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Exploring processual and critical avenues at the crossroad of entrepreneurship and project management

Entrepreneurship and project management share lots of assumptions, concepts and practices even though they seem to relatively ignore each other as disciplines. Performing a project or a venture is a matter of time and duration: both disciplines seem concerned with the imperative of deadlines and the move from project to operations, but both also face the challenge of reconsidering their object as an ongoing phenomena in a more processual way (Hjorth et al., 2015; Sergi, 2012). Project management and entrepreneurship are also rooted in some strong mythological assumptions that should be challenged about the intentionality and the agentivity of the entrepreneur/project manager even though both fields increasingly highlight the significance of social contexts and collective forms of action. Both fields also face some stimulating challenges about unfolding the range of epistemological assumptions beyond a functionalist-positivist paradigm which over-estimated the place of tools, rational action and efficiency (Konstantinou and Müller, 2016). Making a project or a venture happen is about organizing the creation process of novelty, experiencing the ordinariness of practices and elaborating consistent narratives (Blomquist et al., 2010; Drouin et al., 2013).

This special section explores processual and critical research avenues and considers opportunities to encourage a stimulating conversation between both fields. Here, we identify three theoretical movements:

1. From project management to entrepreneurship: venturing process might be considered in many aspects as an ongoing project, but very few scholars aim at comparing both processes and their potential cross-fertilization. The management of a project is based on a range of material practices, devices and tools that support and shape the process. Convincing stakeholders, unfolding a credible storytelling and finding legitimacy to gain resources are for instance one of the main tasks of project managers that entrepreneurs are used to coping with. More broadly, Lindgren and Packendorff (2003, p. 89) suggest the potentialities of a project-based approach to entrepreneurship based on three proximities: entrepreneurial acts are temporary collective experiences in different contexts; entrepreneurship can be studied in terms of people performing entrepreneurial acts in their everyday life; entrepreneurial acts are discontinuities in individual life paths that imply identity (re)constructions. Moreover, the project management may contribute to a de-mythologization of the heroic figure of the entrepreneur as project managers face a large range of constraints and tests in their everyday life and a universe of constraints that force them to create and unfold continuous practices of resistance and negotiation.

2. From entrepreneurship to project management: project management tends to focus on project as a tool for implementing strategy and ignore its creative or exploratory side. Projects are associated with changes. They consist of the efficient exploitation of a competitive advantage or in renewing the strategy through the exploration of margins. An entrepreneurial view of projects would offer some avenues in addressing the creation of novelty through projects. Considering the entrepreneurial dimension of project management suggests highlighting the importance of rules subversion and resistance in...
the making of projects. An entrepreneurial view of projects may put the emancipatory practices in the midst of preoccupations and of the project management research agenda. Effectuation entrepreneurial theory (Sarasvathy, 2001) might also be a promising avenue for a more pragmatically view of project as a process. This theory would suggest that a project and its ends much more emerge from resources on hand and that the project entrepreneur would recruit partners and stakeholders to increase his or her resources stock but also to create (new) ends. In this view, project ends are not given but elaborated in the making of projects. Entrepreneurial concepts such as effectuation, bricolage and serendipity may help project management to move away from a dominant causal logic. In the same vein, the figure of the entrepreneur is probably useful to rethink the role of the project manager in some complex and pluralistic contexts (DeFillippi and Spring, 2004). A better understanding of the exploratory side of the project manager profession would benefit from a partnership with the research stream in intrapreneurship, which deals with the paradoxes underlying the multiple roles of intrapreneurs. This approach might be very fruitful in the social context of megaprojects (Flyvbjerg et al., 2012).

(3) At the intersection of the two fields: project management and entrepreneurship meet some close debates about the projectification of society or the entrepreneurial society, about “projectified” or enterprising selves (Lundin et al., 2015). Discourses in both fields – the invasive call for entrepreneurship and projectification – currently contribute to the making of a new subject in organizations and to create a series of juxtapositions within the self (Bröckling, 2016). Project management and entrepreneurship researchers produce very efficient discourses, tools and devices that perform fluid and flexible identities, reduce one’s subjectivity but also reproduce a very neo-liberal order. They have also jointly to question and challenge some of their main assumptions about the importance of deliberation, intentions, causal practices in the making of (entrepreneurial) projects that probably maintain the figure of a heroic agency. Working at this intersection may thus enrich our understanding of how local and temporary identities are performed and unfold in the flow of action. Both fields should also increase their interest for diverse ethnic, social and gendered identities in a very critical way to better approach the reality and adverse conditions of entrepreneurial projects. The inclination toward an entrepreneurial/projectified organization finally provides prospects for the re-imagination of the labor organization. For instance, the project-based organizing may be analyzed in its entrepreneurial dynamic, its ability to truly produce novelty or its tendency to bureaucratize creativity (Cattani et al., 2011; Ferriani et al., 2009). In this vein, the cross-fertilization of entrepreneurship and project management suggests much more paradoxical and nuanced approaches rather than functionalist and technical ones.

The papers
This special section welcomes papers from scholars in one or the other field experiencing new ideas, practices and methods at the crossroad of entrepreneurship and project management and searching for a significant locus for this innovative conversation. The section is built with this idea of offering the reader a trajectory along which the two fields of project management and entrepreneurship meet at different points and intervals. Each meeting point offers new insights and opportunities to nurture a future research agenda.

The first two papers offer conceptual propositions for bridging (or not) the two fields. The first paper “Entrepreneurship and project management relationships: So far so good? Dialogic conversation and Luhmannian perspective” from Fonrouge, Bredillet and Fouché enter with full force in the debate of the ontological position over time of the two multidisciplinary fields of entrepreneurship and project management. Authors acknowledge
the different and very distinct mindsets and cultures of these fields, each one following a unique and parallel path of development. The interest of this paper is certainly its philosophical approach based on Lunhmann and a systemic-discursive perspective. Moreover, it takes out the assumption of a given beneficial convergence between the two fields arguing for a creative tension between the two fields.

Conversely, the second one adopts a clear position of a positive view on the convergence of the two fields. “Process perspectives on entrepreneurship and projects” from Kuura and Lundin is part of a research program dealing exactly on this phenomenon of linking project management and entrepreneurship. Authors situated the debate at the level of the academic world where interdisciplinary integration is difficult, if not rarely possible. The particular relation between entrepreneurship and project management serves as an illustrative case. Authors propose the notion of research “chunks” as a mechanism to bring together different research fields. This is possible, in their view, by the adoption of a process perspective. Interestingly, Kuura and Lundin build on the seminal work of Gartner whose contribution in this special section offers a literary work on these questions.

