be viewed as relatively more similar to the ownership role in the project management literature in terms of balancing assuring quality practices (i.e. governing) and supporting. However, as the findings illustrate, the supporting orientation of the SROs may range from continuum of “light” to “active” engagement.

In addition, the findings identify two additional governing practices, not previously discussed in the literature in relation to the complex system of ownership of the UK central government structuring the portfolio relationship and structuring the business relationship. These practices enact horizontal governance with distributed tactical owners (i.e. the planning and the operating parties). These practices are different the horizontal governance practices of cross-project operational consensus-seeking practices highlighted by Hällgren and Lindahl (2017) in that their key concern tends to be translating rather than seeking conflict resolution.

6.2 Control paradigms
The findings illustrate that governing practices enact different control paradigms. Funding, prioritising and assessing quality practices tend to enact behavioural control. The departmental and portfolio performances, often do not only focus on reproducing the formal processes and the hierarchical authority rooted in the PA regime, but also to enrich them through interventions based on project management techniques, or by improvisational performances responding to ambiguities or gaps in the formal processes or constraints associated with socio-material artefacts. In doing so, some locally situated portfolio manager improvisations, that can be associated with the NPM regime ideas of effectiveness or the NPG regime ideas of relationship, also attempt to produce “dialectic of control” (Giddens, 1984) with the hierarchical governance bodies in order to protect and further the interests of the portfolio. Some locally situated portfolio performances also respond to
gaps in formal processes by drawing upon the NPM regime to further the interest of the department.

The remaining of practices tend to enact outcome control. For these practices, project management tends to be viewed as a core competency for developing appropriate responses to specific situations. Despite the sharing a common concern for enacting outcome control, whether primacy is given to the means or the ends of delivery tends to differ. Supporting, structuring the portfolio and resourcing practices, tend to be primarily concerned with the means of delivery in enacting outcome control. These practices, concerned with achieving efficiency and effectiveness in delivery, ideas that rooted in the NPM regime, often reproduce the hierarchical and professional power and knowledge relationships institutionalised within the civil service. The performances concerned with integrating knowledge horizontally, however, typically draw upon the NPG ideas of partnerships. In enacting supporting the focus tends to be on enriching the normative targets for means of project delivery. The discursive and socio-material portfolio actor improvisations concerned with delivery partners and suppliers, sometimes also drawing upon ideas from the NPM and the PA regimes, often attempt to develop normative targets for negotiating that protect the interests of the portfolio.

The ministerial sponsorship, structuring the policy relationship and structuring the business relationship practices tend to give primacy to controlling the ends (i.e. the intended benefits and political commitments) of delivery. Performances, concerned with translating political demands into the business contexts, often focus on establishing locally situated “interpretation processes” (Daft and Weick, 1984). In doing so, these performances tend to reproduce, and sometimes, enrich the bureaucratic order of departments and institutionalised portfolio ownership roles. However, locally situated portfolio actor improvisations also attempt to produce a “dialectic of control” (Giddens, 1984). These improvisations, often drawing upon elements of the PA regime or the NPG regime, attempt to reduce or resolve “friction” (Czarniawska, 2014) in translations, or respond to potential disruptions to political commitments (e.g. ministerial change, benefits commitments).

While previous research suggests that large and complex organisations may adopt different control paradigms in different parts of the organisation (e.g. Müller, 2009), these findings highlight that practices in the same contexts may enact different control paradigms. In this context, the enactment of behavioural control can largely be associated with the conformist paradigm and the enactment of outcome control can largely be associated with the versatile artist paradigm. Indeed, previous research by Müller and Lecoeuvre (2014) highlight that governance of organisational change projects tends to be significantly more stakeholder oriented.

The findings also suggest that in enacting these control paradigms, new strategies for extending portfolio control have been emerging. These strategies, as improvisational performances often drawing upon the NPM discourse ideas of effectiveness and the NPG discourse ideas of relationships, can possibly be associated with responding to the pressures and increased controls from the corporate centre of the civil service and the public for achieving commitments and value for money. These findings tend to echo previous findings from Newman (2005) suggesting that new managerial strategies emerging in response to the ongoing reforms in the UK government tend to draw upon the NPM and the NPG discourses for extending managerial power.

6.3 The ecology of the governing practices

The findings illustrate the complexity of the ecology of practices. The ostensive aspects of the practices as illustrated in Figure 2 suggest a complementary view of the portfolio governing practices, in terms of practices being a pre-cursor or an enabler to other practices. However, as Figure 3 shows that in enacting these practices, richer
complementary and competitive relationships between practices may emerge. This finding can be associated with the findings from previous research on routine ecology suggesting that complementary and the competitive relationships between practices co-exist and pressures between routines may produce change (e.g. Turner and Rindova, 2012). This is evident in for example, the emerging improvisations to resourcing practices in response to pressures emerging from enacting ministerial sponsorship.

7. Conclusion
The main contributions of this paper to the governance theorising within the project management literature are: first, extending the insights on complex ownership systems by illustrating two horizontal governance-related practices and demonstrating that different owners may have varying governing and supporting orientations; second, showing that portfolio governing practices may enact different control paradigms; and third, illustrating that governing practices may both enable and constrain other practices in the same ecology. Practically, these contributions draw attention to complex ownership systems and the relationships between practices in developing governance structures.

There are inherent limits to this qualitative single case study in terms of generalising findings. Another limitation is the reliance on interviews and documentary data. Richer accounts of the micro-dynamics and the ecology of governing practices and their evolution over time could be achieved through longitudinal engagements. However, the study offers “analytical generalisations” (Yin, 2003) that can be a stepping stone towards future longitudinal research.

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Further reading


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Do steering committees really steer?

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Abstract

Purpose – The purpose of this paper is to investigate the confusion among project management practitioners about the role of steering committees.

Design/methodology/approach – Semi-structured interviews were conducted with highly experienced participants selected from a range of industries and disciplines in Queensland, Australia.

Findings – Six separate confusions on the role of steering committees were identified within that practitioner community. However, despite participants expressing various opposing views, they had actually come to the same working arrangements for their committees; all that was missing was a common conceptualisation of these working arrangements and consistent terminology.

Research limitations/implications – The paper provides clear evidence to the academic literature that confusion over the role of steering committees actually exists within the practitioner community and identifies six separate ways in which this occurs. It also identifies a problematic error in the widely used PRINCE2 governance model. Clarity in committee governance arrangements will facilitate future research endeavours through the removal of confusion surrounding committee labelling and accountability.

Practical implications – A committee decision tree model that guards against all six confusions is proposed for practitioner use, providing a means of avoiding unnecessary internal conflict within organisational governance arrangements. It can be used to check terms of reference of existing or proposed committees, facilitating organisational efficiency and effectiveness. The suggested renaming of project control groups to project coordination groups, and discontinuance of the practice of labelling committees that cannot authorise their decisions as either steering committees or boards, further supports this.

Social implications – Reconciliation of terminology with actual practice and the consequent clarity of governance arrangements can facilitate building social and physical systems and infrastructure, benefitting organisations, whether public, charitable or private.

Originality/value – Clarity regarding committee accountability can avoid confusion, misunderstanding and their consequent waste of time, resources and money.

Keywords Infrastructure projects, Project governance, Governance structures, Information and communication technologies, Organizational project management, Governance of projects, Project management, Project politics

Paper type Research paper

Introduction

Confusion has existed within project management scholarly publications over the role of steering committees, according to McGrath and Whitty (2013). They found that the issue had been overlooked in the academic literature since the 1980s when the label of steering committee had been attached to ICT committees, regardless of whether these committees decided or advised.

The purpose of this research was to investigate whether the project management practitioner community is similarly confused regarding the role of steering committees. It also explored what adaptations that repeated application of the concept over the last few decades had produced regarding how this democratic device (steering committee) has operated within organisations having an authoritarian structure.

In this paper, we review the literature on the steering committee. We then develop research questions and design the research by selecting the investigation instrument, designing the questions, selecting the sample and determining the method of analysis and evaluation. We then outline the key characteristics of the participants selected before reporting the results, considering the issues identified and considering a model to resolve the confusion.
Literature review

Development of the steering committee was investigated by McGrath and Whitty (2013), who found steering committees were introduced in the 1980s to address a perceived lack of IT organisational power by attempting to influence or change existing power structures. This is evident in Grindlay (1981), Nolan (1982), Robey and Markus (1984). McGrath and Whitty (2013) found “no evidence of any consideration of how these committees would interact with existing power structures that were hierarchical and autocratic”. They also noted the caution by Drury (1984) regarding the importance of whether a committee decides or advises and that this has been ignored in the academic literature since. They also pointed out that the steering committee was a democratic artefact introduced into authoritarian structures, with the potential to disrupt, and stated “The broad philosophical issue is when, where, how and why interspersing democratic structures within a hierarchical and authoritarian structure can actually work” (McGrath and Whitty, 2013). They developed a model for handling such an insertion. It asked a series of questions to determine whether the committee decides or advises. The model was intended to be applied when considering establishment of a committee. It can also be applied to an existing committee to see whether its method of operation is causing any governance conflicts. It starts with first determining whether a committee is actually necessary, based on the need for collaboration with and between stakeholders. If there is no such need then there is no need for having a committee as a committee is a device-enabling collaboration. The rest of the model is concerned with determining whether the committee decides or advises. It does this by applying two tests to any notion that it will decide. The first test ensures the committee’s accountabilities do not conflict with any organisational role. If there is any conflict, then a governance conflict will result and so the committee should be set up as advisory only. The second test is whether there is an organisational role or committee that can over-rule it. If there is, then the committee can make recommendations only and it is advisory. If the answers to both tests are negative, then the committee can be regarded as decision-making.

The McGrath and Whitty (2013) Committee Decision Tree model is shown in Figure 1.

It appears from the literature that the original intention of inserting a democratic device into an authoritarian structure and then mislabelling that device as a steering committee was noble, as it was to give computer system users the ability to influence systems that they would use (Grindlay 1981; Robey and Markus 1984). However, application of the steering committee concept has not accommodated the ongoing operation of existing power structures in a sustainable way, as evidenced by Lechler and Cohen (2009, p. 46) noting that the “concept of a steering committee is neither clearly defined nor perceived in industry”. They also noted “a general lack of research on the role of committees in the implementation of projects” (Lechler and Cohen 2009, p. 51). We note that it would have reduced the disrupting (ICT) influence in the 1980s to have made the subtle disturbance of existing power structures clear. Furthermore, branding it as a democratic device would have made it difficult to question at a time when the Cold War was threatening the basis of western democracy. Nevertheless, early papers (Grindlay 1981; Nolan 1982; Drury 1984; Robey and Markus 1984; McKeen and Guimaraes 1985) warned of the dangers of steering committees. Nolan (1982) even stated committees had a bad name, but considered they were the best way to go. Lechler and Cohen (2009) classified steering committees by level (executive and business unit) rather than by purpose, function or structure and noted “Our results indicate that the probability of project success or failure cannot be predicted exclusively from the presence or absence of a steering committee”. They too ignored Drury’s (1984) warning regarding whether the committee advises or decides. Reimers (2003, p. 348) mentioned a consequence of ignoring that advice; that “a majority-based decision-making principle (in the steering committee)
would enable other managers to block such decisions”. McGrath and Whitty (2013) noted that “Many of the later papers that cited Drury (1984) made the assumption that ‘steering’ was a generic term that encompassed any committee involved with projects”.

McGrath and Whitty (2013) also noted:

Calling the committee by the name “steering”, which Drury (1984) indicated was widely advocated in the systems literature at the time “for groups concerned with MIS issues”, means that steering was supposed to be inclusive of both recommending and deciding. This is logically inconsistent. These two options of harnessing available power are mutually exclusive. Steering a direction means making decisions, not making recommendations or providing guidance. So use of the phrase “steering committee” as a generic term has been and still is a misnomer.

Recent academic publications on governance indicate that use of the term “steering” referring to a group or committee is still prevalent. Muller (2017a, p. 18) says “Project governance [...] is typically executed by a steering group, which directs and controls the project manager”. Muller (2017b, p. 109) notes “The steering group is the most widely used governance institution. Ninety-seven per cent of project managers indicated that they report to a steering group”.

Muller et al. (2017, p. 60) note that The Office of Government Commerce (OGC) in the UK proposes the PRINCE2 governance framework, which recommends that the Steering Group (or in their terms Project Board) is accountable to program or corporate management for the success (or failure) of the project. They then continue to note a variety of models, noting “That begs the question of when such a steering group is appropriate” (Muller et al., 2017, p. 61). They continue as follows: Andersen (2008) highlights two circumstances in which steering groups staffed by line managers may be appropriate:

When there is little or no familiarity with project work within the organisation.

When the project involves several organisations (Muller et al., 2017, p. 61).
They also note “If a project involves several organisations or enterprises, a steering group is essential […] Issues connected with the project will obviously need to be dealt with by several executive managers, as many as there are companies in the alliance” (Muller et al., 2017, p. 61).

This recent literature questions the assumption of a universal need for all projects to have something called a steering committee or group or equivalent.

We conducted a literature review to locate any other evaluations of steering committees. We developed search terms by reasoning that any such evaluation of the steering committee device would have to have the term “steering committee” in its title, as such an exercise could not be conducted incidental to another investigation. We also decided to exclude extraneous references by searching for “project management” in all text. We decided to use the EBSCO database as it is an aggregator which searches databases from multiple sources.

An EBSCO search for “steering committee” in the title and “project management” in all text was, therefore, conducted and produced only five items of which only two were relevant. One was an opinion piece on the operation of steering committees and contained no references. The other was by Murphy (2016) who investigated factors contributing to steering committee performance within an information processing environment. He “found that practitioner literature and academic journals offered little more than anecdotal information on the inner workings of SCs (steering committees), leaving managers guessing at what approach and remedies would work best” (Murphy, 2016, p. 1). He also noted that “Earlier studies found that many things are called ‘steering committees’ and the term remains nebulous” (Murphy, 2016, p. 3). His thesis did not question their history or labelling, and he did not define the term steering committee.

One of the findings from his qualitative interviews was that “Steering committees function better when there is a defined decision maker” (Murphy, 2016, p. 57). This effectively says they work best when advisory; serving a communication function that supports the decision maker and providing a decision-making forum, but not actually having the authority to implement. This is at odds with his later statement “Autonomous decision-making improves a steering committee’s capabilities and leads to improved satisfaction with development process” (Murphy, 2016, p. 142). The two statements can only be reconciled if responsibility and accountability are aligned through the person with the decision-making authority being on the committee. This lack of specificity appears to have become enshrined in practice as, in a section titled Steering Committee Governance, he notes “use of a steering committee is considered a sound project management practice. Its pivotal role is reinforced in the practitioner literature such as in the Guide to the Project Management Body of Knowledge (PMBOK)” (Murphy, 2016, p. 135). There is a fundamental presumption that the steering committees equate with sound project management practice. This universality was challenged by McGrath and Whitty (2013), which was not referenced in Murphy (2016).

Furthermore, McGrath and Whitty (2015) resolved a definition of governance that is not dependent upon a steering committee. They presented a comprehensive mapping of governance terminology that is completely independent of committees.

A further EBSCO search for “steering committees” in the title and “project management” in all text and produced only three items; one was by Lechler and Cohen (2009) which we had already located and referred to above. The other two are as follows.

Loch et al. (2017) consider lessons for effective governance by steering committees. They conducted semi-structured interviews with 17 CEOs or senior executives across Europe and the Mediterranean across a range of process and service industries and identified five themes – or important items to pay attention to. While one of these was steering committee composition, the steering committee mechanism itself was not considered as a potential contributor. This paper was not a critical evaluation of the steering committee mechanism. It seemed to indicate the acceptance of steering committees becoming involved in detailed
management of a project as an indispensable part of governance without paying too much attention to whether it might compromise internal accountabilities or compromise the position of the project manager. This is evident from the general tenor of the paper and the interview questions, one of which asked: “Do you supervise different parts of the project differently?” This begs the question of what a steering committee would be doing getting involved in management and supervision of the project, indicating a high likelihood of authority of the project manager having been compromised.

Mosavi considered portfolio steering committees whereas we are primarily interested in project steering committees. However, he noted “research shows that there are speculations on whether project portfolio decision making should be done in groups (e.g. portfolio committees) or individually (e.g. portfolio manager”). He also noted “Assuming that organizations might be better off to make project portfolio decisions individually, poses an important question about the roles of portfolio committees” (Mosavi, 2014, p. 390). Interviews were conducted with such committee members from the R&D departments of three Danish companies that had PPM in place, producing 29 transcripts. Three roles were determined for these committees; communicating, negotiating and deciding. However, the mechanism itself was not critically evaluated and it was concluded that the three determined roles were related to two governance design factors, namely, frequency and duration of meetings.

A search of the Taylor and Francis database for articles with “steering committee” in the title (this database did not allow for a concurrent text search to select only project management) located 22 items, none of which evaluated the mechanism itself. Searching for the plural form produced 1,203 matches. None of the few such titles examined were evaluations of the mechanism, indicating that the lack of granularity in the database search tool made the search unhelpful. A search of the Emerald database was also conducted for both singular and plural terms and both returned no results.

The literature review has, therefore, confirmed the existence of academic confusion over the definition and the role of the steering committee and located one model providing a means of determining whether a committee decides or advises.

**Definition of steering committee**

As the literature review found that that the “concept of a steering committee is neither clearly defined nor perceived in industry” (Lechler and Cohen, 2009, p. 46), we will first derive a definition of the term so that we have a reference to compare with practitioner views. By steering, we take the *Oxford Dictionary* definitions of “steer” as to “guide or control the movement of (a vehicle, vessel or aircraft), for example, by turning a wheel or operating a rudder”, and “steering” as “the action of steering a vehicle, vessel, or aircraft”. However, this latter definition is recursive and therefore unacceptable, so we take the definition of the verb, strip it of its extensions to render it more general and apply it to the organisational context as “controlling the actions of an entity”. By “committee”, we take the *Oxford Dictionary* definition of “a group of people appointed for a specific function by a larger group and typically consisting of members of that group”, and strip it of its latter two superfluities to render it more general as “a group of people appointed for a specific function”. This, therefore, includes boards and parliaments as well as informal committees and committees set up by a single person. We, therefore, understand a “steering committee” to be “a group of people appointed to control the actions of an entity”.