The following two papers provide empirical settings to reinforce the perspective of a convergence between project management and entrepreneurship. The first one bring a project view, projectification, to the field of entrepreneurship while the second paper, do just the reverse, as it brings entrepreneurship concepts of effectuation and causation within the project field. Auschra, Braun, Schmidt and Sydow authored the third paper “Patterns of project-based organizing in new venture creation: Projectification of an entrepreneurial ecosystem.” Here, the authors adopt an institutional perspective to the study of the Berlin entrepreneurial ecosystem. In this context of start-up ecosystems, they highlight patterns of project-like organizing. So, they suggest referring to projectification as the main driver of what they observe in the entrepreneurial ecosystem.

The fourth paper, “Programming for holistic value creation: Collaboration, coordination and perception” is from Laursen and Killen. The authors’ main objective is to explore how programs and projects bring value to different stakeholders. They rely on a case study in the cultural context in Australia. In this paper, they borrow the concepts of effectuation and causation from the entrepreneurship literature to explain how value creation brings different logics within the project/program. This approach reveals how value is created to include non-commercial aspects, so leading to what the authors associate to a holistic value creation.

As we can observe from these last two papers that a conversation exists between both fields, from project management to entrepreneurship (Auschra et al.) and conversely from entrepreneurship to project management (Laursen and Killen). In both of these papers, there is an attempt to bring consistency to the intersection of both fields.

With the fifth paper, the special section turns to one of its objectives of including critical avenues to the study at the crossroad of entrepreneurship and project management. The fifth paper is from Rehn, “The vanishing point? – notes on conceptual colonization and epistemological emptying,” bring a critical view on the evolution of those fields. The author put into question the will found in these fields to expand their boundaries to a point of losing significance. Studying project society or entrepreneurship society would come at a very general research. Project studies or entrepreneurship studies would hardly be differentiated from organization studies. The author calls for more epistemological rigor in both fields to avoid the emptying and the loss of significant research. This fifth paper echoes the first paper from Fonrouge et al., who put into question the need for a convergence, moreover, when this convergence is reached at the cost of conceptual colonization and epistemological emptying.

The sixth paper adopts the format of an interview. We are proud to include in this special section an interview with Jean-Pierre Boutinet, a well-known author in France for its books Anthropologie du projet (2012) and Vers une société des agendas: Une mutation des temporalités (2004). In this interview, Boutinet highlights seven different themes on the
relation between the two fields, sometimes in resonance with the other and more than others, in contradiction. Nevertheless, what is of interest for this special section is the critical stance Boutinet identified at the intersection of the two fields: that is the social concern from both fields on the “autonomy injunction.”

Finally, the last paper that closes this special section takes a special turn in offering a literature work, namely, a poem from William Gartner, well-known author on entrepreneurship. The poem is titled: “A good man is hard to find: project management, entrepreneurship and serendipity.” For us, it is just fantastic to include this artistic piece of work from a well-known scholar: it is a mark of fruitful combination between science and creativity. Moreover, the particular format of the poem that is the Japanese Haiku, invites all of us to undertake a reflective process on this topic going away from usual conceptual format.

In conclusion, we hope that each of the seven papers forming this special section on entrepreneurship and project management will nurture research in both fields.

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References


Entrepreneurship and project management relationships

So far so good? Dialogic conversation and Luhmannian perspective

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Abstract
Purpose – Both project investments and entrepreneurial ventures are considered powerful catalysts of economic prosperity and social progress. But these ventures and investments come with their inherent challenges and risks. Observing this situation, academics have paid close attention to the fields of entrepreneurship and project management (E&PM). Thus, for over 30 years, the two fields have witnessed remarkable developments among management and organization studies. The historical perspective reveals that these two multidisciplinary fields were built in parallel, on very distinct mindsets and cultures.
The purpose of this paper is to offer a wider dialogic conversation between two distinct perspectives and related propositions: E&PM should stay separated; and E&PM should converge.
Design/methodology/approach – In order to guide the investigation of these propositions, the authors call for Luhmann and a systemic-discursive perspective of both fields discourses. Ultimately, the purpose is to contribute to the debate surrounding the following questions: are E&PM fields so far from each other, and thus, irreconcilable? And, if so, is it so good?
Findings – Finally, the authors will suggest that E&PM may stay far from each other as they do not share similar discourses and codes. This may be a good state of affairs, however, as distance generates a fruitful creative tension between them.
Originality/value – While many researchers focus on linking E&PM, arguing that they largely agree as to their underlying goal, the paper aims to offer a wider dialogical conversation between the two distinct perspectives and their related propositions: E&PM should stay separate; and E&PM should converge.
In order to do so, this paper calls for a Luhmannian and a systemic-discursive perspective.
Keywords Luhmann, Entrepreneurship, Project management, Discourse, Epistemology

Paper type Research paper

Introduction
Both project investments and entrepreneurial ventures are considered to be powerful catalysts of economic prosperity and social progress both at micro and macro levels. However, these ventures and investments come with their inherent challenges and risks. Indeed, they both “involve ‘projection in the future’ and therefore possibility of deliberation (and decision making) about the future (plan), choice of means towards ends” (Bredillet, 2013, p. 64); and “because action takes place over time, and because the future is unknowable, action is inherently uncertain” (Von Mises, 1949; Bredillet, 2013, p. 68).

Considering project investments, more than 25 percent of global economic activity appears in the form of projects, and in some emerging economies, this exceeds 35 percent. For instance, World Development Indicators data from 2015[1] show that 24 percent of the world’s $75 trillion gross domestic product is gross capital formation[2], which is almost entirely project based. In the meantime, only 62 percent of projects meet original goals/
business intent, 53 percent are completed within original budgets, 49 percent are completed on time, 45 percent experience scope creep, 32 percent encounter budget loss and 16 percent are deemed failures (Project Management Institute, 2016, p. 5). As stated by the Project Management Institute (2017, p. 2) report “Organizations are wasting an average of $97 million for every $1 billion invested, due to poor project performance.”