This definition would indicate that the real issue being considered here is whether a particular committee is actually a steering committee or not. However, the model identified in the literature review has used the terminology decide vs advise, which would lead to using the terms “decision-making committee” and “advisory committee”. We will avoid this complication by simply referring to committees rather than to steering committees or project steering committees, except where the colloquial or participant usage dictates otherwise.
Research questions (RQs)
The literature review found terminology confusion and a model for determining whether a particular committee decides or advises. We set out to explore whether similar confusion was present in the practitioner community and to test the veracity of the previously developed model.

The following RQs were, therefore, developed:

\[ RQ1. \] What confusion exists in the practitioner community regarding the role of steering committees?

\[ RQ2. \] Does the committee decision tree model resolve any confusion identified in \( RQ1 \)?

Research design
These RQs call for use of a qualitative method of data collection; it is not possible to express answers to these questions quantitatively. If confusions are identified in one place, then any denial of the existence of the issue can be definitely refuted, rendering possible the inference that it may be an issue in other places.

Instrument selection
The nature of the RQs suggests an interview approach as it is unlikely that satisfactory answers could be gained by survey. This is supported by Fontana and Prokos (2007, p. 23) who considered “Face-to-face interviews have many advantages over less interactive methods. As Shuy (2002) notes, many situations benefit from face-to-face interviews, including those in which the interview is long, or includes complicated topics or sensitive questions”. The subject of steering committees attracts a diversity of opinion, and face-to-face interviewing was considered an appropriate means of canvassing it while avoiding a positivist oversight.

We nevertheless sought to structure the interviews so they did not become undirected conversations leading nowhere. Fontana and Prokos (2007, p. 19) noted that in structured interviewing, “all respondents receive the same set of questions asked in the same order” and “The interviewers must perfect a style of ‘interested listening’ that rewards the respondent’s participation but does not evaluate these responses (Converse and Schuman 1974)” (Fontana and Prokos, 2007, p. 20). This was appropriate for our particular RQs, and suggested use of a semi-structured interview which Wengraf (2001, p. 1) noted as appropriate for in-depth interviewing. Barriball and While (1994, p. 330) and Fontana and Prokos (2007) also noted “semi-structured interviews are well suited for the exploration of the perceptions and opinions of respondents regarding complex and sometimes sensitive issues and enable probing for more information and clarification of answers”.

Wengraf (2001, p. 162) noted “Semi-structured interviewing is characterized by an emphasis on relatively open questions. However, you may wish also to put certain closed questions”. Fontana and Prokos (2007) said “the structured interview […] often elicits rational responses, but it overlooks or inadequately assesses the emotional dimension” (Fontana and Prokos, 2007, p. 22). Whitty (2010) noted the influences of emotions in project management behaviour. We, therefore, wished to capture these emotions. We, therefore, decided to use semi-structured face-to-face interviews with a combination of open and closed questions, some of which would directly call for an emotional response.

Question design
Question design was based on the categories of questions used in a management study by Kummerow and Kirby (2013). These categories were evaluation, personal experience and context. Their questions were a mixture of open and closed. The actual questions used in this study were tailor-made for the RQs and were only very loosely based the actual
Kummerow and Kirby's (2013, pp. 542-544) protocol as their investigation occurred within a contained organisational boundary and was more amenable to statistical analysis than the RQs posed here.

For our particular RQs, it was appropriate for the majority of questions to be open, with closed questions being used principally as prompts.

The interview strategy was to first confirm the background/context of the person by determining various classificatory factors, then ask the pre-determined interview questions. The background/context factors were:

- the sector of their organisation (public or private enterprise (G = government, P = private, H = hybrid);
- the area within the sector (SG = state government, LG = local government, SGA = state government authority, M = manufacturing, E = education); and
- the person’s work type = the type of products worked with (I = infrastructure (civil/building/electrical/mechanical), ICT = information and computer technology, including ICT infrastructure, BD = business development).

These backgrounds were considered to cover the predominant local project management cultures.

Semi-structured interview questions were then developed to capture as many perspectives on steering committees as possible. The approach was to have evaluation questions that covered both the extent and nature of these committees before evaluating their operation. The initial evaluation question (Q1) therefore addressed their extent, with Q2 and Q3 exploring the nature of their operation and Q7 examining the variation off this over time. The remaining questions (Q4, Q5 and Q6) explored their method of operation.

A combination of open-ended and closed questions was developed as follows:

Q1. To what extent does your organisation rely on committees?
Q2. What power is given to these committees and how do they exercise it?
Q3. What decision-making responsibilities do these committees have? (These may be different for different committees. If so, list them?)
Q4. How effective are these committees?
Q5. What conflict arises between committees and organisational roles?
Q6. How is this conflict managed/resolved?
Q7. Do project committee roles or mandates vary during the project lifecycle?

The open-ended questions (1–6) were intended to prompt participant discussion. The single pre-determined closed question (7) was designed to explore reasons for any variations over time.

Other closed questions were asked by the way of “impromptu” prompts to either stimulate further observations or clarify meaning when the response was not clear. In the latter cases, a summary or interpretation of the view expressed was related back to the participant for confirmation or correction.

The interviews were expected to take between 60 and 120 min. All interviews were conducted within that time frame, with most taking 60–90 min.

**Sample selection**

As noted above, a qualitative approach was adopted, rendering statistical analysis inappropriate. It was, therefore, not necessary to have a statistically significant minimum sample size, as would be required for the purpose of gaining inductive confidence.
Only people who were both knowledgeable on the topic and held organisational positions where they would be required to implement their knowledge were interviewed. This avoided assessing issues of training and experience. This also conforms to consensus theory which is based on the principle that experts tend to agree more with each other within their particular domain than novices do according to Romney et al. (1986), who also indicated stable results with sample sizes of around six “experts”. We decided to select only people who were all at least a programme manager or head of a project management support office.

The sample was selected so that all the backgrounds considered predominant in the previous section were represented. The criterion was to cover the diversity of possible views rather than to achieve any minimum sample size within all groups. Notwithstanding that, we were particularly interested in the engineering infrastructure/ICT interface which presented the major cultural distinction.

More recently, Guest et al. (2006) have indicated a sample size of 6 to 12 is sufficient where the participants share common experiences, participants are interviewed separately and in private and the questions asked comprise a common domain of knowledge and a similar set of questions is asked of all participants. On this basis, given that we were particularly interested in covering cultural differences between engineering infrastructure and ICT and given the literature review found previous ICT practitioner interviews but none in engineering infrastructure, we set out to interview at least 12 with an engineering infrastructure project background plus at least 6 from an ICT background.

The likelihood of detecting disagreement was increased by selecting the interview sample across the cultural boundaries of discipline and organisation type. Consequently, a range of these were selected; from government and private enterprise, from physical infrastructure and ICT and from consulting and project owner organisations.

The sample location was also considered. The researchers are based in Queensland, Australia, and consideration was given to whether participants would be selected locally or from interstate or overseas. Australia sits at cultural and geographic crossroads between England/Europe, the Americas and Asia. Local members of The Australian Institute of Project Management are heavily involved with the International Project Management Association and local practitioners were involved in development of the first Project Management Body of Knowledge. The Project Management Institute also has a strong local presence. This, together with the ease of global communication, global access to databases and the existence of internationally accepted bodies of knowledge should ensure that worldwide trends influence local participants. It was, therefore, considered that the sample could be selected locally. We also note the findings of Guest et al. (2006) that when sampling within a targeted specific group, adding results from another country identifies few additional factors.

Potential organisations were identified, their agreement obtained and potential candidates approached. In total, 21 experienced project managers agreed to participate and were interviewed, exceeding the requirement for theoretical saturation. Several of those interviewed headed large infrastructure delivery organisations.

Method of analysis and evaluation
The responses of participants were recorded, transcribed and then compared on a question by question basis. The evaluation of RQ1 is straightforward from the perspective that if everyone interviewed indicates the same understanding of the role of steering committees, then confusion is not established and there is then no contest or disagreement identified among practitioners requiring resolution. However, if this is not the case, then confusion over steering committee operation can be considered established. Any differences of view will be reported and analysed, observing themes as they emerge. Those themes will then comprise the confusions that will provide the answer to RQ1. These will then be analysed individually.
RQ2 will be analysed by determining whether the themes/confusions that emerge from RQ1 can be avoided by the committee decision tree model identified in the literature review.

**Data collection and taxonomy of the group of participants**

Interviews were conducted between 13 August 2014 and 3 September 2015.

In total, 21 people were interviewed from seven organisations of which four were in the private sector (two separate consultancies, one multi-national manufacturing company and one educational institution), two from the government sector (a state government department and a local government department) and one which straddles both – a commercialised state government authority. All had offices in Queensland, Australia.

The distribution by industry area was four from private industry (one from each company), 16 from government (seven from state (one of whom was a contracted consultant) and nine from local (one of whom was a contracted consultant) and one was from the hybrid organisation (who was also a contracted consultant).

The distribution of work types engaged in was nine in physical civil infrastructure, six in ICT, one in business development, one in manufacturing, one in academia/buildings and three in multiple work types (two in infrastructure and business development, one in physical infrastructure and ICT).

The full taxonomy of the interviewed group is given in Table I showing the participants (1–21), their organisation (A–G), industry sector, area within that sector and their work type or discipline.

In the following sections, participants are referred to by their number and organisation e.g. 1A or 21F. The abbreviations in the notes section of Table I are also used in places where brevity is advantageous.

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**Notes:** G, government; P, private; H, hybrid; SG, state government; SGA, state government authority; LG, local government; C, consultant; M, manufacturing; E, education; I, infrastructure (civil/building/electrical/mechanical); ICT, information and computer technology, including ICT infrastructure; BD, business development

Table I. Participant taxonomy

Do steering committees really steer?
Note that full transcripts of interviews have not been included in this paper due to word limit restraints.

Results
The results for each of the seven interview questions are reported below and the themes that emerge from them are underlined progressively before being discussed in the following section.

Question 1 (Q1) – Reliance on committees
The interview question asked was “To what extent does your organisation rely on committees?”

The participant responses were assessed to see whether their organisation’s reliance on committees was H – high (or heavy), M – moderate or L – low. 16 were assessed as H, 3 as M and 2 as L. Of the ones assessed as H, six actually said high or heavy, one said “hugely”, one said “a fair bit”, one said “to quite a degree” and one said “too much”. The 16 Hs were from five large organisations – two government, one government-owned corporation and two private organisations. The 3 Ms were from the two government organisations from which other participants’ views were assessed as H. These were both delivering infrastructure and related services for which ICT was a support function and these responses were not from ICT work areas. The two Ls were from a small and a medium private sector consultancy in the infrastructure work area.

The responses revealed an astounding number of committees, leaving the researchers with a general impression of over-governance existing in the practitioner community. 13C said “ICT has been governed to death, honestly. […] The new CIO is purging them. There are 25 committees overseeing things in our ICT area. We think that’s overkill.” One who was not from ICT (2G) referred to having six levels of committees in their organisation. 7C from engineering infrastructure said “It starts from the top and doesn’t stop. There’s the top-level committee and you committee your way down forever […] Every project has to be represented by a PCG (Project Control Group).”

Engineering infrastructure participants reported fewer committees than those in ICT, with several infrastructure participants mentioning that not every project needs or has a steering committee and 11B (G) saying “If they have no purpose, we don’t have them. Where we set one up, we put a lot of effort into making sure it operates properly. Larger projects have steering committees”.

Those from small to medium consultancies did not set up steering committees at all. As 19E said “We rely on committees outside our organisation to be making decisions”. These organisations seemed to leave committees to the government, as 17C noted in saying “I think it’s a public-sector thing”. However, the comments of 1A and 2G here would suggest that the influence has spread beyond the public sector, albeit that the number of levels in one such private sector organisation (1A) was quite controlled whereas another (2G) said “there’s probably at least six levels of committees, constantly reporting upwards”. The smaller private sector organisations appeared not to have been drawn into the difficulties that some committee arrangements can bring. This could have been due to those organisations not being large enough to either need such arrangements or to fail to notice the inefficiency of diluted accountability that introducing them into a short management chain would bring. 19E from a medium size infrastructure engineering consultancy said their committees were “organisation related, not project related and are related to broad specific objectives but are not management”. 21F from a small engineering infrastructure and business development consultancy said “Steering committees are solutions that are thrown at problems rather than using a rigorous approach to the allocation of responsibilities”.

Comments on committee operations raised by participants included 16C from engineering infrastructure noting that “Most committees are either advisory or approve certain things”
and 17C from ICT saying “It just abrogates responsibility. A committee can’t be accountable – only individuals can […] Committees are run by TORs (Terms of Reference) and I think you would use the term responsibilities rather than accountabilities”. 1A from private industry said “The sponsors would make decisions using the committee for advice. The committees never voted. I saw that in government. That was bizarre; I struggle with that concept”. 11B from government infrastructure said “The steering committees are mainly about the outcomes, separate to the outputs. Any of the external people are from part funders. Other government departments are on some”. 8G from government infrastructure said “There are so many programs and sub-programs and fingers in pies that aren’t focused on delivery and outcomes and are more focused on expenditure”.

Several made comments on the existence of committees. 3C from business development said “You can function without committees”. 5D from infrastructure and ICT said “I’ll more commonly engage people as needed […] I won’t have a PSC (Project Steering Committee) all the way through […] For standard capital works I have no PSCs as they are line of business”. 12C from a large engineering infrastructure organisation said “Steering committee is a great buzzword. Everyone has to have one”. 14B said “Small ICT projects may not have a board, just a project exec from the business”. 15B in responding to an interviewer supplementary question “Does every project have to have a steering committee?” said “No […] We have specific project committees and a few program boards”. 20B said:

I have a problem sometimes with people saying we really need to have a steering committee. Do they really need that or to just get a group of people to get together, sort something out and move on […] A lot of them are more working groups […] As soon as you call something a steering committee, everyone feels like they have to stick an Executive Director or a General Manager on it. You just have to challenge it all the time.

One commented on formal Gateway Review Committees, saying “We have stopped doing formal gateway reviews on our projects, although I conduct such reviews informally myself. They were discontinued because things weren’t going bad anymore and our customers didn’t want to pay for them” (16C).

**Question 2 (Q2) – Committee power**

The interview question asked was “What power is given to these committees and how do they exercise it?” Comments of note are extracted below.

The findings indicate that steering committees are potentially useful communication devices with the potential to be dysfunctional. As 21F said “I’m not a fan of committees. I’m a fan of clear governance”. This and other responses indicated that many had also worked through the issues creating the difficulties referred by 21F and reached a workable resolution.

Many acknowledged that their steering committees performed an advisory function. The key to this appeared to be participants considering that it is the people on these committees who can be held accountable rather than the committees themselves (1A). This sentiment was expressed by many others as well. 2G pointed out that committees may have delegated decision-making authority “but only within a framework decided for them”. 3C said “None have authority”. 6C said “They are for collaboration and have responsibility not accountability – that’s with owner and deliverer. Committees have responsibilities but are not entirely accountable”. 7C said:

The only power player is the project owner, the rest are advisors. PCGs don’t make decisions. Project owners make decisions. The PCG is a decision-making group because the decision maker is there. If it meets without the project owner, it’s only advisory and it’s not a governance body. There’s no such thing as a quorum, the project owner is either there or not.
13C said “The project owner or chair is the decision maker and has the highest power. The Senior User and Senior Supplier don’t have any power but the chair listens to what they have to say”. 14B said “For a project board, the project executive has ultimate authority; it’s not a democracy”. 16C said “PCGs are around scope and procurement. PCGs make decisions within bounds […] The owner makes the decision, on advice […] the committee is really advisory even if it’s called decision-making. Generally, there’s consensus”. 19E said “Our committees make recommendations only”.

Eight participants across engineering infrastructure, ICT and business development work areas and across four organisations explicitly mentioned that these committees were advisory relative to the organisational role that had the authority to make the decision.

Some, however, held the opposite view, with 10C saying “Steering committees have full decision-making and financial control” and 12C saying “Ultimate responsibility sits with PCGs as a decision-making group”.

This establishes that that confusion over whether steering committees decide or advise does also exist within the practitioner community. Interestingly, it appeared that the confusion was semantic, as those maintaining that steering committees were decision-making were operating them in the same way as those who said they were not, as evidenced by 12C’s response to Question 5, reported in that section below. This indicates that the conflict between authoritarian and democratic power models/devices been resolved in practice by ensuring that within a bureaucratic or authoritarian structure, these committees have no accountability and are used as advisory communication forums to assist the person with authority at the meeting, who may be its chair, in making decisions.

Other responses highlighted other aspects of committee operation. 20B distinguished between boards and steering committees, noting “Some people call things steering committees that aren’t […] Some maintenance will have steering committees, but it’s not a board […] the terminology is an issue”. 1A said “The committees I saw in government, I don’t know why they were even there […] Some people didn’t even know why they were on these boards”.

Other responses to this question were.

8B said “Whether there are individual project committees depends on scale. Large, complex projects need a project level group”. Several others also noted similarly. 15B said “I’m on one. It’s managed as a decision-making body and meets at milestones and makes decisions to move to the next milestone […] It does make decisions on narrowing options or which options are taken through to the next milestone”.

These responses point to a need for collaboration rather than control and to committees making some process decisions but not making the final commitment to implementation/expenditure.

**Question 3 (Q3) – Committee decision-making responsibilities**

The interview question asked was “What decision-making responsibilities do these committees have? (These may be different for different committees. If so, list them)”

The responses to this question were consistent with the analysis of the previous question, with six (1A, 3C, 13C, 14B, 16C, 19E) stating unequivocally that project steering committees had no decision-making responsibilities. One of these (19E) said “They are used for consultation and as a communication device. We like them to feel like they made a decision”. Another (3C) said:

“I don’t think there’s anybody in their right mind that would set up a committee and give it free range. It’s got to be answerable to someone. I’ve got into a lot of strife allowing these to continue and nipped them in the bud when I realised what I’d left there.”