A recent report from the Global Commission on the Economy and Climate (2016) stated that “about US$90 trillion in infrastructure investment is needed globally by 2030 to achieve global growth expectations, particularly in developing countries. To achieve this, infrastructure investment needs to be both scaled up, and, due to climate risk, integrate climate objectives.” while the G20-backed Global Infrastructure Hub (GIH) (2015) expressed the following concerns: “Nearly a fifth of the $94 trillion in global infrastructure investment needed by 2040 risks being unfunded if current spending trends continue.” Likewise, a Global Infrastructure Hub report reads: “To close the spending gap, annual infrastructure spending needs to rise to 3.5 percent from 3 percent of global gross domestic product.” Project management (PM) researchers address the challenges associated with projects through various lenses and schools of thought (Turner et al., 2013; Flyvbjerg, 2017), thereby ultimately seeking to increase their chances of success. This ultimate ambition is well highlighted in the Association for Project Management (APM) vision: “APM’s vision is ambitious, challenging and radical. We recognize that to deliver it we need to inspire everyone to create a world in which all projects succeed with Project Management as a life skill for all.”

Examining the entrepreneurial perspective, and seeking to overcome the challenges set forth, theorists have highlighted a number of connections. A historical study of 161 American SMEs by Covin and Slevin (1989) has established a correlation between an entrepreneurial posture and an organic structure. Team projects represent the archetypes of innovative structure for established firms, as this structure helps them redefining or rejuvenating themselves, their positions within markets and industries, or the competitive arenas in which they are placed. Those two literature streams have shared a common label: corporate entrepreneurship (Covin and Miles, 1999, p. 47). However, the rules of the game have changed with the arrival of new kinds of firms, that is, start-ups, which put forward original ways to work together. Today the subject of interest is management of start-up development (Midler and Silberzahn, 2008). Is it possible to use PM methods in the creation of a start-up business plan? (Kiznyte et al., 2016).

At this point, we need to define the concepts of PM, Project and entrepreneurship as they will be used in this paper.

There are several definitions of PM, each of them showing the subject through a different lens. If we consider the widely used Project Management Institute (2013) resource-based definition: “Project Management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements” (p. 4), and a project being defined as “a temporary endeavor undertaken to create a unique product, service, or result” (p. 3). On the other hand, the APM encompasses a process-oriented definition: “Project Management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives”; “[a] project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. A project is usually deemed to be a success if it achieves the objectives according to their acceptance criteria, within an agreed timescale and budget (see footnote 6).”

In regards to entrepreneurship, we adopt the generally accepted definition of this notion as a set of processes for discovering and exploiting business opportunities:

We define the field of Entrepreneurship as the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited (Venkataraman, 1997). Consequently, the field involves the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them (Shane and Venkataraman, 2000, p. 218).
However, our paper is based on a broader understanding of entrepreneurship, emphasizing the fact that entrepreneurial acts may also occur in existing organizations (e.g. takeover or franchising), including public authorities and voluntary associations.

Consequently, entrepreneurship and project management (E&PM) receive more and more interest and support from a wide variety of horizons. Observing this situation, characterized by a high failure rate and growing socio-economic consequences, academics have paid close attention to E&PM, trying to address the perceived dissatisfaction, and offer possible explanations as well as ways toward improvements and higher success.

Thus, for over 30 years, the two multidisciplinary fields have witnessed remarkable developments among management and organization studies. The historical perspective reveals that they were built in parallel, and on significantly different mindsets and cultures (Fouché, 2011). However, the two disciplines aim at a similar endeavor, that is, the transformation of abstract ideas into materialized organizations and delivered benefits. In addition, some authors emphasize that “in real practice, the connections between entrepreneurship and project practice appear stronger,” and thus call for linking the two “segregated communities” (Kuura et al., 2014, p. 214).

Analyzing the link between the two fields through scientometric approach, Fouché (2011, p. 328) concludes that there is a clearly observable divergence, and that:

[…] beyond a common belonging to Management sciences, Entrepreneurship and Project Management are actually not converging at the academic level. It is even sensible that with time, the disciplines tend to share less and less research drivers. It is consistent with the efforts achieved by the two scholarly communities to develop a mature research, ever more unified if possible (Fouché, 2011, p. 10).

While many researchers focus on linking E&PM, arguing that they largely agree as to their underlying goal (Bröckling, 2016; DeFillippi and Spring, 2004; Frederiksen and Davies, 2008; Kuura et al., 2014; Lindgren and Packendorff, 2003; Lundin et al., 2015), we aim to offer a wider dialogical conversation between the two distinct perspectives and their related propositions:

P1. E&PM should stay separate.

P2. E&PM should converge.

What do we mean by dialogic conversation?
The noun conversation means etymologically “living together,” “act of living with[7].” Indeed, our purpose is to offer a conversation between two diametrically opposite perspectives. Furthermore, we acknowledge this conversation as being dialogic:

The term dialogic is frequently appropriated to a modernist framework of assumptions, in particular the […] sociocultural tradition. […] From a dialogic perspective, the difference between voices in dialogue is constitutive of meaning in such a way that it makes no sense to imagine “overcoming” this difference. By contrast, due to the implicit assumption that meaning is ultimately grounded on identity rather than upon difference, the dialectic perspective […] interprets differences as “contradictions” that need to be overcome or transcended (Wegerif, 2008, p. 347).

Furthermore, organizational life is dialogic in essence. In entrepreneurship, this concept is applied to describe the complex relationship between the firm and the entrepreneur: “[Bruyat’s] strong idea, borrowed from Edgar Morin (1984), is that […] dialogics (entrepreneur/enterprise) are joined as a whole in a unity” (Fonrouge, 2002, p. 149; our translation; see also Bruyat, 1994). Unlike a dialectic process, a dialogic one often does not lead to closure and remain unresolved. Thus, dialog can be less competitive, and more suitable when aiming cooperation between parties: in a dialogic process, various approaches coexist and are comparatively existential and relativistic in their interaction.
Ultimately, our purpose is to contribute to the debate surrounding the following questions:

Are entrepreneurship and project management fields so far from each other and thus, irreconcilable?

If yes, is it so good?

To quote Joseph Joubert (1850), a French Moralist and Essayist: “It is better to debate a question without settling it than to settle a question without debating it” (p. 10).

The conversation we wish to provide as an attempt answer to these questions is organized in four sections. The first provides a brief overview of our underlying theoretical framework. The two following sections present the arguments supporting each proposition. In the last section, we discuss and suggest areas where divergence and convergence seem to be relevant, and what the implications are for the research fields concerned (Fiol, 2001).

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First, we focus on the two research fields (Kuura et al., 2014, p. 223), as well as on the communication and related discourses, in a “systemic-discursive perspective” – as Seidl (2007, p. 199) coined it – within and between both fields (Bröckling, 2016). Both E&PM can be defined as research fields. For Audet and Malouin (1986), a field is “the space occupied by the whole of the people who claim to produce knowledge in this field, and this space is also a system of relationships between these people competing to gain control over the definition of the conditions and the rules of production of knowledge” (p. 42). For instance, we have shown that PM is a recognizable research and knowledge field (Bredillet, 2010, p. 4).