Only two unequivocally stated that they did have decision-making responsibility (4C and 12C).
The remainder gave qualified answers, indicating some level of awareness of the potential confusion of responsibility with accountability. One said they did but only if the chair was present (7C), indicating that authority and accountability rest with the chair, not with the committee, with 14B noting “a PRINCE2 project board has no decision-making power. The entity doesn’t have power”. Others felt that the steering committees did make some limited decisions. 15B indicated these decisions were within limits, saying that a steering committee “does make decisions [...] If it can’t decide, will get the consultants to proceed with say both options to the point where a decision can be made. It’s more about incremental narrowing down”. 20B made a similar observation in saying:

There are some issues it makes decisions on and some things it can’t approve, but you won’t get approval unless the steering committee has endorsed it, so it does have power. They are there to give comfort to the decision makers.

Others made similar observations. From this and the responses to the other questions, it is evident that terminology regarding the word decision is an issue.

One response to this question mentioned a disciplinary committee that operated “like the rugby league judiciary” (2G), who also said “A committee wouldn’t be dismissed; it would be individual members being reprimanded”. Disciplinary committees will be considered in the discussion section below, as will technical review committees, which were also mentioned by some participants.

**Question 4 (Q4) – Committee effectiveness**

The interview question asked was “How effective are these committees?”

The responses were assessed to see whether they considered the effectiveness of committees was H – high, M – mixed (medium) or L – low. 12 were assessed as H, 7 as M and 1 as L, with 1N/A, saying the question was too broad.

The committee sizes were not asked but some reported their numbers. Some project control groups (PCGs) had the standard PRINCE2 number of three, one mentioned the ideal as “a smallish group of 5-6 supported by a key suite of advisers” (8B) and one referred to a (non-project) committee of 30–40 people (2G).

While participant answers ranged from high to low, their observations were not inconsistent, identifying factors supporting and inhibiting committee effectiveness.

Factors mentioned as supporting committee effectiveness were:

- the members have a genuine interest;
- having a smallish group of five to six supported by a key suite of advisers;
- people understand their roles, members having a common vision on where they are going;
- having a solid TOR with clear scope, role, reporting arrangements;
- “clarity around whether they are advisory or what the nature of the committee is” (3C); and
- support from on high, especially when the project cannot deliver because it cannot get supplies from other parts of the organisation.

Factors mentioned as inhibiting committee effectiveness were:

- a person is just there to feed back to somewhere else;
- people are time poor and delegate their attendance;
- multiple people pulling in all sorts of directions to stop, slow or deviate;
- members who cannot tell me their purpose on the committee;
committees used as a blame smearing activity;
- delivery committees that include stakeholders who should be put off to one side and managed, so they do not obstruct; and
- committees that “haven’t been fitted into the governance arrangements and just exist in the firmament” (21F).

Two participants mentioned the deciding vs advising issue (3C and 21F), corroborating identification of it as an issue by McGrath and Whitty (2013) as well as the affirmative answer to RQ1. The remark by 21F that his views were formed “around the late 70s early 80s when the term steering committee was starting to be used” also corroborates the findings of McGrath and Whitty (2013) tracing the usage of the term “steering committee” in the academic literature back to the early 1980s.

Question 5 (Q5) – Conflict with organisational roles
The interview question asked was “What conflict arises between committees and organisational roles?”

The responses were assessed on a yes/no basis as to whether their view indicated that such conflict existed or not. In total, 11 responses were assessed as N, 9 were assessed as Y and one was N/A, offering no comment.

Many focussed on internal committee conflict rather than conflict with the accountability of organisational roles. Several saw no conflict between committees and organisational roles giving the reason that these committees are not empowered to make decisions (19E, 6C and 9B). Conflicts between committees and organisational roles that participants mentioned were:
- around resources (1A) and money (15B);
- not everyone with a contributing interest being in the room (12C, 20B and 21F);
- committees becoming “zealots driving the organisation in directions it doesn’t want to or have time to go in” (3C), which 2G expressed as “people have misused authority, unintentionally because their personal view differed from that of others” and 4C as “obstructing or second guessing” (4C);
- committees being established to appear to be doing something on an issue the organisation “doesn’t want to deal with structurally” (3C) and “can be part of a piece of laziness on the part of the organisation. You think you’ve got the issue covered because you’ve got a committee. It’s a bit of a political statement” (3C);
- inappropriate TORs, members and/or the chair not understanding their roles (8B, 21F); and
- multiple governance structures that must co-exist – organisational, financial, project – not sitting together harmoniously (7C).

Several of these are symptomatic of the confusion surrounding whether these committees authorise or advise. One response to this question was relevant to Question 2, namely that of 12C in saying:

There’s no vote. It’s not a democracy. The project owner is accountable. There is consultation at a PCG or Board level, but clearly the chair is the person who makes the decision. Does this mean these committees are advisory? No. They are decision-makers, but the ultimate decision is made by that person. You need to have all those people at the table. The committees do overlap with the chair, but the chair has the final decision.

Question 6 (Q6) – Conflict resolution
The interview question asked was “How is this conflict managed/resolved?”
The responses were assessed on whether they indicated the means of resolution was H (hierarchical) or O (other). In total, 16 gave responses that were assessed as answered H and 5 responses were assessed as O.

Many of the 16 whose response was assessed as indicating conflict was managed/ resolved hierarchically (H) said the chair/sponsor/project executive/DG/CEO/CIO decides. Of those whose response was assessed as O (other), apart from 19E, who said “It doesn’t occur”, all gave similar responses indicating some conflict resolution process. This was also indicated by five whose responses were assessed as H, who mentioned the consultation, communication and negotiation aspects of committees and the allocation of risk money.

Several other conflict resolution processes other than hierarchical were mentioned as follows:

- 4C said “stakeholder negotiation” and 21F said “ensuring there’s a discussion with affected parties with view to resolving it”.
- 11B said “Most of this stuff is either relationships or role clarity and mostly role clarity. If there’s no reason to have a committee and there’s someone accountable for it, then don’t have one”.
- 13C said “We offer to facilitate a process. We keep them on track and give them little cheat sheets that talk about emotional maturity (and) sabotage by not listening”.
- 14B said “Alignment of governance with organisational structure is crucial to avoiding all of that conflict”.

Question 7 (Q7) – Committee lifecycle roles

The interview question asked was “Do project committee roles or mandates vary during the project lifecycle?”

The responses were assessed on whether they considered their roles or mandates changed or not, with Y = yes, N = no and M = maybe. Most were explicit requiring little interpretation. In total, 11 gave responses that were assessed as Y, 8 were assessed as N and 2 as M.

Many of those who said “no” responded from the perspective of the part of the organisation they were involved with rather than from the perspective of the full project. 6C made this explicit saying “Not for project delivery”. 7C added “What you do may change but your role doesn’t”. 16C said “TORs are consistent all the way through. The members may change” and 10C and 20B expressed similar sentiment. 17C said “There are certain boards you go to at various points in the life cycle. The PCGs are periodical, the others come in at particular points & we deliver projects and don’t do the total end-to-end project”.

13C said “the same roles will stay […] The types of issues they deal with stay pretty much the same […] We generally don’t get a PCG until the project is all set up. The initiation generally won’t have a PCG”.

The responses to this question were interesting but yielded no additional information affecting the answer to either RQ.

Discussion

There are several themes that emerge from these results, each indicating a confusion existing in the practitioner community and collectively constituting the answer to RQ1. These themes/confusions are listed in Table II.

All six confusions are enmeshed, and all contributed to the differences of views that participants expressed. However, when it came to practical implementation, all participants who were dealing with un-constituted boards or steering committees had reached the same workable arrangements which did not actually allow the command and control
organisational power to be countermanded or dispersed. This effectively recognised the potential for disruption, no matter what contrary or conflicting words they put around it.

The confusions identified in Table II are elaborated below.

C1 – Whether establishing a steering committee is warranted or not
This confusion emerged from the responses to Q1. Some considered all projects needed a SC (7C). However, many did not (11B, 12C, 14B, 15B, 19E, 20B) and from performance monitoring results some of these were claiming, this was not adversely impacting their project delivery and may well have been enhancing it. The most common determinant mentioned was project size, with some of those who did not routinely establish committees saying that they became necessary for large projects. 20B specifically mentioned the constant vigilance required to ensure unnecessary and unproductive committees are not established. The level that this can reach is evidenced by 13C saying there were 25 committees overseeing things in their ICT area. The problem was by no means restricted to ICT areas, but the number reached in that one area was astounding. An expression of the majority collective view would be that steering committees are only necessary for large projects and that in many cases, establishment of a temporary issue resolution or working group is preferable.

C2 – confusion of responsibility and accountability
This confusion emerged from the responses to Q3. These two terms have been defined by McGrath and Whitty (2018) as:

- Responsibility: an obligation to satisfactorily perform a task
- Accountability: liability for ensuring a task is satisfactorily done.

The confusion between these two terms was in regard to dispersion of them, which is dealt with below and the origin of the confusion is then traced back to a particular source.

Dispersion of responsibility
Dispersion of responsibility is not the same as the dispersion of accountability. The two concepts have long been confused but have now been defined with the quite distinct and different meanings given above by McGrath and Whitty (2018) who also confirmed the statement by Cornock (2011) that responsibility can be delegated whereas accountability cannot. Delegation of responsibility is useful and necessary for distributing work.
Dispersion of accountability

It is evident from the responses to Question 6 and also to other questions that committees which decide hierarchically and do not vote, do not disperse accountability. Conversely, a committee that votes does disperse accountability away from individuals to a single accountable, representative entity, where that entity is properly constituted. A corporate board clearly has accountability for the company it directs, and its constitution ensures that no one individual can take complete control of the corporation to the disadvantage of the other owners. There are other circumstances where the dispersion of accountability is advantageous, namely judiciaries/disciplinary committees and appeal committees, as mentioned by 2G.

2G likened his organisational disciplinary committee to a sporting judiciary committee. Sporting disciplinary committees disperse accountability away from both the organisation and individuals within it. This can be useful for demonstrating independence or in protecting and/or supporting the individuals on such committees. However, the matters dealt with do not compromise any organisational authority. Sporting judiciary committees do make implementation decisions, but on behavioural matters only. They also apply a set of pre-determined rules which they have authority to interpret but not to change. They do not commit their parent organisation to any expenditure, resource allocation, organisational change or strategic direction (other than their own operating expenses). Their function is to prevent unsanctioned activity happening, not to initiate anything new. Consequently, having authority to make implementation decisions on such matters does not conflict with the authority of any proactive role in the organisation of which it is a part.

Confusion between the two

There were two participants whose response to Question 2 indicated they viewed steering committees as having accountability. These two participants were in or associated with ICT. Consequently, the principal ICT source was investigated to see if it might contain the source of this confusion. PRINCE2 does not use the term “steering committee” but it does note in Section 19.10 that “the steering group is equivalent to PRINCE2’s Project Board” (Murray, 2009) and in Section 5.2.5 it notes that “PRINCE2 recommends that for completeness the Project Board should include representation from each of the business, user and supplier interests at all times” (Murray, 2009). Section 5.3.2.2 lists the first duties of the Project Board as “Being accountable for the success or failure of the project in terms of the business, user and supplier interests” (Murray, 2009). It also states under the heading of authority that “the Project Board is accountable for the project” (Murray, 2009). However, having asserted this accountability, it then goes on to say under the heading of “executive” that:

Although the Project Board is responsible for the project, the Executive (supported by the Senior User(s) and Senior Supplier(s)) is ultimately accountable for the project’s success and is the key decision maker. The Project Board is not a democracy controlled by votes. The Executive is the ultimate decision maker (Murray, 2009).

This is clearly internally contradictory and while the latter statement distinguishes correctly between accountability and responsibility as defined above, the earlier statements confuse these concepts. The contributing committee roles and the committee itself have responsibilities but not accountabilities.

This perpetuates the mistake of the 1980s identified by McGrath and Whitty (2013) long after the historical motivation of disruption to existing power structures has been forgotten. As concluded earlier, if a committee can decide something but cannot authorise implementation, then it is advisory. A proper board can authorise the implementation of decisions. Most PRINCE2 project boards cannot do this and so the label is a misnomer.

This confusion has become “generic” “best practice” through being marketed as such. OGC self-declares “Since 2000 the Office of Government Commerce (OGC), former owner of Best
Management Practice, has been the custodian of the portfolio on behalf of the UK government
[...] The Best Management Practice portfolio covers a range of best management practices referring to PRINCE2 MSP and other offerings (Office of Government Commerce, 2017). AXELOS has continued declaring PRINCE2 and other products as “Best Practice Solutions” (AXELOS, 2017). This provides an example of a practice thought to be “best” and generic within the confines of one field, being applied universally to circumstances where it is not generic. Project Coordination Group would be a much more appropriate name for a PRINCE2 committee than steering committee or board and such a change to PRINCE2 would be highly desirable.

C3 – Confusion between authorising and deciding
This confusion emerged from the responses to Q3 and Q5 and warrants further analysis. The word “decide” is defined in the Oxford Dictionary as “come or bring to a resolution in the mind as a result of consideration”. We therefore need to carefully consider who actually decides what. The committee may collectively resolve (= decide) what is best and the chair (or other person with authority, who may be present or not) will decide whether that resolution will be implemented. Of course, the whole point in a collaborative environment is to reach agreement on action that the person with authority will have no hesitation in implementing. But this nevertheless masks the reality of organisational power; that authority can over-rule a recommendation. In essence, this is no different to deciding to take personal action on a difficult matter opposite to what one considers to be “best” due to prevailing circumstances such as lack of power to do so. There are two decisions, one to come to a view on what is best and another on how to implement it, as any activist group attempting to influence authority would attest. The second requires having the authority to implement.

Those participants who considered that their project steering committees had no decision-making power were looking at their lack of organisational authority to implement the position they agreed to, making their decisions simply recommendations. Those who considered these committees made decisions were ignoring the authority to implement.

The project steering committee, therefore, provides a forum that includes:

1. a chair or other person who has the authority or power to authorise action for their project or organisation; and

2. members who can influence the chair’s desired outcomes due to their power to authorise action within their own contributing organisation – and who can witness what is happening and feel some sense of ownership due to their participation.

Even though the committee may collectively determine a feasible course of action, the members, apart from the authorised person, have no authority to decide to implement on behalf of the project or organisation. As many said or implied, there is no vote. The appearance of such a steering committee being able to authorise (decide to implement) is therefore an illusion which is supported by such decisions being published through the medium of committee minutes.

It is, therefore, necessary to be quite specific about where the authority to implement decisions actually lies.

A steering committee member can, of course, still gazump an implementation decision by failing to implement it within their own organisation, but that is a matter of politics and organisational tactics which we are not dealing with here.

C4 – Confusion between deciding and advising
This confusion emerged from the responses to Q2 and Q4. Several participants mentioned technical review committees and exploring their modus operandi is useful in understanding this confusion. Technical or quality review committees generally decide whether technical or quality standards of project outputs have been met or not. They then advise the higher entity
that has the authority to decide on whether a project progresses or not. When a project output is not accepted by such a review committee and the project manager arranges remedial work, the project manager is accepting that whoever has the necessary power will agree with the committee and will require its decision to be implemented; so that committee only appears to have the authority to act on its decision. The authority actually lies with the person or entity the committee reports to. If a committee can be over-ruled, it is an advisory body, not a decision-making body. Even if the controlling person is on the committee, this does not change anything as “accountability cannot be delegated” (Cornock, 2011) and rests with that person. There is a clear distinction necessary between committee members making their own decisions on how to approach matters before the committee and the committee itself actually having the authority to decide, i.e., to implement whatever conclusion it may come to.

In the circumstance where a recommendation of such a committee threatens entity reputation or survival, it can be overridden, and the recommendation ignored or modified. Business then proceeds through committee members either having their objection recorded or accepting the possible future liability consequences if they do not feel able to have their objection so recorded. Accountability for knowing sufficient to be able to form a view may well rest with committee members, but that is a different accountability with a different higher entity, such as legislation, professional body or public opinion. So, there are categories of decisions and making internal decisions does not make the committee itself a decision-making entity.

Participants mentioned numbers of other committee types: project, programme and other name boards, PCGs and working groups. The names did not necessarily indicate whether they were steering (making decisions) or not. Various committee types can have various functions; some are responsible for making and implementing decisions (such as company boards of directors), some contain the person who makes decisions thus giving the appearance that the committee has the authority to implement its decisions when it does not (some project committees e.g. PRINCE2), some make and implement decisions on quite limited, specific matters (judiciary committees), some make recommendations on matters that the person they report to has to think very carefully about not accepting (technical standards/quality review committees) and some simply provide a convenient forum for coordination. These committees all require their members to make internal decisions to be able to provide advice, but that does not mean their committees are decision making for the organisation.

C5 – Confusion between steering committees and boards
This confusion emerged from the responses to Q2. Corporate boards are legitimately constituted to make implementation decisions by voting. As shown above, project steering committees that are not managing joint ventures are not. They are designed as a means of communication and to provide a forum to facilitate the person with authority making decisions. Labelling them as boards is therefore misleading and risks inducing committee members and others into the delusion of thinking that the committee itself has the authority to implement. It also attempts to artificially inflate the importance of these committees by association of their name with corporate boards.

C6 – Confusion between democratic and authoritarian power models/devices
This confusion emerged from the responses to Q2. The practitioners interviewed had dealt with the conflict between authoritarian and democratic power models/devices by ensuring that within a bureaucratic or authoritarian structure, these committees had no accountability and that they were used as advisory communication forums to assist the person at the meeting with the authority, who may be its chair, in making decisions. Nevertheless, some held to the conceptualisation that they were decision-making. This has been discussed and resolved above in considering C2.
Applicability of the committee decision tree model

The common implementation solution that practitioners had arrived at, with their steering committees being subject to direction of the chair and therefore not actually making decisions to implement, corresponds with the result of applying the model. True steering committees that slip straight down the left-hand side are joint-stock company boards of directors and judiciaries including juries. Even where an appeal mechanism exists, some penalty or sanction or threat of same will remain until or unless overturned as the committee does have authority and can authorise. Any joint venture (JV) arrangements, including alliances also slip straight down the left-hand side. Note that this accords with the observation of Muller et al. (2017) noted in the literature review that a steering group is essential if a project involves several organisations or enterprises. Voting within these arrangements generally operates on an “all have veto” arrangement rather than a simple majority, to avoid relative strength or contribution issues, with discussion continuing until a resolution is reached that all can live with. This is a democratic device where a voting arrangement other than a simple majority is pre-agreed. Committees other than judiciaries and JVs within a bureaucracy cannot slip down the left-hand side. They may seem to operate like a JV, but the key difference is that their members can be directed, unlike a JV or company board.