Second, we root our argument in a Luhmannian framework. Luhmann is a Social Theorist, Organization Theorist and System Thinker rather than a sociologist per se (Seidl and Mormann, 2014). This paper draws on Luhmann’s work on autopoietic social systems, and on Seidl systemic-discursive perspective, grounded on Luhmann’s work (Seidl et al., 2005, Seidl, 2007).

The following conversation is based on the observation of the two fields: E&PM. According to Luhmann’s discussion of observation and distinction:

Drawing on Spencer Brown’s (1969) calculus of distinctions, Luhmann unfolds this basic idea. According to this calculus, observation can be conceptualized as distinction and indication: every observation draws a distinction in the world (e.g. between primary numbers and all other numbers) and indicates the side it wants to observe (e.g. the primary numbers). That is to say, the observer has to focus on one side while neglecting the other. It is not possible to focus on both sides simultaneously. In this way, the relation of the two sides to each other is made asymmetrical; the observation creates a “marked side” (the observed one) and an “unmarked side” (the unobserved one) (Seidl and Becker, 2005, p. 13).

Therefore, there is no middle ground between the two above-mentioned propositions. Each of the fields is, in a Luhmannian perspective, an autonomous discourse, i.e. an autopoietic communication system relying on different codes, “according to which its communications are meaningful” (Seidl, 2007, p. 202).

Each discourse conveys a specific worldview. E&PM, as fields, are conveying two different worldviews, rooted in two different finalities; indeed, their ends are different: PM finality is about making the project “dying,” whereas entrepreneurship is about “giving birth” and “developing.” These fields are interdependent in some way. Indeed, the interdependence or mutual stimulation of two operationally closed discourses can be described as structural coupling (Seidl, 2007, p. 209; Luhmann, 1992, pp. 1418-1419). However, according to Seidl:

[b]ecause of the incommensurability of the different [discourses], [fields] cannot draw on any general [E&PM] concepts. Instead, any concept used within a particular [field] has to be understood as the [field]’s own construct. Concepts developed and propagated in other discourses can stimulate [fields] to develop their own [E&PM] concepts in response, but they can never enter the [field] as such.
Consequently, what appears as the adoption of a general [E&PM] concept would have to be treated as an illusion – a productive misunderstanding – based on the fact that [fields] use the same labels, or sets of labels, for their own constructs (Seidl, 2007, p. 206; text into […] is modified by the authors).

Thus, the circulation and transmission of general concepts between fields occurs because of this structural coupling (Seidl, 2007, p. 210). We should note that structural coupling does not involve “tension” or “competition” and our purpose is not to argue in favor of one or the other proposition – which would stand in contradiction with the dialogical approach, but rather to highlight, in a Luhmannian perspective, that advocating for a “convergence” involves much more than relying on similar labels. This leads us to question the role of observation in performing distinctions and indications, the “codes” of the discourses, the shared labels and their role in productive misunderstanding (Seidl, 2007, p. 206; Teubner, 2000, p. 408), as well as structural coupling.

As a matter of consequence, for this paper, schools, tracks, subdivisions or components within a field, and whatever the level of relation between them, are part of the same autopoietic communication system, i.e. of the same discourse with its own logic. However, when the logics – i.e. the “codes” – differ, we can conceptualize the field as an ecology of discourses, the different discourses within the field being “both autonomous and highly interdependent at the same time” and co-evolving (Seidl, 2007, p. 209).

We are not looking for synthesis or consensus, but rather, we aim at tentatively highlighting the underlying reasons supporting the two propositions and suggesting possible avenues for productive misunderstanding to occur between the two fields and their “structural coupling” (Luhmann, 1995, cited by Seidl, 2007, p. 209). Lastly, despite a focus on the two research fields, our discussion may touch on practice, especially while talking about some shared “labels” between the two disciplines (Nicolai, 2004, p. 955).

P1. E&PM should stay separated because of the existence of two distinct discourses

Considering the richness and inherent complexity of a research field, it seems relevant to focus on discourses and narratives held within the field in question, and to look at the “stories” told within the field to construct meaning out of them and gain a full picture of the field’s line of thought (Tsoukas and Hatch, 2001).

Typically, this kind of study allows the unveiling of various schools of thought within a field. Both in E&PM (see Bredillet, 2010; Turner et al., 2013; Fonrouge, 1999) several typologies have been suggested sometimes in agreement, sometimes not (see Table I).

Unlike PM, entrepreneurship is beyond the field in management studies (Huang and Knight, 2017). The reason is because, historically, literature on entrepreneurship mainly builds on authors in the fields of economy, psychology and sociology.

The foundation of our argument, based on a Luhmannian perspective (Luhmann, 1989, 1995, 2005), is that a research field is a self-reproducing social system. This leads us to adopt the notion of systemic-discursive perspective (Seidl, 2007, p. 199), and to apprehend a given research field as an operationally closed autopoietic communication system (Hernes and Bakken, 2003, p. 1515) with its own autonomous discourse and codes (Seidl, 2007, p. 202). Indeed, each system “possesses its individual code, according to which its communications are meaningful” (Seidl, 2007, p. 202).