C1 dealing with whether it is necessary to have a committee at all is accommodated by the first question in the decision tree. The second box addresses C4, the deciding vs advising question. The third and fourth boxes address C3 regarding where the power to authorise lies. The whole model deals with C6, resolving the democratic vs authoritarian device potential conflict, by proposing committees as forums for discussion and consultation. C5 is addressed by the absence of the word “board” from the model, but this does not preclude any proper steering committee that can actually authorise being labelled as a board. The whole model also deals with C2, ensuring that accountability is not compromised in the delegation of accountability.

The model therefore provides a clear process for determining whether the committee decides or advises and it also ensures there is no conflict between the democratic and authoritarian devices by requiring committees to be established as advisory if there is any potential conflict with organisational roles or if there is an organisational role or committee that can over-rule it.

It is therefore evident that application of the model to check a committee’s TOR before establishment can avoid the confusions and governance conflicts identified in RQ1. This confirms that the answer to RQ2 is positive. Note that the model could also be applied to existing committees to determine whether their role may be causing any governance conflict.

Observations

It is noteworthy that none of the true steering committees (company board, JV board, judiciary, disciplinary committee, appeals committee) actually have the label steering and that any change of name would be most unlikely as their other names sound more important anyway, as well as actually describing what they actually do. This leaves practically nowhere that the steering committee title is actually useful and leads to the conclusion that most, if not all committees labelled as steering do not and cannot actually steer.

It seems that practitioners have become comprehensively confused with imprecise definition and labelling leading to inestimable loss of productivity. The extraordinary waste is referred to by many participants in statements such as the 25 ICT committees mentioned by 13C in response to Question 1 and the vigilance needed to stop the same thing happening in engineering infrastructure mentioned by 20B in response to Question 1.

The working arrangements that the participants had arrived at reflect the reality that committees that are not constituted to authorise can only recommend. Both recommending and authorising, involve making decisions. In some areas where beliefs to the contrary have become entrenched, such as in ICT areas following PRINCE2, it requires a paradigm shift to shed that erroneous view of “best practice” and recognise that there are only very limited
circumstances within a bureaucracy where committees can be established that can actually steer – and this is on matters which are also very limited.

It would benefit the clarity of governance if use of the terms steering committee and board were to disappear from project usage for circumstances other than where there are joint funding partners, such as alliance delivery contracts or planning studies of areas with overlapping geographical jurisdictions and joint funding arrangements. And judiciaries are not referred to as steering committees anyway.

The remaining committees are advisory and would be more appropriately labelled coordination committees, which for projects would have the same acronym as some currently use, namely PCG, with the C denoting “coordination” rather than “control”. That label sounds suitably important, befitting the communication role they play, but without misleading anyone through loose terminology into thinking they do something that they do not and what’s more cannot. It also avoids puffing up their importance with a more important sounding governance label. It describes much more accurately what they do within the power structure of a bureaucracy.

**Limitations and future research**

The limitation of this work is that it is based upon a sample of organisations and industries in one state in one country. While Australia does sit at a cross-road between England/Europe, the Americas and Asia, and while global communication, global access to databases and the existence of internationally accepted bodies of knowledge mean that worldwide trends should be picked up in any local study, there is no guarantee of that.

During this study, data were also collected on project governance and the exercise of power and these will be analysed separately.

Future research could be conducted in other geographic locations. Research could also be conducted on the impact of committees being labelled as steering committees or boards when those committees have responsibility only and cannot have accountability.

**Conclusion**

This paper has documented the collection and analysis of data from experienced practitioners concerning steering committee roles. It found that, not only was confusion present, there were six different ways in which it arose. It also found that while there was contention over terminology, the practitioners interviewed had nevertheless implemented common governance arrangements which were appropriate to their steering committees being advisory; they were simply unable to articulate that agreement due to the confusions identified. This arrangement was that the project steering committees recommended rather than authorised, and simply provided a forum for the person having authority (the power to implement) to reach a conclusion upon what to do.

It was also pointed out that this leaves practically nowhere that the steering committee title is actually useful. The answer to the question posed in the title of this paper is no; committees labelled as steering that are established within an authoritarian chain of command do not and cannot actually steer. It was noted that joint ventures will generally be labelled as boards rather than steering committees and that disciplinary committees do have the power to authorise penalties on individuals for behavioural breaches within the organisation without diffusing managerial accountability and are given labels other than steering that better reflect their purpose.

A previously developed model to avoid internal conflict within bureaucracies was examined and then confirmed. The only committees that get down the LHS of this model are those that can authorise, such as company boards, JVs and disciplinary committees. This model was recommended for use in checking for governance conflicts in both existing and proposed committees.
Specific changes were recommended to the PRINCE2 governance model regarding correcting the confusion of accountability with responsibility and ceasing to describe committees that cannot authorise activities as boards. It was also recommended that such committees be established as project coordination groups, which has the same abbreviation as project control groups PCGs, leaving an existing common acronym in place, with a different middle word.

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Further reading

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A systemic inquiry into the delay factors in South African electrical distribution projects

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Abstract
Purpose – The purpose of this paper is to explore the delay factors in South African electrical distribution projects and demonstrate the interlaced relationship between the identified project delay factors.

Design/methodology/approach – This research employs interactive management (IM) methodology to construct a model achieving the research purpose. The IM methodology is anchored in the soft systems thinking. Its inquiry process mainly comprises four phases: idea generation, idea clarification, idea structuring and interpretation of the structured ideas. The IM methodology allows the relevant stakeholders to collaboratively develop a digraph displaying the interrelationship among the system elements.

Findings – The participants of the IM session structured a systemic model showing that a loop comprising three factors is the driver leading to the delays in the electrical distribution projects. The three delay factors in the loop are "poor communication," "poor planning" and "project scheduling not properly done".

Originality/value – The findings show that a loop comprising three delay factors is the driver leading to the project delays. This result is different from the outputs of the commonly used approaches. The three identified root causes serve as the starting point for eradicating delays in the electrical distribution projects.

Keywords Strategic management, Stakeholder engagement, Soft skills

Paper type Research paper

Introduction
"Project delays" are defined as the time overrun either beyond completion date specified in a contract or beyond the date that the parties agreed upon for delivery of a project (Marzouk and El-Rasas, 2014). Project delays can easily occur and lead to a negative impact on the project, such as cost overrun, poor quality and lack of safety (Luu et al., 2015). If project costs or schedule exceed their planned target, the customer satisfaction would be compromised. Project delays have a devastating effect on contractors, clients and consultants in terms of growth in adversarial relationships, mistrust, litigation, arbitration, cash flow problems and the general trepidation of one another (Kaliba et al., 2009).

Delays in electrical engineering construction projects are common phenomena in South Africa. The apprehension about project delays materialize in the electrical construction projects as well, such as community protests due to poor service delivery, loss of revenue to customers due to inability to expand their operations (DoE, 2015a), and renewable energy not realised as the result of no network capacity to connect independent power producers (DoE, 2015b).

Some researchers, such as Mulla and Waghmare (2015), Marzouk and El-Rasas (2014), Doloi et al. (2012), Albogamy et al. (2012), Luu et al. (2015), Fugar and Agyakwah-Baah (2010), Baloyi and Bekker (2011) and Sunjka and Jacob (2013), have investigated the types of delays encountered from the initiation to close-out phases of the projects in various regions. These researchers collected data for their research studies by using questionnaires from the target population, mainly contractors, consultants and clients. Their studies enumerate the identified delay factors and see them as independent parts. This idea corresponds to analytical thinking where system components are broken into smaller parts for a better understanding without taking cognisance of the whole system (Nicholas and Steyn, 2012). The pattern of the ripple effects agitated by the delay factors and the interdependence between the delayed factors are not the focal point of the common approaches.
Aligned with systemic thinking, this paper upholds that knowledge is subjective (Flood, 2010). Systemic thinking embraces soft systems approaches. On the one hand, it embraces the conventional ideas of systems thinking, such as the concepts of interrelatedness, non-linear relationships, asymmetry, emergence and so forth. On the other hand, it recognises that cognitive complexity is a major factor leading to the escalation of dissonance in managerial problems. When observers capture the same signal, they interpret the signal in a different way. The limitation of mental power could further exacerbate the complex situation. People view the problems through the lens with which they are familiar. The pluralistic nature of problem contexts suggests that soft systems approaches are adequate for dealing with the complexity stemming from people.

This paper demonstrates how a soft systems approach called interactive management (IM) methodology (Warfield and Cardenas, 2002) was used for identifying the delay factors in South African electrical distribution projects. IM can be applied to solve complex problems or situations that cannot be solved easily using the normal problem-solving processes (Warfield and Cardenas, 2002). It is noteworthy that IM Inquiry is not aimed at establishing universal laws. The IM mainly comprises four phases: idea generation which entails the identification of system elements from relevant stakeholders, clarification of identified system elements, idea structuring which entails structuring a digraph illustrating interrelation of system’s elements and interpretation of structured model. These phases take cognisance of communication amongst stakeholders to yield positive learning about the problem situation.

The paper starts by giving an overview of the backgrounds to the study regarding the factors causing the late delivery of electrical distribution projects in South Africa. The works previously conducted in different countries and regions regarding the identification of project delay factors will be presented. Following the literature review, this paper briefly explains IM methodology and its systemic nature anchored in the soft systems thinking. They last part illustrates how IM was applied to structuring project delay factors for an electrical distribution project at an operating unit. IM’s output manifests a holistic picture of the issue in question based on the relevant stakeholders’ consensus. The model generated through the IM inquiry is different from the output of other surveyed approaches.

**Backgrounds to the study**

South Africa owns the electricity network comprised of more than 300,000 km kilometres of power lines, 27,000 km of transmission grid and over 7.5m electrification connections (DoE, 2015a). The electricity network generates, transmits and distributes electrical power to South African industrial, agricultural, commercial and domestic consumers. Providing efficient, effective and sustainable operation of electricity supply infrastructure, promoting the use of renewable energy sources and energy efficiency, and facilitating universal access to electricity for South African consumers is the mandate of the state (Government Gazette, 2006).

However, South African consumers are experiencing frequent load shedding due to the imbalance between generation capacity and load demands. The power shortages are related to the increased load demands as a result of many years of economic growth and the provision of electricity to townships and rural areas that were not connected to the national grid many years ago (DoE, 2015a). The Department of Energy (DoE) has collaborated with the electricity suppliers and municipalities to initiate and implement various electrical engineering projects called distribution projects, to alleviate the power shortage problem.

The electrical distribution projects are classified into five categories: strengthening projects, refurbishment (reliability) projects, direct customers projects, infills projects and electrification projects (Eskom, 2015). These high priority projects still encounter severe delays which negatively impact South African economic growth (DoE, 2015a). For example, strengthening projects are defined as projects that are initiated to upgrade the capacity of
existing and new substations, high voltage (HV) lines, medium voltage and low voltage distribution lines (Eskom, 2014). The Orlien Karats HV line project was initiated in 2013 to upgrade the capacity of the HV lines between Orlien and Karats substations. This project has been delayed for more than four years due to servitude agreements with land owners (Eskom, 2017). The delay in the delivery of this project has resulted in the late connection of independent power producers to the national grid. The design is in the process of finalisation to deviate the HV lines from the original routes, and the project will only be constructed and commissioned in 2018 (Eskom, 2017).

The National Energy regulator of South Africa released the findings of an audit that was done in 2011 into 11 major electrical distributors in South Africa, in 2007. Only 15 per cent of the electrical networks were found to be at an acceptable state (DoE, 2015a). The refurbishment projects are aimed at monitoring and maintaining the electrical network to ensure the provision of excellent quality of electrical supply. However, the implementation of refurbishment and maintenance projects has been very slow.

The electrification projects are initiated to increase access to electricity of rural households in villages or rural development plan houses in the townships, schools and clinics in various provinces. However, electrification projects are still completed very late. For example, Bathlaros electrification project was initiated in 2015 to connect 600 households to the national grid (Eskom, 2017). This project has been delayed for two years because there was no capacity on the electrical network to connect these households (Eskom, 2017). This project was dependent on the strengthening of Maruping 22 kV lines. The project was not constructed and commissioned until 2017 (Eskom, 2017).

Infill project is an electrification of some households in an already electrified area (DoE, 2010). These houses might have been omitted because they were not there when the area was originally electrified (DoE, 2010). These projects are handled differently using short processes. South Africa is still failing to deliver these projects on time which results in various consequences, e.g., people connecting themselves illegally to the national grid (DoE, 2015a).

The direct customer projects are initiated by various customers through the application processes (Eskom, 2014). The customer would basically specify all power supply requirements in the application form. The industrial customers that would normally apply for power upgrades are Mines, Transnet, Sasol, etc. The severe delays materialized in the delivery of direct customer projects. For example, an operating unit carried out a direct customer project for a mining company. This project has been delayed for five years and the mine cannot expand its mining operations (Eskom, 2017).

The illustrated delays in distribution projects signal the need to eliminate the factors causing delays so that South Africa can fulfil its mandate to provide efficient, effective and sustainable electricity to South African consumers. Prior to eliminating the factors causing the project delays, several questions have to be answered: what are the factors causing delays in distribution projects? Should resources be invested in eradicating all of the identified delay factors? Are there high leverage points where interventions can achieve greater effectiveness in rectifying the delays?

Some studies have been done to investigate this common problem. The next section briefly reviews the prevailing approaches adopted for investigating project delays. Their underpinned ideas and limitations will be discussed.

The studies on project delays

Various factors causing project delays have been identified through the studies previously conducted in different countries and regions. Baloyi and Bekker (2011) designed a questionnaire that was distributed to consultants (24), contractors (20) and clients (16) involved in the 2010 World Cup stadium construction sites in South Africa. The questionnaires comprised 19 potential factors causing cost overruns and 34 potential factors
causing delays to be ranked by the respondents. They analysed the results using Relative Importance Index (RII) formula used by Aibinu and Jagboro (2002) and Chan and Kumaraswamy (1997) and found ten major factors causing delays during the construction of South African stadiums: incomplete drawings, design changes, clients’ slow decision-making, late issue of instruction, shortage of skilled labour, poor planning and scheduling, labour disputes and strikes, shortage of manpower, orders changed by the client during construction, poor information dissemination and delay in work approval. Corresponding to the use of questionnaire surveys and RII to identify the delay factors, Tafazzoli and Shrestha (2017) used literature reviews to generate the common causes of delays in US construction projects. Subsequently, they conducted a nationwide questionnaire survey based on the generated common delay factors and use the RII to rank the delay factors. Their findings show that “excessive change orders” is the most important delay factor. Durdyev et al. (2017) used a questionnaire survey and the RII to rank the causes of delay in Cambodia construction projects. They conclude that the “shortage of material” is the most important factor. Adeyemi and Masalila (2016) adopted interviews and literature reviews to solicit the delay factors for a questionnaire survey to investigate the delay factors in Botswana construction projects. The RII analysis reveals that “contractor’s improper planning” is ranked first among the identified delay factors. Zewdu (2016) adopted literature reviews to collate the delay factors for designing a questionnaire for surveying the experienced practitioners in the Ethiopian construction sector to rank the causes of delay. Zewdu also used RII to rank the identified delay factors. The result shows that “cash flow problems” is the most important factor causing delay. Arantes et al. (2015) identified 47 causes of delays reported in the literature to investigate the delay factors in Portuguese construction projects. Subsequently, they administered a questionnaire survey and used RII to rank the identified delay factors. They conclude that “slow decision making” is the most important factor causing delays in the Portuguese construction industry. Seboru (2015) classified the delay factors reported in literature into 25 categories to administer a questionnaire survey to investigate the factors causing delays in road construction projects in Kenya. Through the RII analysis, “payment by client” appears to be the top factor causing delays. Muhwezi et al. (2014) identified 81 delay factors through literature reviews for administering a questionnaire survey to assess the factors causing delays in Ugandan construction projects. They use RII to analyse the identified delay factors. The result shows that “delay in assessing changes in the scope of work by the consultant” is ranked first among the identified delay factors. Gardezi et al. (2014) reviewed 50 projects and identified 27 factors causing delays in Pakistan construction projects. Based on the identified 27 delay factors, they designed a questionnaire to survey the professionals in Pakistan’s construction industry and used RII for analysis. They discovered that “domestic issues” ranked first among the identified delay factors. Ahmed et al. (2014) focussed on the factors causing cost deviation in construction projects. They also designed a questionnaire based on literature reviews and workers’ experience and used RII to analyse the identified factors. They conclude that “change orders by owner” is the most important factor causing cost overrun.

Sunjka and Jacob (2013) conducted a study on significant causes and effects of construction project delays in the Niger Delta region in Nigeria. They designed a questionnaire on the groupings of 38 causes of delay factors and 8 effects of delays, identified from the literature. The factors were categorised into client-related issues, contractor-related issues, labour- and equipment-related issues, material-related issues, community-related issues, contractual-related issues and external issues. Their research reveals that the six most important causes of project delay in the Niger Delta region are late identification and resolution of drawings, specification errors and omissions by the consultants, delay or non-payment of compensation to the communities, selection of inappropriate consultants and contractors by the clients, weather conditions and lack of community buy-in.
Fugar and Agyakwa-Baah (2010) investigated the cause of delay of building construction projects in Ghana to determine the significant ones according to each of the project participants (clients, consultants and contractors). They collected research data by using two methods: first by non-structured interviews of 15 key role players involved in the implementation process selected from non-probabilistic snow ball technique, and second by questionnaires incorporating 32 causes of identified problems. They found that the most significant causes of delays in Ghana were delays in honouring payment certificates, underestimation of project cost, underestimation of the complexity of projects, difficulty in accessing bank credit and poor supervision. Amoatey et al. (2015) also conducted an investigation associated with the delay factors in Ghanaian construction projects. Their research objective is to assess the causes and effects intensity of delay factors. However, the delay factors are generated through summarizing the extant literature. They summarise 37 delay factors and classify them into ten categories. The summarised delay factors are used for the questionnaire survey to investigate the causes and effects intensity of the identified delay factors.

Luu et al. (2015) developed a questionnaire to assess the perceptions of the parties involved in government projects on the impact of delays in Vietnam. The delays factors were ranked according to the value of their mean. The factors with mean value exceeding 3.5 represented a fairly high agreement of the respondents. Luu et al. (2015) found that the most significant causes of delay were information delays, and lack of information exchange, incompetent owner, incompetent supervision consultant, inadequate contractor’s human resources and difficulties in financing the project by owner and incompetent project management consultant. Echoing Luu et al. (2015), Mydin et al. (2014) designed a questionnaire embodying the delay factors identified through literature reviews to investigate the causes of delay in Malaysian construction projects. They also adopted a mean score to rank the delay factors. Their survey result shows that “weather conditions” is the top factor causing delays. Aarseth et al. (2016) used questionnaire surveys to rank the challenges facing Norwegian projects among 16 factors. The questionnaires were distributed through Project Norway. They used an average index, whose major component is the average score of the respondents, to rank the challenges. They concluded that “scope changes” is the most challenging factor, followed by “decision process” and “organisational complexity”.

Mulla and Waghmare (2015) conducted surveys to identify the causes of project delays in Indian construction projects. They collected research data by interviewing the officials of the construction industry and found that the time and cost overruns of projects were mainly due to: inaccurate estimate of time and cost, faulty design, land acquisition problems, poor bidding, irregular flow of finance, delay in payment for work, deficiencies in management, delay in making a decision by client, lack of coordination between different parties involved and change in work scope. Corresponding to Mulla and Waghmare’s (2015) approach, Zidane and Andersen’s (2018) research also explored the semi-structured interviews to identify the delay factors in Norwegian construction projects. Zidane and Andersen’s objective is to compare the delay factors in Norwegian construction projects to the universal delay factors derived from the literature review. However, their qualitative analysis of the transcripts shows that there are 11 major delay factors, ranging from the “poor planning and scheduling” ranked in the first position to the “user issues” ranked in the 11th position.

Doloi et al. (2012) investigated the cause of delay on construction projects in India. They modelled the delay factors to identify the most significant ones using linear regression model. The forward stepwise was used to formulate the regression models. Their study shows that the causes of delay were due to: slow decision from owner, rework due to errors in execution, poor site management and supervision, consultants or architect’s reluctance to accept change and poor labour productivity. Kim et al. (2016) designed a questionnaire to explore the delay factors in hospital projects in Vietnam. The questionnaire comprises 35 delay factors derived from the previous studies.
However, they used Cronbach’s $\alpha$ to vet the identified delay factors. The 33 remaining delay factors were entered into the questionnaire survey. Their findings show that “financial difficulties of the owner” is the top delay factor.

Marzouk and El-Rasas (2014) investigated the causes of delays in Egyptian construction projects and designed a detailed questionnaire comprising 43 delay factors retrieved from the literature which were grouped into seven categories: owner-related, contractor-related, consultant-related, material-related, labour- and equipment-related, project-related and external-related. They concluded that the most significant causes of delay in Egyptian construction projects were finance and payments of completed work by owner, variation orders, changes of scope by owner during construction, effects of subsurface conditions, low productivity level of labour, ineffective planning and scheduling of project, difficulties in project financing by contractor.

Albogamy et al. (2012) identified 63 causes of delays, derived from the previous studies and literature review, and used them as the template to investigate the project delays in the Kingdom of Saudi Arabia. They classified the causes into four major categories such as owner/client-related factors, contractor-related factors, consultant-related factors and external factors. They used an importance index formula, which was adopted by Assaf and Al-Hejji (2006) and Marzouk and El-Rasas (2014) to rank each delay factor associated with construction projects in the Kingdom of Saudi Arabia. They found that the most significant causes of delay were the low performance of the lowest bidder contractor in the government tendering system, delays in sub-contractor’s work, poor qualification, skills and experience of the contractor’s technical staff, poor planning and scheduling of the project by the contractor, delay in progress payments by the owner. Corresponding to the use of important index (IMPI) to rank delay factors, Oshungade and Kruger (2017) used desktop study to elicit the causes of delay in the South African construction industry and administered a questionnaire survey based on the identified delay factors. They also used IMPI, the product of frequency index and severity index, to rank the identified delay factors. Their findings reveal that “strike” is the top factor causing delays in the South African construction industry. Bagaya and Song (2016) administered a questionnaire survey to investigate the causes of delays in public construction projects in Burkina Faso. The delay factors in their questionnaire are derived from literature reviews. Through the importance index analysis, they conclude that “financial capability” is the most important delay factor. Bekr (2015) identified delay factors from literature for running a questionnaire survey to rank the identified delay factors for the public construction projects in Iraq. The importance index analysis reveals that “security measures” is the top factor causing delays. Rahman et al. (2014) collate the delay factors reported in the literature to design a questionnaire survey for ranking the delay factors in Bangladesh construction projects. They use importance index to rank the identified delay factors. Their findings show that “price of construction materials increased very rapidly” is the most important factor. Akogbe et al. (2013) used interviews to solicit delay factors for a structured questionnaire survey for investigating the causes of development construction project delays in Benin. They adopted importance index to rank the identified delay factors. The result shows that “financial capability” is the top delay factor.

The reviewed approaches to studying project delay factors are not exhaustive. For example, Amandin and Kule (2016) focussed on the relationship between cost overrun and time overrun in Rwandan construction projects. A by-product of their research is the identification of delay factors. They simply used the frequency count to rank the delay factors derived from documentary reviews and questionnaire surveys. Their findings reveal that “delayed payment” is the most important delaying factor. Elawi et al. (2015) also used the frequency count to rank the delay factors in infrastructure projects in Saudi Arabia. The delay factors are identified through the owner’s perspectives in 49 cases. The top delay factors
factor is “land acquisition”. Saeb et al. (2016) used a variant of multi-criteria decision making to rank the delay factors in the construction projects of a steel company in Iran. They conclude that “inflation and price change” is the most important delay factor.

Some project delay factors are common among different research studies conducted by Baloyi and Bekker (2011), Sunjka and Jacob (2013), Fugar and Agyakwah-Baah (2010), Luu et al. (2015), Mulla and Waghmare (2015), Doloi et al. (2012), Marzouk and El-Rasas (2014) and Albogamy et al. (2012). For example, design changes or variations were identified by the majority of the researchers. However, through the literature study, it has also been noted that some causes of delays identified by various authors have been found to be unique to the projects that were surveyed. The identified top delay factors range from “excessive change orders” in the USA; “slow decision-making” in Portugal; “low performance of the lowest bidder contractor in the government tendering system” and “land acquisition” in Saudi Arabia; “delay in assessing changes in the scope of work by the consultant” in Uganda; “incomplete drawing” and “strikes” in South Africa; and “financial difficulties of owner” in Vietnam among others.

The reviewed literature exhibits certain features in the adopted approaches in investigating the project delays. First, the factors included in the inquiry are reduced to a desirable scope. For example, Sunjka and Jacob (2013), Marzouk and El-Rasas (2014) and Albogamy et al. (2012) limit the identified delay factors to those in previously completed studies. The participants are only allowed to expose themselves to the predetermined scope of delay factors. Doloi et al’s (2012) use of regression analysis is another example of narrowing down the variables to the scope of the researchers’ interest. They only analyse the relationship between the variables of interest. The relationship in focus between the identified delay factors can be encapsulated by the relationship of “more important” in the adopted techniques RII, IMP.I, Likert scale questionnaire surveys, or interviews. The interrelation of interest between system elements is whether delay factor A is more important than delay factor B. If the delay factor A is more important than delay factor B and delay factor B is more important than delay factor C, the investigators infer that delay factor A is more important than delay factor C. Based on this algorithm, the delay factors are ranked. However, these predominant ideas did not further question why delay factor A is more important than delay factor B. Is the reason that factor A is more catastrophic because factor A can give rise to factor B? Second, the employed approaches assume that the summation of parts is equal to the whole, a reductionist paradigm conceiving problems as the composition of independent parts. For example, Fugar and Agyakwah-Baah (2010) and Mulla and Waghmare (2015) use interview to elicit itemised project delay factors, assuming that the combination of the itemised delay factors accounts for the whole. The ranking process used by Luu et al. (2015) and Baloyi and Bekker (2011) see the identified factors as independent parts. The average score rated by the respondents for each factor denotes its intensity of causing delay. This conviction does not embrace the interplay between the delay factors. Third, their approaches rarely promote interaction among the participants, e.g., the questionnaire survey carried out by Fugar and Agyakwah-Baah (2010) and Mulla and Waghmare (2015). In their research, humans are seen as subjects. Interaction, dialogue and mutual understanding between the stakeholders are subordinate to the search for universal laws. The level of consensus that can be achieved by the conventional approaches is questionable.

This paper echoes systemic thinking, upholding the existence of interlaced relationships between system elements and the interpretive nature of knowledge (Flood, 2010). It is different from the foregoing three attributes prominent in the conventional approaches. Enhancing consensus and learning are at the heart of soft systems approaches. IM is a strand of soft systems approach. Its inquiry process is interpretive and interactive. The algorithm of IM embraces logic and the reasoning through relationship. The IM can be used...
to investigate different systems’ relationships. As seen in the foregoing discussion, the prevalent relationship investigated in the literature is whether delay factor A is more important than delay factor B. However, the common approaches did not further explore why a factor is more important than another factor. The IM inquiry can further explore a different relationship underpinning that one factor is more important than another factor, e.g. the relationship of “leading to”. If delay factor A could lead to delay factor B, delay factor A should be given more attention. The reason is that the occurrence of delay factor A will subsequently cause delay factor B to materialize. However, structuring the causal relationship between many delay factors through multiple stakeholders’ involvement is not a straightforward business. IM is suitable for structuring the causal relationship between numerous systems elements, meanwhile embracing the multiple stakeholders’ subjectivity. The output of IM is a digraph displaying the participants’ systemic views on the issue in question. The next part briefly describes the IM methodology.

**Interactive management methodology**

Since its inception, “systems thinking” has been used to embrace polarised convictions: the belief that social systems yield to governing laws opposed to the social systems not bounded by governing laws. Tuan and Jay (2016) illustrate that some functionalistic systems approaches echo that governing laws dominate this world. Forrester’s (1961) System Dynamics Modelling, Beer’s (1981) Viable System Model and Miller’s (1978) Living Systems Theory are examples of upholding that social systems are governed by laws. Their ideas echo that knowledge is objective. Checkland’s Soft Systems Methodology (Checkland and Scholes, 1990), Ackoff’s (1999) Interactive Planning and Warfield’s (1994) IM are examples of upholding that social systems are not bound by governing laws. Their ideas echo that knowledge is subjective. Flood (2010) notices the overburdened use of “systems thinking”. Therefore, he contends that to use “systems thinking” to denote the belief assumes that knowledge is objective. In contrast, “systemic thinking” is used to embrace the conviction that knowledge is subjective. Nevertheless, Tuan (2018) illustrates that certain concepts in systems thinking, such as nonlinearity and feedback, are still essential in systemic thinking. Systems thinking and systemic thinking indeed complement each other. The primary focus of systemic thinking is the unfathomable purposeful behaviour, i.e. the complexity stemming from the mind.

Warfield (1994) argues that complexity embodies two forms: situational complexity and cognitive complexity. The situational complexity means the phenomena opened for the interception by the mind. It manifests various relationships between system elements, such as reflexive, symmetric, asymmetric relationships and cycles. These features are aligned with the ideas of conventional systems thinking. However, the intercepted information by the mind is interpreted in different ways, influenced by the observers’ self-interest, mental power, educational background, values, norms and so forth. The cognitive complexity is the major factor resulting in the escalation of managerial problems. For Warfield, the language based on logic, the reasoning through relationships, and displaying the reasoning in archival forms are the essential components for dealing with complexity. The birth of IM is for dealing with complex problems. The versatile nature of IM has been demonstrated in dealing with various issues, e.g., the analysis of critical success factors of supply chain (Yadav and Barve, 2015), structuring the supply chain risks for apparel in retail chains (Venkatesh et al., 2015), the exploration of basic education problems in Lesotho (Nthunya et al., 2017) and a probe into AIDS epidemic in South Africa (Tuan, 2018). These studies show how IM can reconcile relevant stakeholders’ perceptions to generate systemic models.

Warfield and Cardenas (2002) suggest that the IM group workshop is comprised of 6–12 participants who are knowledgeable about the issue or situation. It is noteworthy that the participants of the IM workshop should not be seen as human subjects. They are not samples.
The soft systems approach is not aimed at discovering universal laws but rather the pursuit of learning and consensus. The participants of the IM workshop can be seen as the delegates of a committee. It is not adequate to use “sample size” to denote the number of representatives in a committee. People’s major concern about the committee is whether its delegates are representative and knowledgeable. The IM workshop mainly includes four phases as follows (Nhunya et al., 2017; Warfield and Cardenas, 2002):

1. Idea generation phase: this phase is to elicit the system elements from the participants. Warfield and Cardenas (2002) define idea generation as a process of producing various ideas to an issue from group participants. Each group participant is requested to silently generate ideas in response to the triggering question, e.g., “what are the main factors that cause late completion of electrical distribution projects?” The group participant generates the elements individually from their vantage points. The reason for the silent idea generation is to avoid having a power situation entering into the IM inquiry. Once the participants have generated the ideas, the process continues with the sequential clarification of each generated idea.

2. Idea clarification phase: this phase focusses on collectively reviewing each idea generated by the group. As people use language in different ways, the same word might be used to imply different meaning. On the other hand, different words might be used to imply the same meaning. The participants collectively examine the generated ideas one by one to ensure that they have a shared understanding of the generated ideas. In the process of clarification, some generated ideas may be rephrased, deleted or merged, if deemed necessary by the group.

3. Idea structuring phase: this is a phase where participants collectively examine if a contextual relationship exists between a series of posed elements. The employed technique is called interpretive structural modelling (ISM). The heart of ISM is the binary matrix. If the contextual relationship exists between a pair of posed elements, “1” will be entered into the associated cell in the binary matrix. If the contextual relationship does not exist, “0” will be entered into the associated cell. For example, in the question “is a book heavier than a feather?”, the contextual relationship is “heavier than”. The answer to this question is “Yes”. Therefore, “1” is entered into the associated cell in the binary matrix. ISM uses the mathematic fundamental of transitive logic to reduce the number of pairwise analyses needed to create the model, and to simplify the algorithm of the model (Sorach, 2014).

The transitive logic states that for any three ideas (X, Y, Z) with a given relationship (→), if (Sorach, 2014):

- X has the relationship to Y, i.e. X→Y;
- and Y has the relationship to Z, i.e. Y→Z; and
- then X has the relationship to Z, i.e. X→Z or X→Y→Z.

ISM uses full transitive logic inferences. The “no” or “yes” decision implies whether the relationship exists between a pair of elements. This gives the greatest reduction in the number of decisions required to construct the models (Sorach, 2014). The group specifies a relationship statement that defines the type of relationship desired such as “aggravates”, “enhances”, etc. (Bolanos et al., 2005). The computer tracks all the responses which create entries to the reachability matrix (Malone, 1975). ISM allows the user to do a comparison between the mathematical operation and heuristics, and affect the required changes (Malone, 1975). The final output of ISM is the digraph illustrating the relationships between the system elements.
It is noteworthy that the system relationship used for modelling must be transitive. For example, “heavier” is a transitive relationship. A desk is heavier than a book. A book is heavier than a pen. It is plausible to infer that a desk is heavier than a pen. The verb “cause” is transitive as well. But, “eat” is not transitive. Lions eat buffaloes and buffaloes eat grass. It is absurd to infer that lions eat grass:

(4) Interpretation of the structured idea phase: this is a phase where the produced model is reviewed by the group. The IM facilitator will read and interpret the generated digraph to all workshop participants. During this phase, the participants may change the records of their decision regarding whether the contextual relationship exists between a pair of system elements. Therefore, the structured model is amenable to change. The IM process is to promote iterative learning. It is aimed at establishing consensus among the relevant stakeholders on the system designed through an interactive and disciplined procedure.

This paper demonstrates how IM was used to model the delay factors for South African electrical engineering construction projects. The findings from the study are discussed in the next section.

Research findings and discussions
The IM session involved ten participants from an operating unit carrying out the electrical distribution projects. The attendees ranged from the manager of customer network centre department to the manager of capital accounting department. The constituency of the group reflected the major functions of this operating unit.

During the idea generation phase, the participants were requested to list six significant factors which in their perception result in the late completion of distribution projects. The triggering question used to solicit the delay factors was “what are the main factors that cause late completion of electrical distribution projects at this operating unit?” The participants were also requested to give a brief description of each identified factor. A total of 112 delay factors were initially solicited during the idea generation process.

During the idea clarification phase, the group reviewed the initially generated delay factors. Through the clarification of generated factors, the 112 initially identified factors during the idea generation phase were condensed into 44 factors. Following the clarification of generated ideas, the participants were requested to select 4 delay factors out of the clarified 44 factors that they perceived to be significant. There were 26 delay factors receiving more than one vote as shown in Table I. The participants agreed to use the identified 26 delay factors for modelling to reduce the time needed for the IM session.

All 26 significant delay factors were used for the idea structuring phase. The software used for modelling is called Concept Star. The contextual question used for modelling was “Does delay factor X significantly lead to delay factor Y”. The word “significantly” was used to avoid linking two systems elements where the relationship between them is weak. The Concept Star software posed a series of questions whether or not a relationship exists between the pair of ideas. For each pair of ideas, the group debate was held in order to reach a consensus whether the relationship between pairwise elements is either “yes” or “no”.