E&PM are grounded on different codes themselves carrying communications. PM research discourse is built on the code labeled success. On the one hand – whatever the school of thought, the onto-epistemological, or the paradigmatic lens – the purpose of PM research is ultimately to increase the likelihood of a project’s success. This can be seen in the way scientific publications (explicitly or implicitly) set the scene, justify their relevance and claim making a significant contribution to the research field. On the other hand, entrepreneurship
<table>
<thead>
<tr>
<th>School</th>
<th>Key idea/questions</th>
<th>New trends and renewal</th>
<th>Came to prominence</th>
<th>Key variable or unit of analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimization school</td>
<td>Optimize project duration by means of mathematical processes</td>
<td>Late 1940s</td>
<td>Time</td>
<td>Time, cost, performance, quality, risk, etc.</td>
</tr>
<tr>
<td>Modeling school</td>
<td>Use of hard and soft-systems theory to model the project</td>
<td>1950s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governance School</td>
<td>Govern the project and the relationship between project participants</td>
<td>1970s</td>
<td>The project, its participants and governance mechanisms</td>
<td></td>
</tr>
<tr>
<td>Behavior school</td>
<td>Manage the relationships between people on the project</td>
<td>Mid-1970s</td>
<td>People and teams working on projects</td>
<td></td>
</tr>
<tr>
<td>Success school</td>
<td>Define success and failure</td>
<td>Mid-1980s</td>
<td>Success criteria and success factors</td>
<td></td>
</tr>
<tr>
<td>Decision school</td>
<td>Information processing throughout project life cycle</td>
<td>Late 1980s</td>
<td>Information based on which decisions are made</td>
<td></td>
</tr>
<tr>
<td>Process school</td>
<td>Find an appropriate path toward the desired outcome</td>
<td>Late 1980s</td>
<td>The project, its processes and sub-processes</td>
<td></td>
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</tbody>
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Table 1. Schools of entrepreneurship and project management research works
<table>
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<tr>
<th>School</th>
<th>Key idea/questions</th>
<th>New trends and renewal</th>
<th>Came to prominence</th>
<th>Key variable or unit of analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingency school</td>
<td>Categorize the project type to select appropriate systems</td>
<td></td>
<td></td>
<td>Factors that differentiate projects</td>
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<td>Discovering and exploitation of businesses opportunities</td>
<td>Bygrave and Hofer (1991), Shane and Venkataraman (2000)</td>
<td>From an idea to an opportunity</td>
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research discourse is formed around the code opportunity (Alvarez and Barney, 2013; Shane, 2012; Vogel, 2016); this code is independent from the onto-epistemological or paradigmatic perspectives. Entrepreneurship research is fundamentally about finding ways, in a way or another, to unveil opportunities, made or found (Garud and Giuliani, 2013). Thus, the two fields “differ fundamentally in the way they process meaning,” because communications are encoded in a different way (Seidl, 2007, p. 203). PM or entrepreneurship research can be examined according to their own criteria, making them meaningful within their own system of discourse. For instance, the concept of performance is not constructed the same way and does not convey the same meaning in the two fields. In PM, the variable performance is usually related to the success of a project, according to predefined goals to be met upon project completion, whereas in entrepreneurship, performance may relate to growth, future profit, or any specific goals pursued by an entrepreneur and this at different time horizons.

One may say that the two fields are sharing some similar general concepts. However, as explained above, “the same words have different meanings in different contexts or discourses. Thus, the transfer of a set of labels from one discourse to another is associated with a (mostly unnoticed) re-interpretation, i.e. with a change of its meaning” (Seidl, 2007, p. 206). Thus, when both fields make use of a label, e.g. innovation (Kuura et al., 2014, p. 216), it is understood in a different way in each field, undermining any attempt at mutual usage between fields. We can, for the purposes of illustration, state that the label “start-up” has a different focus and meaning in PM and in entrepreneurship. In a PM perspective, one speaks about project start-up phase (i.e. planning) (Midler and Silberzahn, 2008), while entrepreneurship sees a business start-up as being part of an entrepreneurial act involving four phases: “the idea, pre-start-up, start-up and post-start-up phase” (Kuura et al., 2014, pp. 220, 224).

Thus, “a discourse cannot receive an input of meaning from another discourse” (Seidl, 2007, p. 207). This aspect is described as “productive misunderstanding” (Teubner, 2000, p. 408):

In a precise sense, interdiscursive translation is impossible. Here lies the paradox of today’s babylonic language confusion. Between the discourses, the continuation of meaning is impossible and at the same time necessary. The way out of this paradox is misunderstanding. One discourse cannot but reconstruct the meaning of the other in its own terms and context and at the same time can make use of the meaning material of the other discourse as an external provocation to create internally something new (Teubner, 2000, p. 408).

Following Luhmann, introducing outer labels or concepts is the source of “perturbation” in the operationally closed discursive systems, i.e. research fields. These labels are re-interpreted according to the specific code of each system, and may create new idiosyncratic meaning in each system. Considering the two fields as parts of an ecology of discourses (Seidl, 2007, p. 208), the shared concepts or labels are “a source of mutual stimulation between different discourses – despite their autonomy,” and their operational closure; this phenomenon is described as “structural coupling” (Luhmann, 1992, p. 1432). Through structural coupling, different discourses can “adjust with regards to each other” (Seidl, 2007, p. 209).

In summary, whatever the shared labels or concepts, perceived influence – in a way or another between the two fields or from a tierce field – each one remains a distinct discursive operationally closed system with its own communication code.

P2. E&PM should converge because of the potential action-oriented links

Despite the fact that E&PM have developed quite separately, those young disciplines share similar issues.

First, both must achieve a sustainable competitive advantage (Fiol, 2001). For instance, in industrial services, project managers invest in the entrepreneurial learning skills of their team (Matthyssens and Vandenbempt, 1998). They need to be innovative, proactive and capable of
proposing new solutions. In short, project teams are entrepreneurially oriented, and this characteristic stimulates corporate entrepreneurship (Dess and Lumpkin, 2005). In a recent research on 145 ICVs, Covin et al. (2015) demonstrate that internal corporate ventures are contingent upon their ability to adjust their value proposition as they develop. Firms engaging in “internal corporate venturing activity can facilitate the recognition of product-market opportunities, the development of new organizational capabilities, the discovery of new technological possibilities, and the creation of new strategic trajectories” (p. 762).

Second, a new organization – be it a project or a venture – shares the same market pressure, especially for innovative products or services. Whatever its nature, it faces uncertainty. New entrants have to learn from, by and about the market. For example, an “incubation period” is often said to exist when new technology-based firms introduce novel products to the market (Christensen and Raynor, 2003). Entrepreneurs and project managers are searching for clarification by markets of how and why particular value propositions are or are not appealing. Agile organizations methods are appropriate for entrepreneurs and project managers. They are considered as those who learn fast and are effective. In order to better understand how entrepreneurial methods of quick and inexpensive learning about the market could be applied in PM, Stettina and Horz (2015) propose a research based on 30 interviews conducted in 14 large European organizations. By analyzing their application to IT project portfolios, their study contributes to the understanding of agile methods. Agile methods have been implemented bottom-up in the majority of the cases. This is reflected in the fact that characteristics perceived as agile can be mostly found on the project level and portfolio level. They point out the danger a lack of commitment of senior management can pose (Stettina and Horz, 2015). Digital native entrepreneurs are not as confronted to that problem.

Third, new venture and project-based enterprises are composed of social actors embedded in networks. Traditionally entrepreneurs used collaborative relationships that conveyed the information and resources required to carry out new projects. Ferriani et al. (2009) analyze the performance determinants of project entrepreneurs, namely, the individuals who are responsible for launching and carrying out those projects. They argue that project entrepreneur’s performance is related to their degree of centrality within the social network, and their familiarity with the selected project team as captured by the distribution of ties among team members. They test these hypotheses within the Hollywood Film Industry over a period extending from 1992 to 2003. The findings show that assembling teams that combine old-timers and newcomers does lead to centrality and performance benefits, albeit bound to the law of diminishing returns (Ferriani et al., 2009).