The group’s decisions on a series of questions posed by the computer are shown as Table II. In Table II, all arrows denote “significantly leads to”. For example, the first cell “1 → 2 Yes” means that the computer posed the question “Does element 1 significantly leads to element 2”. Element 1 is “Financial constraints”. Element 2 is “Project lifecycle model not followed” (see Table I). The record “Yes” in the first cell means that the group debated this posed question and decided that element 1 significantly leads to element 2.

Upon completing all of the questions posed by the computer, a digraph manifesting the relationships between the delay factors is extracted, shown as Figure 1. Given that there are
26 delay factors identified in this study, the digraph in Figure 1 is extracted from a 26×26 binary matrix. The entries in the binary matrix are established on the decision records described in Table II. The process of extracting a digraph from a binary matrix involves complicated algorithm. Warfield (1976) explains the algorithm in depth. The advent of computer software has alleviated the time needed for extracting the digraphs.

### Table I.
The significant delay factors identified by IM group participants

<table>
<thead>
<tr>
<th>No.</th>
<th>Delay factor</th>
<th>Total frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Financial constraints</td>
<td>10</td>
</tr>
<tr>
<td>D2</td>
<td>Project lifecycle model not followed</td>
<td>6</td>
</tr>
<tr>
<td>D3</td>
<td>Poor communication</td>
<td>6</td>
</tr>
<tr>
<td>D4</td>
<td>Lack of staff competency</td>
<td>6</td>
</tr>
<tr>
<td>D5</td>
<td>Human resource constraints</td>
<td>5</td>
</tr>
<tr>
<td>D6</td>
<td>Environmental approvals</td>
<td>5</td>
</tr>
<tr>
<td>D7</td>
<td>Stringent procurement processes</td>
<td>4</td>
</tr>
<tr>
<td>D8</td>
<td>Poor planning</td>
<td>4</td>
</tr>
<tr>
<td>D9</td>
<td>Community unrest</td>
<td>4</td>
</tr>
<tr>
<td>D10</td>
<td>Servitude and wayleave approvals</td>
<td>4</td>
</tr>
<tr>
<td>D11</td>
<td>Late delivery of material</td>
<td>3</td>
</tr>
<tr>
<td>D12</td>
<td>Authorisation of contractors</td>
<td>3</td>
</tr>
<tr>
<td>D13</td>
<td>Scope creeps</td>
<td>3</td>
</tr>
<tr>
<td>D14</td>
<td>Design changes</td>
<td>3</td>
</tr>
<tr>
<td>D15</td>
<td>Politics</td>
<td>3</td>
</tr>
<tr>
<td>D16</td>
<td>Unavailability of surveyor general (SG) diagrams</td>
<td>2</td>
</tr>
<tr>
<td>D17</td>
<td>Unclear scope definition</td>
<td>2</td>
</tr>
<tr>
<td>D18</td>
<td>Shortage of material</td>
<td>2</td>
</tr>
<tr>
<td>D19</td>
<td>Project scheduling not properly done</td>
<td>2</td>
</tr>
<tr>
<td>D20</td>
<td>Late release of funds</td>
<td>2</td>
</tr>
<tr>
<td>D21</td>
<td>Unforeseen conditions</td>
<td>2</td>
</tr>
<tr>
<td>D22</td>
<td>Late delivery of designs</td>
<td>2</td>
</tr>
<tr>
<td>D23</td>
<td>Change of business strategies</td>
<td>2</td>
</tr>
<tr>
<td>D24</td>
<td>Ineffective organisational structures</td>
<td>2</td>
</tr>
<tr>
<td>D25</td>
<td>Leadership changes</td>
<td>2</td>
</tr>
<tr>
<td>D26</td>
<td>Incorrect material</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table II.
The group's decision records on the contextual questions posed by the computer

<table>
<thead>
<tr>
<th>No.</th>
<th>Delay factor</th>
<th>Total frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>1 → 2 Yes</td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>2 → 1 Yes</td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>1 → 3 No</td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>3 → 1 Yes</td>
<td></td>
</tr>
<tr>
<td>(5)</td>
<td>1 → 4 Yes</td>
<td></td>
</tr>
<tr>
<td>(6)</td>
<td>4 → 1 Yes</td>
<td></td>
</tr>
<tr>
<td>(7)</td>
<td>1 → 5 Yes</td>
<td></td>
</tr>
<tr>
<td>(8)</td>
<td>5 → 1 No</td>
<td></td>
</tr>
<tr>
<td>(9)</td>
<td>1 → 6 Yes</td>
<td></td>
</tr>
<tr>
<td>(10)</td>
<td>6 → 1 No</td>
<td></td>
</tr>
<tr>
<td>(11)</td>
<td>5 → 6 Yes</td>
<td></td>
</tr>
<tr>
<td>(12)</td>
<td>6 → 5 No</td>
<td></td>
</tr>
<tr>
<td>(13)</td>
<td>1 → 7 Yes</td>
<td></td>
</tr>
<tr>
<td>(14)</td>
<td>7 → 1 No</td>
<td></td>
</tr>
<tr>
<td>(15)</td>
<td>5 → 7 Yes</td>
<td></td>
</tr>
<tr>
<td>(16)</td>
<td>7 → 5 No</td>
<td></td>
</tr>
<tr>
<td>(17)</td>
<td>6 → 7 No</td>
<td></td>
</tr>
<tr>
<td>(18)</td>
<td>7 → 6 Yes</td>
<td></td>
</tr>
<tr>
<td>(19)</td>
<td>1 → 8 No</td>
<td></td>
</tr>
<tr>
<td>(20)</td>
<td>8 → 1 Yes</td>
<td></td>
</tr>
</tbody>
</table>
The interpretation phase informed the participants what can be learnt from the structured model. Figure 1 illustrates the relationship between the factors causing delays in electrical distribution projects at the operating unit. All arrows in Figure 1 mean “significantly leads to”. The delay factors in the same box illustrate that there is a circular relationship between them. For example, the second-stage box means that element D17 significantly leads to element D21 and element D21 significantly leads to D17.

The model shows that a loop consisting of three elements on the far left is the driver causing the late completion of electrical distribution projects. The three factors are as follows:

1. Poor communication (D3);
2. Poor planning (D8); and
3. Project scheduling not properly done (D19).

The three delay elements are not influenced by other identified factors. They are the root causes agitating the causation ripples through different paths and giving rise to other delay factors. For example, the three root causes significantly lead to the second-stage loop comprising element D17 (unclear scope definition) and element D21 (unforeseen conditions). The second-stage loop further significantly leads to the third-stage loop comprising 13 elements and element D26 (incorrect material) lying at the rightmost stage. Therefore, addressing the three far left elements has potential to effectively eradicate the project delay at the operating unit.

Furthermore, Figure 1 shows that the driver leading to the project delays is a loop comprising three delay factors. This finding is different from the result of conventional approaches. The conventional approaches rank the delay factors with consecutive numbers starting with 1, such as the studies of Zidane and Andersen (2018), Amoatey et al. (2015), Luu et al. (2015), Baloyi and Bekker (2011) and Fugar and Agyakwah-Bazah (2010). The commonality of these results is that there is only one factor ranked as the most important factor. Even if several delay factors are ranked in the first position, there will be no differences in investing resources to deal with the delay factors ranked first. They will be...
given equal attention as all of them are ranked in the first position. However, Figure 1 implies that the intervention can be started by dealing with any one of the three delay factors in the first-stage loop, i.e. the loop comprising D3 (poor communication), D8 (poor planning) or D19 (project scheduling not properly done). Dealing with any one of the three delay factors could destroy the aggravating relationship in the loop. Therefore, the other two delay factors will be mitigated. It is not cost-effective to allocate resources to tackle the three delay factors together at the same time. This finding is different from the paradigm of the conventional approaches.

Different from the findings of other research conducted in South Africa, this study reveals that the top delay factors concluded in the surveyed literature are caused by the three major drivers in Figure 1. Baloyi and Bekker (2011) investigated the causes of delay in the 2010 World Cup Stadium project. They conclude that “incomplete drawings” is the top delay factor. The factor “incomplete drawings” corresponds to the delay factor D22 (late delivery of design packages) in Figure 1. However, Figure 1 shows this factor lies at the third stage, caused by the loop lying at leftmost stage. Oshungade and Kruger (2017) conclude that the top delay factor in the South African construction industry is “strike”. This delay factor corresponds to the delay factor D9 (community unrest) in Figure 1. It also lies at the third stage in the digraph. Its power of influence is not as strong as the three drivers lying at the leftmost stage.

It is noteworthy that the six delay factors lying at the rightmost stage in Figure 1 have no power to influence other identified delay factors. They are caused by other delay factors. The six delay factors are D12 (authorisation of contractors), D6 (environmental approvals), D16 (unavailability of surveyor general (SG) drawings), D10 (servitude and wayleaves approvals), D18 (shortage of material) and D26 (incorrect material). Dealing with them will not effectively eradicate the late completion of electrical distribution projects because the three drivers lying at the leftmost stage will incessantly result in the six delay factors lying in the rightmost stage to materialize.

The ranking results in Table I and the systemic model in Figure 1 reveal the limitation of relying on counting and summation to draw a conclusion. The frequency count for the votes received by each element in Table I corresponds to the commonly adopted approaches in the surveyed literature, such as the interview technique adopted by Fugar and Agyakwah-Baah (2010) and Mulla and Waghmare (2015) and the summation and mean value analysis employed by Luu et al. (2015). These approaches solicit delay factors through each human subject’s direct perceptions and uphold that the summation of the parts represents the whole. Table I shows that the most significant delay factor is D1 (financial constraint), followed by D2 (project lifecycle not followed), D3 (poor communication) and D4 (lack of staff competency). However, after the group examined the interrelationships of “significantly lead to” between system elements in an interactive way, the group drew a different conclusion. The systemic model in Figure 1 shows that D1 (financial constraint) is not the major factor causing delay. It lies at the third stage in the digraph, caused by the other delay factors lying to its left. The three elements ranked second importance in Table I (D2, D3, and D4) lie at different stages in Figure 1. D2 (project lifecycle not followed) lies at the third stage in Figure 1. D3 (poor communication) lies at the first stage in Figure 1. D3 is actually one of the major drivers leading to other delay factors. D4 (lack of staff competency) lies at the third stage. Its importance is not like the ranking portrayed in Table I. Furthermore, element D19 (project scheduling not properly done) only receives two votes in Table I, an insignificant factor from the reductionist point of view. However, the systemic model in Figure 1 reveals that it is the major factor leading to the delay in the electrical distribution projects. The structured model in Figure 1 can help the participants to understand the strength of using systemic approaches to examine the interrelationship between system elements.
The IM process also demonstrates how a group of participants can spell out a holistic picture about the ripples of causation. Figure 1 embraces various interrelated factors generated by the participants and shows how the ripples spread across the system. The factors span different aspects of elements, from internal factors, such as D4 (lack of staff competency), to external factors, such as D9 (community unrest). The IM inquiry promotes the expansion of spectrum in the design process because of its democratic and interactive nature. The IM process manifests the strength of involving participants from different backgrounds to spell out a more holistic picture of a problematical situation through the interaction between participants in a disciplinary way.

**Conclusion**

This research demonstrates how IM methodology was used for identifying the delay factors in electrical distribution projects at a South African operating unit. The output from the IM session shows that the participants believed that the identified delay factors are interrelated, manifesting loop and non-linear relationships. The systemic output is different from the conventionally adopted approaches. The identified three root causes of project delays in Figure 1 could serve as the starting point to revisit the strategy in eradicating the project delays. For example, the group may run another IM session to explore the strategies for dealing with the identified drivers leading to the delays in the electrical distribution projects. The triggering question might be “what strategies may be undertaken to deal with the three major drivers leading to the delays in the electrical distribution projects”. The contextual question that can be used in the idea structuring phase might be “does strategy A helps to achieve strategy B”. Using this contextual question may identity the strategies that can generate the greatest leverage to mitigate the project delays. However, demonstrating how to structure the strategic model is not within the scope of this paper.

The IM inquiry is time-consuming. This is its major limitation. Putting aside the idea generation and clarification phases, the idea structuring phase normally takes a full day to complete. If the number of participants increases, the time needed for structuring the model increases as well. This is why it is advisable to set up the IM group comprising 6–12 participants. The generated model mirrors this limitation in terms of the number of participants involved in the IM session. Therefore, this research can be further strengthened by including more stakeholders into the IM session to improve the representativeness of the generated model and its practical usage.

The output of IM inquiry paves the path of further learning. The IM inquiry embraces continuous learning, searching for consensus among the involved participants rather than discovering universal laws. The iterative learning process promotes putting the achieved consensus into actions and making progress in resolving an unsatisfactory situation.

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Loan tenor in project finance
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Abstract
Purpose – The purpose of this paper is to develop a better understanding of the debt structuring of project finance (PF) loans and the main drivers affecting the maturity of bank loans in infrastructure deals. When banks grant loans to a project, they have two decision variables: the interest margin or the spread and the maturity of the loan. Although several studies analyze the drivers of the spread, few studies in the literature look at the maturity of bank loans. As infrastructure projects are typically highly leveraged, the structuring of bank lending is an important parameter in the financial viability of the project.

Design/methodology/approach – The paper develops a regression analysis of the loan’s maturity on four categories: characteristics of the project, political risk of the country where the project is executed, the macro-economy setting and the regulatory framework. By using a new data set of InfraDeals containing data on bank loans of more than 1,800 infrastructure projects worldwide from 1997 to 2016, this paper reveals new insights on the debt structuring of banks for PF loans.

Findings – The results indicate that the maturity of bank loans granted to infrastructure deals is predominantly driven by political risk and regulation, rather than the structuring of the project. This implicates that the region where the deal is closed weighs more heavily than the specificities of the project itself.

Originality/value – The results have important policy implications. The paper allows to develop a better understanding on how political risk and new regulation, like Basel III, might affect the PF market. The paper is the first one finding empirical evidence of the impact of Basel III regulation on PF lending. By delving deeper into the political risk variable, the authors formulate several recommendations to mitigate political risk.

Keywords Infrastructure, Maturity, Macroeconomics, Project characteristics, Infrastructure regulation

Paper type Research paper

Introduction
Across the world, there is an intense need to invest more in infrastructure. Private investors need to play a larger role in filling the gap in the financing of large- and long-term infrastructure projects. Project finance (PF) is one of the most common finance techniques for the financing of single-purpose, capital-intensive projects, such as infrastructure. Gardner and Wright (2012) define project financing as follows: “The raising of finance on a limited recourse basis, for the purposes of developing a large capital-intensive infrastructure project, where the borrower is a special purpose vehicle (SPV) and repayment of the financing by the borrower will be dependent on the internally generated cashflows of the project.” The responsibilities of all parties involved and the distribution of risks and returns are written down in contractual arrangements (Ehlers, 2014). While PF reduces potential agency conflicts and aligns incentives of the various parties involved (Morellec, 2004), it involves high legal and transaction costs and can be relatively time consuming compared to other forms of financing (Sorge and Gadanecz, 2008). Since the economies of scale for large projects outweigh the ones of smaller deals, the legal and transactions costs for large projects are relatively lower. Hence, PF has been especially used to fund large-scale, capital-intensive projects generating hard currency cash flows. PF lending is non-recourse lending which means that lenders have little or no claim on the balance sheets of its sponsors in the event of default by the SPV. The loans granted to the project are fully paid from the cash flows of the project. PF loans are fully self-contained, one-time financing events. Sorge (2004), however, argues that one drawback of non-recourse debt is that it exposes lenders to project-specific risks that are difficult to diversify. A project financing is typically a highly leveraged transaction, up to 70–80 percent of financing would be procured in the form of debt while the share of equity would not normally exceed 20–30 percent (www.eib.org/epec/g2g/annex/1-project-finance/). Since project financing has peculiar characteristics compared to corporate finance, we must analyze their characteristics separately.
There is a variety of ways how the debt component of infrastructure projects may be financed (e.g. bond financing, commercial lending, public institutional capital investor markets), but bank lending is still the major source of funding in PF deals which is the focus of this paper. When banks grant loans to a project, they have two decision variables: the interest margin or the spread and the maturity of the loan. Although several studies analyzed the drivers of the spread, few studies in the literature look at the maturity of bank loans. As infrastructure projects are typically highly leveraged, debt structuring is an important parameter in determining the financial viability of the project. PF deals could significantly decrease funding costs by achieving high leverage as debt financing is much cheaper than equity financing. However, the higher the debt-to-equity ratio, the more likely that the project company will run the risk of a loan default during hard times, possibly terminating the project. The shorter the loan tenors of the debt granted to the project, the more quickly the project should raise new debt financing on the market. A shorter loan term exposes the project more to refinancing risk, increasing the probability of a project default.

In the remainder of this paper, the purpose is to develop a better understanding of the debt structuring of PF loans and the main drivers affecting the maturity of bank loans in infrastructure deals. After a brief review of some studies which analyzed loan maturities in infrastructure deals, the second section presents some descriptive statistics on our sample of loan tranches. The core of this report is the third and fourth section where we propose our own empirical analysis answering the questions: what are the main drivers of loan maturities for infrastructure? How do banks structure debt? What is the impact of new regulation, like Basel III, on bank debt? The conclusion summarizes the main findings and draws some policy implications. Our goal is to define the drivers of loan maturities and to show how tenors vary in relation with these variables.

A deeper understanding of debt structuring and the risks involved in PF is important for both practitioners and policy makers. This study is intended primarily for government officials who influence the political environment of infrastructure projects. It will help government officials to assess how political risk and new regulation, like Basel III, might affect the PF debt market and will support their efforts to improve PF lending. By delving deeper into the political risk variable, we formulate several policy recommendations to mitigate political risk. This report should also be helpful to private infrastructure investors, developers and operators, as it provides them with a deeper understanding of PF lending and how lenders determine the maturities of PF loans. It will help them to improve the structuring of their projects and mitigate risk factors that might shorten the maturity lenders are willing to grant.

Literature review and hypotheses
Although projects could be funded from different sources (e.g. export credit agencies (ECAs) and multilateral agencies, bond financing, bank loan market, public institutional investor capital markets), commercial bank lending still represents the principal source of financing for a project. Bank loans have some key advantages over bonds or other structured financing solutions. First, they have the expertise to perform a crucial monitoring role in the project (Ehlers, 2014). Second, bank loans are sufficiently flexible to deal with a gradual disbursement of funds or the restructuring of existing debt in the case of unforeseen events. Furthermore, Niehuss (2015) argues that capital markets and institutional investors never became the dominant funding source because they are reluctant to accept construction phase risk. However, the maturity of assets banks can safely hold is limited by the short-term liabilities they have. Sponsors, on the other hand, will invariably be drawn to the longest maturities, ceteris paribus, as it brings inherent benefits to a project’s economics (Gardner and Wright, 2012). The SPV should evaluate the combination of tenors and interest rate structures of each type of financing and opt for the one(s) that best suit the project’s revenues and debt profile (AFME, 2015).
Several studies (Kleimeier and Megginson, 2000; Blanc-Brude and Strange, 2007) argue that PF loans strongly differ from corporate debt. By comparing 90,000 syndicated loans including 5,000 PF loans, Kleimeier and Megginson (2000) find that PF debt facilities are typically structured with much longer repayment tenors compared to other forms of financing. Craciun (2011) argues that tenors in PF are, historically, usually two or even three times longer than corporate loan financing. These longer maturities are granted to better match the economic life of the underlying asset (Sorge and Gadanecz, 2008). Infrastructure projects require significant initial capital investments and only start to generate cash flows after the construction period which could take a long time (Sorge and Gadanecz, 2008; Gardner and Wright, 2012; Ehlers, 2014). Although PF deals typically face a liquidity shortage during development and construction, these projects could be financially viable on the long term. Therefore, several authors (Bouzguenda, 2014; Ehlers, 2014; Blanc-Brude and Strange, 2007) argue that PF loans require much longer maturities than corporate debt loans. As projects usually require substantial investments up front and loan repayment relies primarily on these cash flows, longer maturities play a crucial role in ensuring a project’s financial viability.

By providing longer-term infrastructure loans, banks could moderate liquidity constraints of the project company, thereby reducing the risk of default (Bouzguenda, 2014). Longer-term PF loans are therefore less risky than short-term loans. Shortening loan maturities force the project company to make large payments in the early stages of the project. Sorge and Gadanecz (2008) argue that this might, ceteris paribus, exacerbate the project company’s liquidity constraints, thus increasing the risk of default. Longer maturities allow the SPV to amortize all capitalized costs over a long period alleviating default risk (Gardner and Wright, 2012). Hence, longer-term infrastructure loans might not necessarily be perceived by lenders as riskier, compared to shorter-term ones (Sorge, 2004).

The question of what determines loan maturities is crucial to understanding the peculiar nature of credit risk in PF but has remained so far largely unexplored. Since PF has several peculiar characteristics, we might expect tenors in PF to behave differently from that of other loans or bonds.

Although PF loans typically have longer maturities, the tenor is still shorter than the full lifecycle of the project. In Bouzguenda (2014), the average maturity of loans is approximately eight years. For many projects, banks provide loans, also known as “mini-perms,” with much shorter maturities of three to seven years. This leaves the project company and sponsors with material refinancing risk. PF deals are generally more vulnerable to refinancing risk compared to corporates as the life of PF assets is limited. Since refinancing might not be available or very expensive, this creates substantial project default risk, especially in markets vulnerable to a credit crunch or in which long-term maturities are not available. As the length of the loan tenor is crucial for the long-term viability of PF deals, we should shed more light on the factors that influence these maturities:

\[ H1. \] Higher political risk has a negative impact on loan maturities.

As political risk is hard to manage for private companies and can often not be allocated to the public sector, this is expected to affect PF loan characteristics. Political risks refer to the risks related to the effects of government actions on an infrastructure project or asset. Della Croce and Sharma (2014) argue that political risk is among the greatest concerns of private investors, representing a major disincentive for investments. In emerging economies, political risk is the greatest constraint on investment decisions, except for macro-economic stability (WEF, 2015). Political risk and regulatory risk can take many forms: delayed construction permits, community opposition, changes to various regulations or taxation laws, outright expropriation, corruption, currency convertibility, failure of
state-owned suppliers or customers to fulfill their contractual obligations or the unilateral renegotiation of existing contracts by new governments (WEF, 2015; Ehlers, 2014; Sorge and Gadanecz, 2008). WEF (2015) notes that political risk applies particularly strongly to infrastructure investments as the asset lifecycle is much longer than political cycles. Investor returns could be eroded not only by the current government, but also future governments could severely affect the performance of infrastructure investments. Governments have the power to renegotiate contracts, and sometimes are tempted to do so (Ehlers, 2014). Precedents of contract renegotiations and one-sided political interference greatly increase the perception of risks for private investors. The economic performance of an infrastructure asset depends directly on (changes in) the regulatory framework and/or on money from the public purse (WEF, 2015). The regulations in question might be sector specific, as in the case of power grids (which involve a natural monopoly) or public transportation (when assets rely on subsidies). Creating a pipeline of suitable projects requires a coherent and trusted legal framework for infrastructure projects (Ehlers, 2014). In some countries, those frameworks do not exist. Even when a solid legal framework exists, the expertise and institutions for the development of large infrastructure projects are lacking.

Some papers find evidence of the impact of political risk on lending conditions in the PF loan market. Sorge and Gadanecz (2008) find that political risk significantly affects credit spreads in emerging markets. By proxying political risk by the corruption index provided by Transparency International, Sorge (2004) finds that more corruption in the host country raises the risk premium for borrowers in emerging markets. However, in advanced economies, results suggest that corruption is not a significant problem for PF. Although most attention in the literature is drawn to the impact on the spread, Sorge and Gadanecz (2008) also analyze the impact on loan maturities. The authors find evidence that commercial lenders are more likely to commit for longer maturities under the umbrella of multilateral development banks or ECAs in their sample of emerging countries:

\[ H2 \] The involvement of a development bank exercises an upward pressure on the length of the loan tenor.

Second, the presence of ECAs and multilateral institutions might significantly affect debt structuring. Development banks and ECAs play a crucial role in financing and facilitating infrastructure deals in both developing and developed countries. The difference between ECAs and multilateral agencies is that the latter are established by intergovernmental agreements and are independent of the interests of any single country member or recipient government (Gardner and Wright, 2012). Both provide political risk covers, which reassures other lenders such as local banks (Ehlers, 2014; Gardner and Wright, 2012). Their loan commitments are in some cases a pre-condition for private lenders to make their funding available. They can also provide direct lending or even equity participation. However, Gardner and Wright (2012) note that development banks usually are not main financier of infrastructure projects as their financial resources are naturally limited. Development banks and ECAs also play an important role as facilitator of PF deals as they bring vast expertise and monitoring capabilities in the project (Ehlers, 2014).

The political risk guarantees provided by multilateral development banks or ECAs can either be explicit (formal insurance contract against specific political risk events) or implicit (no formal contract) (Sorge and Gadanecz, 2008). Even if no formal credit guarantee is provided to lenders, the de facto preferred creditor status of multilateral development banks is perceived to mitigate political risks. The special relationship between multilateral development banks and host governments, which are also their shareholders, facilitates the resolution of any problems that might arise in the regulatory or policy environment leading to project default. Additionally, before being approved for co-financing, projects are subject
to detailed appraisals and thorough evaluation by the multilateral development banks. It is difficult to distinguish between implicit and explicit guarantees. In the absence of any formal contractual arrangement spelling out the terms of the credit protection, it is hard to verify the nature and extent of risk mitigation for implicit guarantees.

Sorge and Gadanez (2008) and Sorge (2004) find that the availability of such explicit or implicit forms of risk mitigation appear on average to significantly reduce the spread attached to PF deals. Sorge (2004) argues that loans with political risk guarantees from these agencies are priced on average about 50 bp cheaper, *ceteris paribus*. These results, however, need to be viewed with some caution, as they are based on *ex ante* measures of credit risk, given the limited available evidence on actual default rates for PF loans or secondary prices for PF loans. Sorge and Gadanez (2008) find evidence that commercial lenders are more likely to commit for longer maturities under the umbrella of multilateral development banks or ECAs in their sample of emerging countries. The median maturity for loans with an agency guarantee increases to 12 years from a median of only 7.5 years for the whole sample of loans with and without agency guarantees. Furthermore, Sorge (2004) also finds empirical evidence that suggests that the availability of agency guarantees effectively lengthens maturities of PF loans in emerging markets:

**H3.** PPPs are granted longer loan maturities relative to traditional projects.

There are several reasons why we hypothesize public–private partnerships (PPPs) projects having longer maturities. The structuring and delivery of modern infrastructure projects is extremely complex as it involves many different stakeholders over the project’s lifecycle with different roles, and often conflicting interests (Beckers *et al.*, 2013). Large infrastructure projects often suffer from a lack of forward-looking, life-cycle-oriented risk assessment in the early stages of the project. The seeds of many project failures are sown in the early stages of development as poor risk assessment in the project origination and design phase generates risks which can materialize in later stages. This leads to delays, cost overruns and ultimately diminished returns. Proper front-end project planning can alleviate many of these issues. Crawford (2014) argues that a detailed risk assessment is required prior to procurement contracts being awarded to minimize the chance of a risk being realized at a given stage in the project.

In PPPs, risks are typically better anticipated and managed from the outset (Beckers *et al.*, 2013). Since the risk allocation is already set out contractually before the construction phase, the different parties involved put a lot of effort to identify and quantify all the potential risks at the beginning of the project. In PPP contracts, each risk is ideally allocated to the party, either public, private or shared between the two, that is best able to manage the risk (WEF, 2013). As the public sector is better able to manage some risks, the involvement of the government in PPPs might reduce the overall risk exposure, creating trust among lenders allowing them to grant longer maturities. Furthermore, the involvement of the government might also reduce specific risks by granting credit support or guarantees. In PPP projects, the government, which is the procurer, may also retain an ownership stake in the project and be a sponsor. Gardner and Wright (2012) note that the government may contractually provide several undertakings to the project company, sponsors or lenders which may include credit support in respect of the procurer’s payment obligations under a concession agreement. Craciun (2011) argues that the direct involvement of the public authorities, through guarantees or direct contracting and through local or national budget funding, results in a reduced specific risk:

**H4.** The size of the banking syndicate has a negative impact on maturities.

Fourth, the size of the banking syndicate is expected to have a negative impact on loan maturities in PF transactions. Bank loans in PF are usually provided by a syndicate of banks...
rather than a single bank. Since large projects might be too big for a single bank to finance on its own (Sorge, 2004), they are more likely for very large loans. Kleimeier and Megginson (2000) noted how PF loans are generally characterized by larger syndicates compared to other syndicated credits. A syndicate of a limited number of banks has also an attractive feature. Sorge (2004) and BIS noted that a syndicate would help to diversify risks of a single project across a group of banks. Sorge and Gadanecz (2008) found empirical evidence that sharing the risks across multiple investors has an important risk-mitigating effect. Sorge and Gadanecz (2008) even noted that PF is making increasing use of larger syndicates to cope with political risks. Although a syndicate of banks helps to diversify risks, Sorge (2004), however, noted that too many banks in the syndicate might make it harder to monitor the project or to enforce project-specific governance rules to avoid conflicts of interest.


Furthermore, the impact of the country’s regulatory framework on debt structuring is discussed. The focus in this study is on the new Basel III regulation. Since Basel III limits the possibilities of banks to grant long-term loans, we expect this to be reflected in the data. Typically, a PF structure involves one or more sponsors who act as investors and a syndicate of banks that provide loans that fund 70–80 percent of the project (Ma, 2016). As a result, regulation of banking activities, such as capital requirements or liquidity coverage ratios (LCRs), significantly affects the optimal financing structure for infrastructure. This regulatory risk is defined by Craciun (2011) as the risks following from changes in the regulation of certain aspects of business. Recently, banks face increasing restrictions in their capacity to fund infrastructure projects. Basel III, which was proposed in the aftermath of the financial crisis of 2007–2008, introduced two liquidity standards, the liquidity coverage and net stable funding ratio (NSFR), that are likely to have a far-reaching impact on the global PF industry (Ma, 2016). The LCR requires banks to hold sufficient assets, such as cash, central bank reserves and government bonds (Morrison, 2016), that can be converted easily into cash in private markets with limited losses (Wandhöfer, 2014) which should allow the bank to survive a stress scenario (Gelencser and Campbell, 2014). Morrison (2016) notes that an undrawn revolving loan requires 100 percent liquidity cover if made to a SPV, used in most project financings. The second liquidity standard introduced by Basel III is the NSFR which requires banks to fund their activities with secure longer term, higher cost sources of funding for long-term, illiquid assets (such as PF loans). Gardner and Wright (2012) argue that the continuing pressure on bank liquidity forced some banks to withdraw from the markets resulting in a smaller universe of banks with the appetite and balance sheet capacity to fund large infrastructure projects. For those banks that remain in the market, Shearman and Sterling LLP (2014) and Ma (2016) argue that Basel III has certainly begun to change the structuring of PF deals.

Although Basel III will not be fully integrated until 2018, banks are already adjusting funding profiles under the gradual phase-in period and the market pressure of peers (McNamara and Metrick, 2014). Various sources indicate an upsurge in funding costs for banks from 60 to 110 bp, as compared to Basel II (Härle et al., 2010). For global systemically important banks, which carry out a major portion of global PF transactions, the actual impact on bank funding cost will be even higher as these banks must hold extra common equity (Watson et al., 2012). The question is how much of this rise in funding costs for banks will result in an increase of the cost of debt for infrastructure projects. Apart from the spread, Basel III is also expected to affect loan tenors as banks face increasing restrictions on the tenor of the loans they can offer (AFME, 2015). Prior to the crisis, commercial banks were willing to make PF loans with long maturity, covering both the construction and operational phase of the project. Largely because of the NSFR, banks are increasingly unwilling to finance PF structures with long-maturity loans. Morrison (2016) argues that the
number of lenders able to lend project loans with tenors longer than 7–10 years has become smaller, especially for larger loans above £100m. Gelencser and Campbell (2014) note that the appetite for loan tenors of more than 15 years is minimal. Finally, Shearman and Sterling LLP (2014) argue that transactions are structured differently with lending done at reduced tenors:

**H6.** The economic setting has an impact on the length of a loan tenor.

The role of the economic outlook at the time of granting the loan on loan maturities is discussed in this section. During the Great Recession (2008–2010), risk premiums rose sharply and banks withdraw from the PF market in large numbers. The significant increase in funding costs combined with the general deterioration of global macro-economic parameters deteriorated the expected returns on infrastructure investments (Craciun, 2011). Consequently, many projects were postponed or abandoned. However, Ehlers (2014) notes that, although volumes over 2011–2013 has shrunk compared to 2008–2010, issuance volumes over 2011–2013 were already significantly higher than in the credit-boom period 2005–2007. Deleveraging and adjustment to new global financial regulations by banks may have contributed to the decline, as well as government budget restrictions the deleveraging and shrinking of balance sheets in the banking sector. The impact of macro-economic parameters on loan maturities is unknown as empirical evidence is lacking. However, there are some indications that debt structuring is a function of the economic outlook. Craciun (2011) notes that, according to Euromoney estimates, the average duration of loans to finance investment projects dropped from 10 to 7 years during the Great Recession. By including several macro-economic factors pertaining to the country of the borrower in their regressions (real gross domestic product (GDP) growth, inflation, investment to GDP, credit to GDP), Sorge and Gadanecz (2008) find the pricing of PF loans to be very sensitive to several sources of macro-economic risk as well as the cyclical stance of the world economy:

**H7.** Availability-based projects are characterized by longer maturities.

**H8.** Greenfield projects are granted loans with shorter tenors.

Finally, some remaining factors are discussed that we expect to have an impact on loan tenors, such as whether the revenue scheme of the project is revenue based or availability based or whether the project is a greenfield or brownfield project. Availability-based projects are expected to have longer loan maturities. In contrast to revenue-based projects when the demand risk resides with the concessionaire which is expected to recoup its initial investment from user fees, in availability-based projects, the government retains the demand risk for the project. We expect that longer loan maturities are granted to projects with availability-based payment mechanisms. These projects face lower default risk as the private party bears no demand risk. While greenfield projects are associated with assets yet to be constructed, brownfield projects involve established assets in need of improvement. Greenfield projects are expected to have shorter tenors as they expose lenders to higher default risk making lenders more reluctant to lend on the long term.

**Data**

The main source of data used in our study is the Transactions database of Inframation Group, a primary market information provider on infrastructure projects, listing loan, project and borrower characteristics. Our sample is complemented with macro-economic data from the IMF and the World Bank. These variables include GDP growth (World Bank), Central Government Debt (World Bank) and Inflation (World Bank). We linked these macro-economic variables to the transactions database on the country and the date. Also, a political risk rating, measuring the political stability of a country, is added to

This rating includes 12 components covering both political and social attributes which are grouped together in six major categories of political risk: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Each political risk component is awarded a score between a minimum of zero and a maximum number of points that depends on the importance (or weighting) of that component to the overall risk of a country. The higher the score, the lower the potential risk for that component, with zero corresponding to the highest potential risk. After a risk assessment score has been awarded to each of the 12 risk components, the components are added together to provide an overall risk rating. As the scores of the different political risk categories are given separately, we could track the effect of a single category on loan maturities.

As an exploratory analysis, in this section, we present some descriptive statistics on our sample of loan tranches. The focus in this paper is on the general loan terms. There exist many different types of loans, each with different objectives and characteristics. As Table AI shows, loan maturities considerably vary across these loan types. Therefore, these other loan types fall outside the scope of this paper. Our sample contains information on loan maturities for 1,801 transactions over 1997–2016, representing a substantial fraction of the entire PF population. The average maturity is 15.11 years, varying from less than a year to up to 60 years. In 355 infrastructure projects, there is at least one governmental or multilateral agency involved which might provide political risk guarantees. In 76 projects, multiple governmental or multilateral agencies provided debt financing. Our sample also shows a substantial difference in loan maturities between PPP and non-PPP projects. While the 817 PPP projects in our sample have an average loan maturity of 19 years, the other 994 non-PPP projects show a much shorter average maturity of 12 years.