Fourth, E&PM share the same team management processes. “Small is beautiful”: this motto could describe both fields, as both consider optimal teams to be small, coherent, multidisciplinary and highly result oriented. Moreover, team members are often deviant from socially accepted norms (Lin et al., 2016). They are concentrated in the same physical space, which fosters creativity (McKeever et al., 2015). Both the project manager and the entrepreneur generate deep personal loyalty among their team members. In both cases, teams are highly autonomous, responsible and incentive driven. Project teams at Google are a case in point: while Google employees are encouraged to devote 20 percent of their time to personal projects, they are expected to deliver results from those projects within a relatively short time frame, as the Google slogan exemplifies: “Fail early fail fast!” In other words, employees devoting their time to non-performing projects can expect early dismissal. Entrepreneurs and project managers have irregular schedules and are not prone to engage in routine skullduggery (Barczak and Wilemon, 1989). Fixed daily routines are often nonexistent in start-ups, because they have not yet had the time to emerge. Similarly, projects managers often choose to eschew such routines in an attempt to reproduce the entrepreneurial culture. Start-ups are by definition vulnerable and often short lived; as a
result of this, their teams are often temporary. However, in highly entrepreneurial areas, such as Silicon Valley or Route 128 in Massachusetts, the same individuals often tend to move from one project/team to another. A central argument about employment mobility in regional clusters concerns the opportunities for new learning. The concept of “boundaryless career” was recently tested in a French innovation cluster called Minalogic (Culié et al., 2014). On the basis of a set of 42 interviews, this research has highlighted how inter-firm collaborations can lead to the development of individual career capital, and, in turn, boost individual psychological mobility.

Fifth, an emerging common discourse about effectuation/causation argues that dichotomy or continuum is possible thanks to the convergence of those two fields (Alvarez and Barney, 2013). It is often argued that causation is more prevalent in PM while effectuation is more dominant in entrepreneurship. As Brettel et al. (2012) have shown on 123 R&D projects, effectuation is positively related to success in highly innovative contexts, and causation approaches are beneficial in projects with low levels of innovativeness. It is not the field that is determinant but rather the degree of innovativeness (Brettel et al., 2012).

Discussion and conclusion
To our first question, are E&PM fields so far from each other and thus, irreconcilable? The answer may be yes!

We can argue that the two fields are grounded in two different discourses and codes, and therefore “differ fundamentally in the way they process meaning” (Seidl, 2007, p. 205). E&PM research works have also two distinct institutional statuses, further emphasizing the distance between them.

The academic status of a research discipline can be assessed by the number and the impact factors of related journals, and by the place occupied by the discipline in the university: has it been assigned a faculty, a school, a department, a discipline or a subject matter expertise within a department?

Based on the Scopus database journal list and CiteScore, Table II summarizes some key facts and figures.

First, considering the active publications, we find 24 journals in entrepreneurship (E) and 8 journals in PM in 2016.

Second, observing the CiteScore 2016, three journals in entrepreneurship have higher CiteScore than 3, the highest being 5.39, while two journals in PM have a score above this threshold, with the highest being 4.58. However, the average CiteScore for entrepreneurship journals (1.22) is lower than the one for PM journals (1.72). Furthermore, considering the evolution of CiteScore since 2011, we note that PM scores higher on average (Figure 1).

Third, paying attention to the coverage of the journals (All Science Classification Codes), it appears that PM journals are mainly covering:

- Business and International Management;
- Civil and Structural Engineering;
- Geography, Planning and Development;
- Information Systems and Management;
- Management Information Systems;
- Management of Technology and Innovation;
- Management Science and Operations Research; and
- Strategy and Management (Figure 2).
Table II. CiteScore summary for entrepreneurship and project management journals

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While e-journals coverage is broader, i.e.:

- Business and International Management;
- Business, Management and Accounting;
- Development;
- Economics and Econometrics;
- Education; Gender Studies;
- Management Information Systems;
- Management of Technology and Innovation;
- Marketing; Renewable Energy, Sustainability and the Environment; and
- Strategy and Management and Urban Studies.

The four areas of overlap are:

- Business and International Management;
- Management Information Systems;
- Management of Technology and Innovation; and
- Strategy and Management.

The difference in the number of journals and in impact factors of each respective discipline's top journals, as well as in each respective discipline's breadth of coverage, persuades one to acknowledge a distinction between the two fields, a difference of status and focus.

With respect to our second question, if yes, is it so good?, there is no easy answer. Looking for transdisciplinary research is useful only if it helps to better tackle grand challenges and makes "a difference which makes a difference!" (Bateson, 1972, p. 315).

We can argue that E&PM share similar issues, as well as some similar practices (see above P1). In the meantime, and beyond these issues, both fields, at least partly, include societal aspects, such as sustainability, environmental concerns, resource efficiency and effectiveness, social entrepreneurship, social design and innovation, computing and technological development (e.g. AI, machine learning, quantum computing), all impacting both fields' discursive and sociomaterial practices (Orlikowski, 2007; Mantere and Vaara, 2008).
From there, “[w]hat is the difference that makes [possibly] a difference” (Bernstein, 1982)? And how to move forward?

With Seidl and Becker (2005), we may find some inspirational thinking process in Luhmann’s concept of autopoiesis. Many social researchers failed in their endeavors to apply this concept autopoiesis to social science because they tried to transfer its original, biological meaning and vocation (Maturana and Varela, 1980) directly from one field to the other. In contrast, Luhmann did not apply the concept directly to the social domain, but abstracted “from the originally biological concept a general, transdisciplinary concept of autopoiesis. This transdisciplinary concept of autopoiesis was then open to re-specifications by the different disciplines” (Seidl and Becker, 2005, p. 25).

A possible way forward is to start by acknowledging that both E&PM are applied sciences aiming at coping with institutional organizational tensions in institutions, as well as competing demands (Smith and Lewis, 2011; Smith and Tracey, 2016). From there, we can move up to the level of general sciences, and beyond each specific discourse and code (although each discursive system remains). It is not an integration but, rather, another dimension and addition to the ecology of discourses adding “another level” of structural coupling. The two fields are, indeed, part of the general scientific discourse (code true/false), built on the code labeled true/false. Thus, instead of borrowing, blending and transferring concepts “laterally” and directly from practice to practice or theory to theory, or from practice to theory (such as done in Kuura et al., 2014, p. 223), we move “upwards” by abstracting general and transdisciplinary concepts from each field, general and transdisciplinary concept. In our illustration, we suggest considering the general concept of paradoxical organizing as a transdisciplinary concept, open to re-specifications by different disciplines. Indeed, as aptly demonstrated by Smith and Lewis (2011) and Smith and Tracey (2016), a theory of paradox offers a relevant ground to better understand and explain organizing tensions, and how to cope with competing organizational demands, and to suggest that our cyclical responses enable organizational sustainability.

Figure 3 summarizes the process of abstraction/re-specification, as well as the distinct logics and specific organizing perspectives. At a general scientific level, we can find Structural Realist organizing aimed at discovering the fundamental structure of the universe through pure research, and Foundationalist organizing, looking for hidden patterns in data by means of induction. At the level of applied science, Instrumentalist organizing engages in truth-independent problem solving, and Strong Paradigm organizing builds a scientific paradigm and exploits its implications. Finally, Critical Realist organizing (not depicted in Figure 3 as this logic can be found at various levels and in different fields) focuses on emancipating people from prevailing structures of power and oppression (Kilduff et al., 2011, p. 299).

At the end of this dialogical conversation, we want to highlight the following points:

1. E&PM should stay “far from each other” as they do not share the same discourse and code. This distance allows each discipline to develop in its own way, and may create a fruitful creative tension.
In the meantime, it would be “good” for these two fields to build on shared issues and move, through a process of abstraction, to a deeper conceptualization and scientific lens, allowing to tackle grand societal challenges in a more fruitful way. Moreover, this would allow through re-conceptualizations to foster the development of the two disciplines in a more enlightened way!

Notes
2. Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation, see http://data.worldbank.org/indicator/NE.GDI.TOTL.ZS (accessed September 25, 2017).

References


**Further reading**


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Process perspectives on entrepreneurship and projects

Arvi Kuura
Pärnu College, University of Tartu Ülikool, Pärnu, Estonian, and
Rolf A. Lundin
Jönköping International Business School, Jönköping, Sweden

Abstract

Purpose – The purpose of this paper is to integrate research on entrepreneurship and projects by applying process perspectives on these two fields with the ambition to shed light on how this kind of alternative perspectives can be used to further the fields in research and practice.

Design/methodology/approach – This conceptual paper is based on previous research efforts in the two fields and on how they have been treated in the past. Business process research is introduced to enrich notions on how the two areas can be combined.

Findings – By rearranging thinking about projects, entrepreneurship and processes, and through introducing the notion of “chunks”, the authors illustrate how different types of business processes in different types of project contexts can be coordinated through orchestration and/or choreography.

Research limitations/implications – The research made for this conceptual paper has been thorough. However, the literature is huge, so the reservation must be made that the authors might have missed some important trends. Anyway, there are implications for how research and analyses of data can be used with the thinking described.

Originality/value – Combining various lines of research is not common as illustrated by the lack of studies combining entrepreneurship and projects; therefore, by adding process notions and “chunk” reasoning, this paper opens up for innovation and renewal in research. To the authors’ knowledge this approach is new.

Keywords Entrepreneurship, Business processes, Projects, Orchestration, Choreography, Chunks

Introduction

It has been argued that research efforts concerning entrepreneurship and projects essentially constitute two separate streams in the academic literatures. However, entrepreneurial activities and project work are well linked in the real world of practice and this furthers the stance that possibly research is less well organized to mirror and analyze what is happening in society. This separation of research streams seems to be quite common in the academic world of today due to specialization of research combined with how the market of academic journals develops and how university governance and policies for recruiting senior academics change.

The purpose is to outline alternatives to organize research in an integrative way. We do so by exemplifying with an effort to combine three research areas on projects, entrepreneurship, and processes, and this is the focus of this paper.

The underlying belief is that the world currently is undergoing a change from industrial society to project society where projects and temporary organizations become more prevalent. This is an institutional and practical transformation which correspondingly calls for different research “chunks” in comparison with the current research scene. It has been said repeatedly in the past that interdisciplinary research should be encouraged, but in fact that happens very seldom due to the functioning of the academic world.

In this paper, we will describe some alternative roads to integrate research on entrepreneurship and projects via a process view and we will also use this case as an
Below, we will examine more in detail the current divide between research on entrepreneurship and research on projects. The following text will cover how those fields have developed over time as major separate themes. The few signs of linking efforts will also be described. Next we bring in the process view and examine its relations with entrepreneurship and project management. Forwards we present an alternative (from the mainstreaming business process management (BPM)) view of process “chunks” and propose a new approach for coordinating process chunks via choreography and/or orchestration. Finally, in the last section, alternatives to integrate the entrepreneurship and project “chunks” will be described going all the way from making expert researchers from different fields to cooperate over time.

To allude to the current divide between entrepreneurship and project management research, it is apparent that they are “ancient” well-connected practice fields but as academic disciplines disconnected and considered to be relatively young, even immature. Recent research (cf. Kuura et al., 2014) has indicated organic links between the two practice fields: at certain stages of entrepreneurial processes – like starting up, renewal, closure or transfer – the entrepreneurs act as project leaders. Also, the two academic disciplines should be related but they have developed in parallel, yet still along separate paths. This is mainly because researchers tend to work on narrow subtopics and publish in specialized (niche) journals. This has caused segregation of academic communities and fragmentation of generated knowledge. Similar fragmenting mechanisms also work on the practical side: it is easier to become an “expert” in a narrow subfield but more difficult to cover a wider area. This has caused fragmentation of knowledge and omission of potential synergies, both in academia and to some degree also in practice.

Against this background, it should be mentioned that attempts to break out of prevalent academic “silos” seem to be quickened during the 2010s. Reassessment of relationships between entrepreneurship and project management is such an example. There have been deliberate and partly successful efforts to connect the two academic fields but we believe that more concerted efforts from researchers in both fields are needed to seek synergies. Next, we provide a background on the research divide and how that divide has developed, however. We start from recent developments in entrepreneurship and project management, focusing on matters with linking potential, and continue examination of significant developments from the process perspective. We carry out literature reviews, using a loosely structured method, starting with keyword searches in academic databases and examination of the content of relevant publications. Then we use “bottom-up” approach, following the references of examined articles, and again examine the contents of publications. Some sources are from our previous research and some (non-academic but professional) from general web searches.