Tables AII and AIII show the geographic breakdown of the PF loans with Table AIII showing only a selected number of countries. Although Europe (1,060 loans, 58.9 percent) accounts for most of the loans, our sample has a worldwide coverage with also a substantial number of observations in North America (223 projects, 12.4 percent), Latin America (199, 11.0 percent), Australia (144, 8.0 percent), Asia (125, 6.9 percent), the Middle East (36, 2.0 percent) and Africa (14, 0.8 percent). Most observations are UK-based projects (421, 23.0 percent), followed by Thailand (82.2 percent), Spain (82.2 percent), Italy (5.2 percent), France (5.2 percent) and Germany (2.9 percent). The share of the other countries did not exceed 2 percent of the sample. Tables AII and AIII also show the average loan maturity for each country. Since loan maturities substantially vary across countries, it seems that country or political risk plays an important role in defining the maturity of the loan. The average loan maturity in Peru (11.7 years) is substantially lower than the average one of the UK (19.6 years). Table AIV shows the industrial breakdown of project loans. Most of the loans in our sample are granted to renewables (618, 34.3 percent), transportation (479, 26.6 percent) and social infrastructure projects (402, 22.3 percent), but also includes a substantial fraction in power (184, 20.2 percent), environment (92, 5.1 percent) and telecoms (19, 1.1 percent). In Table AIV, these sectors have been further unraveled in several subsectors. Average loan maturities seem to vary substantially across sectors. While health, education and social housing projects are typically granted loan maturities above 20 years, for airports and ports this falls below 10 years.

**Methodology**

We develop a regression analysis of PF loan maturities on the different variables presented above, using ordinary least-squared (OLS) estimation. The dependent variable is the term of the loan tranche, expressed in number of years. As in Corielli et al. (2010), we use multiple tranches as separate observations. Unfortunately, our samples were too small to attempt
Loan maturity is the term of the loan tranche, in number of years; Political risk the indicator measuring the political stability of a country; Agency the dummy equals 1 if at least one governmental or multilateral agency is involved in the project, i.e. development banks or European Investment Bank (EIB), for European projects; PPP the dummy equals 1 if the project is a PPP, 0 otherwise; Syndicate size the number of different financers awarding the loan; Basel III the variable reflecting the gradual phase-in of Basel III regulation, between 0 and 1; Economic growth the real GDP growth in project’s country, for the year concerned; Inflation the rate at which the general level of prices for goods and services is rising, for the year concerned; ROE the return on equity of the banking sector in the project’s country, for the year concerned; Debt-to-GDP ratio the ratio of a country’s public debt to its GDP, for the year concerned; Availability-based project the dummy equals 1 if the project is entirely financed by availability payments and is not exposed to demand risk, 0 otherwise; and Greenfield the dummy equals 1 if the project is a greenfield project, 0 otherwise.

**Results**

In this section, we discuss the impact of the different variables on loan maturities. Table I reports our baseline regression results for the sample of PF loans. The table shows how loan maturities of term loans granted to infrastructure project change with several variables which are expected to have an impact on the length of the loan tenor. As loan maturities considerably vary across sectors, we control for sector-specific risks by adding sector dummies to the model. Table I shows five different specifications of the model presented above. The first three specifications include all loan tranches in our sample. In the last two specifications, the sample is limited to Europe. In the second specification, we control for sector-specific risks by adding sector dummies to the model. In the third, macro-economic variables are added to the model. In the last two columns, we test whether the presence of the EIB has an impact on the length of the loan tenor. In the final specification, we test the impact of Basel III on PF loans characteristics.

As put forward in H1, political risk has a negative impact on loan conditions. The political risk index is constructed in a way that the higher the index is, the lower the potential risk is, with a score of zero corresponding to the highest potential risk. Results show that countries with little political risk (a high score on the political risk index) are granted loans which last, on average, 8–10 years longer for similar projects. In our whole
sample, there is a difference up to 9.7 years. When the sample is limited to European projects, the impact is slightly smaller but still very large (eight years) and highly significant. Since political risk increases project default, lenders put their money at risk for a shorter term. H2 states that the involvement of a governmental or multilateral agency in the debt financing of the project is expected to result in longer loan maturities. The list of all multilateral agencies and credit agencies considered for defining our dummy variable are provided in Table AV. Results in Table I show that the presence of such agencies, providing political risk guarantees, extends the average length of the loan by 1.5–2 years (Columns 2 and 3). Development banks often provide guarantees lowering the credit risk of the project. This results, on average, in longer loan maturities. In the last two columns, we limit our sample to European projects and test whether the presence of the EIB has an impact on the length of the loan tenor. The presence of the EIB in the syndicate size seems to extend loan maturities with almost two years. However, the impact is not significant.

H3 is also accepted as results in Table I show that loan conditions are less favorable for non-PPPs. PPP projects have, on average, loan maturities which are 6.2–6.5 years longer relative to traditional projects. Under the PPP scheme, lifecycle costs and returns have already been charted before the start of the project. A risk matrix is constructed which lists all risks and their potential impact and assigns each risk to the party that is best able to bear them. An SPV is set up and all parties have already closed contractual agreements listing their rights and responsibilities before the construction phase. Therefore, lenders are willing to grant more favorable loan terms as they consider the likelihood of default of these projects as lower. H4 states that the size of the banking syndicate negatively affects loan maturities in PF transactions. To assess the extent to which risk is being shared among many institutions as opposed to the case where the syndicate is small, the number of banks providing funds in the syndicate is included as explanatory variable. A larger syndicate size results in significantly lower loan maturities. However, the effect is small. The more banks involved, the higher the transactions costs and so project risk leads to shorter loan maturities.

Furthermore, we tested in the last specification whether Basel III has an impact on loan conditions in our sample of European PF transactions (H5). The Basel III regulatory framework came into force in January 2013 with a gradual phase-in period of seven years.

<table>
<thead>
<tr>
<th>Sample Control variables</th>
<th>Total</th>
<th>Total Sector</th>
<th>Total Sector and economy</th>
<th>Europe Sector</th>
<th>Europe Sector and Basel III</th>
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</thead>
<tbody>
<tr>
<td>Political risk</td>
<td>9.17**</td>
<td>9.49**</td>
<td>9.69**</td>
<td>7.97**</td>
<td>8.14**</td>
</tr>
<tr>
<td>Development bank</td>
<td>1.18</td>
<td>1.52*</td>
<td>2.00*</td>
<td>1.97</td>
<td>1.96</td>
</tr>
<tr>
<td>EIB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPP</td>
<td>5.07**</td>
<td>6.24**</td>
<td>6.53**</td>
<td>6.27**</td>
<td>6.27**</td>
</tr>
<tr>
<td>Syndicate size</td>
<td>−0.22**</td>
<td>−0.10</td>
<td>−0.14</td>
<td>−0.19*</td>
<td>−0.19*</td>
</tr>
<tr>
<td>Basel III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic growth</td>
<td>−0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation</td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>0.10**</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Debt-to-GDP ratio</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avail. payments</td>
<td>2.67**</td>
<td>1.49*</td>
<td>1.30</td>
<td>1.42*</td>
<td>1.39*</td>
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<tr>
<td>Greenfield</td>
<td>4.30**</td>
<td>2.92**</td>
<td>2.27**</td>
<td>2.29**</td>
<td>1.91**</td>
</tr>
<tr>
<td>Sector dummies</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Constant</td>
<td>4.04**</td>
<td>2.48</td>
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<td>−0.01</td>
<td>0.90</td>
</tr>
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<td>$R^2$</td>
<td>0.39</td>
<td>0.47</td>
<td>0.53</td>
<td>0.51</td>
<td>0.52</td>
</tr>
<tr>
<td>$n$</td>
<td>1,205</td>
<td>1,205</td>
<td>892</td>
<td>979</td>
<td>979</td>
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</tbody>
</table>

Notes: *p < 0.05; **p < 0.01
Therefore, the Basel III dummy included in our model increased every year with 1/7th to take into account this gradual phase-in period. Although the new regulation will be fully effective from the start of 2019, a negative impact on loan conditions is already observed in our sample of PF transactions. Between 2013 and 2016, the Basel III regulatory framework reduced the average length of the loan tenor with 2.3 years. This paper is the first one finding empirical evidence of the impact of Basel III regulation on PF lending. In H6, the economic outlook at the time of granting the loan is discussed. Therefore, four different macro-economic indicators are added to the model: economic growth, inflation, the return on equity of the banking sector and the Debt-to-GDP ratio. During the Great Recession of 2007–2009, loan conditions for infrastructure projects deteriorated dramatically with an upsurge in spreads and many banks withdrawing from the PF lending market. Therefore, we expected to find loan maturities also to evolve with the business cycle. However, results show that the impact of the economic outlook on loan maturities is negligible.

H7 stated that projects with availability-based payment mechanisms are expected to have longer loan maturities. This is confirmed by the results in Table I. Loan maturities of availability-based projects are, on average, 1.3–1.5 years longer compared to projects where (part of) the demand risk resides with the SPV. In the first specification, the coefficient of 2.7 is slightly higher. As social infrastructure projects typically have availability-based payment schemes and are characterized by lower sector-specific risks, this coefficient seems to pick up this last effect. Since the government retains the demand risk for projects with availability-based revenue schemes, these projects face lower default risk encouraging lenders to grant loans with longer maturities. Based on the output in Table I, H8, specifying that greenfield projects are granted loans with shorter tenors, can also be accepted. The coefficient is estimated at 2.9. When we control for the macro-economic setting at the time of granting the loan, the impact is slightly smaller but still very significant. For our European sample, estimates vary between 1.9 and 2.3. As greenfield projects are associated with assets yet to be constructed, they expose lenders to higher default risk making lenders more reluctant to grant long-term maturities.

In the remainder of this section, we distinguish between advanced and developing countries. The first specification in Table II shows the regression output for the total sample.
In specifications 2 (4) and 3 (5), the analysis is executed for advanced and developing countries, respectively. In the first (i.e. total sample) and last two specifications, the political risk index is further unraveled in its different categories: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Table II shows that political risk affects advanced and developing countries differently. Political risk weighs more heavily for developing countries. For the sample of advanced countries (specification 2), the political risk index is no longer significant. However, in the sample of developing countries, the index has a strong and significant effect on loan maturities. Instead of estimating the impact of the political risk index on loan conditions, the impact of its different categories on loan maturities are estimated separately in the final two specifications. This again reveals differences between advanced and developing countries. In the sample of advanced countries (specification four), regulatory quality shows a significant impact on loan maturities while in the sample of developing countries, the impact of the political risk index is mainly driven by the categories: voice and accountability and rule of law. As expected, the higher the country score on the rule of law, the longer loan maturities, \textit{ceteris paribus}. Remarkably, the coefficient of voice and accountability is negative which indicates that a higher score on this category is related to shorter loan maturities, which is left as an open question in this paper. This has important policy implications. Across the world, there is an intense need to invest more in infrastructure. Governments could reduce the infrastructure gap in their country by mitigating political risk, which deters private financiers to invest in infrastructure in their country. The results in this paper show that political risk largely deteriorates loan conditions for infrastructure projects as loan maturities granted to infrastructure projects are significantly shorter in countries with high political risk. Results show that the focal point, however, differs between advanced and developing countries. Governments in advanced countries should mainly focus on their regulatory quality to improve loan conditions, while public authorities in developing countries should mainly pay attention to improve the rule of law.

**Conclusion and policy recommendations**

Given the special nature of PF deals, loan maturities in PF behave differently from corporate debt loans. Longer maturities are granted to better match the economic life of the underlying asset and to moderate the project company’s liquidity constraints during development and construction. Therefore, loan tenors play a crucial role in ensuring a project’s financial viability. Analyzing how lenders determine PF loan tenors is crucial to uncover the special nature of credit risk in PF. However, this has remained so far largely unexplored. This paper provides practitioners and policy makers with a deeper understanding of the debt structuring of PF loans and the main determinants that affect the maturity of PF bank loans. The main results show that maturities are mainly driven by political and regulatory risk, the revenue scheme, deal type (greenfield vs brownfield), execution approach (PPP or non-PPP) and the presence of multilateral institutions and ECAs.

These results shed more light on the time profile of credit risk for this asset class and the peculiar nature of the term structure in PF lending. Several papers in the literature find either a downward effect (Bouzguenda, 2014; Altunbaş and Gadanecz, 2004; Sorge, 2004; Sorge and Gadanecz, 2008) or no effect (Kleimeier and Megginson, 2000; Dailami and Leipziger, 1998) between the credit spread and maturity. \textit{Ceteris paribus}, longer-maturity PF loans appear to be associated with lower or constant credit spreads. By controlling for interaction between loan maturities and explicit or implicit political risk covers provided by development banks or export agencies, Sorge and Gadanecz (2008) concluded that this behavior must be due to more fundamental characteristics of PF structures as the
relationship holds even in the absence of agency guarantees. However, other factors in our analysis might drive the behavior of the hump-shaped behavior of the term structure in PF lending. Our results show that political risk shortens loan maturities granted to projects, while evidence indicates that it drives up the spread (Pollio, 1998; Dailami and Leipziger, 1998; Kleimeier and Megginson, 2000; Esty and Megginson, 2000; Sorge and Gadanez, 2008; Sorge, 2004; Corielli et al., 2010; Bouzguenda, 2014; Altunbaş and Gadanez, 2004; Blanc-Brude and Strange, 2007). Furthermore, the development and construction risk in greenfield projects might result in higher spreads (Buscaino et al., 2012) and leads to shorter loan tenors as indicated by the results above. Contrary, projects with availability-based revenue schemes are charged higher spreads (Buscaino et al., 2012; Blanc-Brude and Strange, 2007; Flyvbjerg et al., 2003; Bain and Plantaged, 2004), while at the same time are granted longer loan maturities; longer compared to projects where (part of) the demand risk resides with the SPV. Availability-based payment schemes might alleviate the perceived risk of longer-maturity PF loans. In this way, our results indicate why longer-maturity PF loans are related with lower credit spreads which is pointed as surprising and left largely as an open question by Sorge and Gadanez (2008). Further evidence is left for future research.

The results have important policy implications. The paper provides a cross-country assessment of the determinants of PF loan maturities. A deeper understanding of debt structuring and the risks involved in PF would be helpful to private infrastructure investors, developers and operators to improve the structuring of their projects and mitigate risk factors that might shorten loan maturities that lenders are willing to grant. For instance, the longer maturities that are granted to PPPs underline that a proper risk distribution and project preparation is crucial to get attractive loan conditions. Furthermore, this paper gives government officials an insight in how political risk and new regulation, like Basel III, might affect the PF debt market and will support their efforts to improve PF lending. Hence, governments must take decisive measures to deter or insur against such risks. These recommendations deserve the attention of policy makers as they help to reduce the infrastructure gap and encourage investors to invest in their country. By delving deeper into the political risk variable, we formulate several policy recommendations to mitigate political risk. The focal point, however, differs between advanced and developing countries. While advanced economies should mainly focus on the quality of the regulatory framework to improve lending for their infrastructure projects, developing countries should mainly pay attention to the rule of law. The legal and regulatory environment of the country has a significant bearing on the willingness of investors to invest in a country’s infrastructure. Legislation alone is not enough, however, government officials must also comply with the laws. This should be a priority for developing countries. As political risk weighs more heavily for developing countries, they could realize substantial gains by improving the rule of law in their countries. Finally, this paper is, to our knowledge, the first one finding empirical evidence of the impact of Basel III regulation on PF loan maturities. Although the Basel III regulation will be fully effective from the start of 2019, a negative impact on loan conditions is already observed in our sample of PF transactions as it reduced the average length of the loan tenor between 2013 and 2016. This regulation induces banks to shorten PF loan maturities which might worsen the projects’ viability. It encourages banks to reallocate their portfolio away from long-term commitments into more short-term exposures which might not be necessarily safer. This new regulation might, unintendedly, make long-term PF lending riskier instead of safer. Future research is needed to analyze whether regulatory capital relief should be granted to PF deals, given the peculiar nature of the PF term structure.
References


Appendix. Descriptive statistics’ tables

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<tr>
<th>Loan type</th>
<th>Obs</th>
<th>Mean</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
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<td>Loan</td>
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<td>Multilateral</td>
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<td>19.60</td>
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<td>Equity bridge loan</td>
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<td>Other</td>
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<td>0</td>
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<td>Vat facility</td>
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**Table A1.** Descriptive statistics on tenors: observations across loan types

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<th>Obs</th>
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<th>SD</th>
<th>Min.</th>
<th>Max.</th>
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<tr>
<td>Africa</td>
<td>14</td>
<td>15.43</td>
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<tr>
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<td>125</td>
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<td>4.76</td>
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<td>30</td>
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<td>144</td>
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<td>17.23</td>
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**Table AII.** Descriptive statistics on tenors: observations across continents
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<td>18.26</td>
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Table AIII.
Descriptive statistics on tenors (selected countries): observations across countries.

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Table AIV. Descriptive statistics on tenors (reduced sample): observations across sectors.
List of governmental or multilateral agencies providing political risk guarantees*

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<td>Exim Bank</td>
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<tr>
<td>African Development Bank</td>
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<td>CAF Andean Development Corporation</td>
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<td>China Development Bank</td>
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<td>Ekspord Kredit Fonden</td>
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<tr>
<td>Inter-American Development Bank (IDB)</td>
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<td>International Finance Corporation (IFC)</td>
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<tr>
<td>European Bank for Reconstruction and Development</td>
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<tr>
<td>Other*</td>
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<td>KEXIM</td>
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<td>FMO</td>
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<td>Industrial Development Corporation of South Africa</td>
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<td>Japan Bank for International Corporation (JBIC)</td>
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<td>Overseas Private Investment Corporation (OPIC)</td>
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<td>Total</td>
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Notes: *Based on the list provided in Sorge and Gadanecz (2008, pp. 56–57). Other includes Coface (one project), Export Finance and Insurance Corporation (one project), Hungarian Development Bank (one project), Export-Import Bank of China/China Exim Bank (four projects), SACE (one project) and the Export-Import Bank of India (one project). In 76 projects, there is more than one governmental or multilateral agency involved. This brings the number of infrastructure projects with at least one governmental or multilateral agency involved at 355.

**Table AV.** List of governmental or multilateral agencies providing political risk guarantees

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**Corresponding author**

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