The development of entrepreneurship and project research over time
Entrepreneurship is a term used for a set of wide and multiplex phenomena: one can find numerous definitions in the literature, and different terms (such as “self-employed”, self-activated, etc. and even “small business management”), labeling related phenomena, at that often used interchangeably. As a more precise discussion of definitions does not fit in the scope of this paper, we limit ourselves to a very brief clarification. We build on a seminal contribution of Gartner (1989), perceiving entrepreneurs as key actors in the process of creation of new ventures. Advanced process perspective (discussed in a section below) is certainly important and by relating that to behaviors, personalities, etc. one can explain several essential aspects of entrepreneurship. However, limiting our view on entrepreneurship to the creation of new organizations leads to unsuitably narrow understanding that does not correspond to current realities. Already in his classic text Drucker (1985) associated entrepreneurship with innovative and change-oriented behaviors rather than just starting (and running) a business. The past decade has also acknowledged a
new but related concept – entrepreneurship in existing organizations (Bosma et al., 2010). This comprises intrapreneurship (a bottom-up process, proactive initiatives of individual employees) and corporate entrepreneurship (a top-down strategy, fostering initiatives from the employees).

Briefing the latest developments in ways of understanding entrepreneurship, it is worth to mention that the actual underlying concepts of “innovation” and “change” have also been acknowledged by public agencies. For one, the European Commission (2006, p. 20) specifies entrepreneurship as “[…] a dynamic and social process where individuals, alone or in collaboration, identify opportunities for innovation and act upon these by transforming ideas into practical and targeted activities, whether in a social, cultural or economic context.” In a more recent document the authors (Bacigalupo et al., 2016, p. 10) go even further determining that “Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social.” The cited documents (European Commission, 2006; Bacigalupo et al., 2016) are devoted to entrepreneurship education. The latter also proposes something special in the field – the “Entrepreneurship Competence Framework” defining entrepreneurship as focusing value creation in every sector – private, public or third – as well as in hybrid combinations of these. In other words, it can embrace different types of entrepreneurship (from classical profit-oriented to social) in different environments (from small and nascent firms to big organizations with a solid history). Notably, the idea of (providing) “value for others” is significant as it obviously hints to an important concept in a contemporary paradigm, named “service-dominant logic,” alluded to by Vargo and Lusch (2004).

To be in line with recent developments in the field, we adopt a broader meaning and define entrepreneurship as “[…] changes in existing practices and processes, or the establishment of new activities that lead to changes in the economy and society” (Kuura et al., 2014, p. 216). We recognize that this definition may also fit to innovation but innovation appeared to be the main junction between entrepreneurship and projects on the practice side, and the mainstream linking concept in existing academic literature (Kuura et al., 2014).

Research on entrepreneurship has evolved significantly during the last decades, particularly because of the importance of entrepreneurship for the whole society seems to be almost indisputable for all, especially policymakers. All public institutions, from the EU and states to communities, have policies for supporting entrepreneurship and significant resources are allocated for that, including research and development (Kuura et al., 2014). As a longer overview would not fit in the scope of this paper, we refer only some of the most important developments in entrepreneurship research. A conceptual history of entrepreneurial thought (Murphy et al., 2006) discerned three major periods: prehistoric, economic (from the end of the eighteenth century to the 1970s) and multidisciplinary (since the 1980s). Stevenson and Jarillo (1990) distinguished some main streams of contributing disciplines – psychology and sociology, management, and economics – answering three main questions: why and how entrepreneurs act and what happens as result. At the last turn of the century some researchers considered entrepreneurship as an immature discipline but most researchers recognized significant developments in its conceptual basis, as well as in empirical works. The discipline looked at empirical phenomena from a variety of lenses, drawing upon different areas (such as economics, sociology, psychology, etc.) and related business fields (such as management, marketing, finance, etc.) and, in turn, feeding back into mentioned domains (Kuura et al., 2014).

Rosa (2013) has described recent entrepreneurship research as drawing upon a rich diversity of theory and methods from social sciences and scholarly traditions from different countries. In this century, the academic communities have recognized some emerging subtopics – such as empowerment of indigenous communities, people with disabilities and other minorities through entrepreneurship; sustainable, social and “green” entrepreneurship, etc. Differences are
noted between the USA and Europe: European researchers tend to be more policy oriented, more methodologically open, and more inclined to multidisciplinary approaches. The main characteristics of the European entrepreneurship research seem fit well to the central idea of Zahra et al. (2014) about the need for the contextualization of entrepreneurship research. They discussed dimensions of industry (spatial, social, etc.) and notably, the first one of the dimensions they discussed is temporal. The opinion of cited authors is that “despite the number of studies touching on these issues [...] our knowledge of time as a dimension of context remains fragmented at best” (Zahra et al., 2014, p. 482). They point to one potential reason – the entrepreneurship research is still lacking a coherent, integrative, and well-grounded theoretical framework in general. The last issue is generally known and has worried several researchers in the field. At the same time, it is worth to point out that the temporal aspect of entrepreneurial context has the closest connection to projects and temporary organizational settings.

Project management also concerns an “ancient” phenomenon and relatively young (even immature) academic field. Even though “rudimentary” project management has been used over centuries, the discipline got started as late as in the 1950s. Projects, no matter how rudimentary or in what form, have been used to deal with changes in societies. This is important because it links projects to innovation. However, not all projects are innovative, as well as not all (new) businesses are innovative or entrepreneurial. (Cleland and Ireland, 2006) The focal notion of project has been defined in several ways, but we proceed from Artto et al. (2006) who discerned three viewpoints on a project: tasks or phases in a process, product or work breakdown structures of a project, and temporary organizations. The first two encompass most aspects in “classical” understandings and comprise the notion of “project work.” The third viewpoint – temporary organizations – is more recent; it focuses on behavioral aspects, dealing projects as organizations (Lundin and Söderholm, 1995).

Nowadays most organizations increasingly use projects and also project management for achieving their strategic objectives and coping with increasing complexity, uncertainty, and ambiguity in the current socio-economic environment (Bredillet, 2010). The contribution of projects and project management to global value creation is important and also most probably growing. According to estimates, the overall share of projects in the world economy and over all sectors is at least one-third; in less developed countries – emerging economies – possibly even more (Turner et al., 2010). At that, a research stream, uncovering the value of project management for permanent organizations (Thomas and Mullaly, 2007) has developed.

The importance of project management increases because of ongoing projectization (the extent to which the activities of an organization are based on projects) and projectification – organizational changes accruing from the increasing volume of projects. The projectification concept was introduced in a seminal article by Midler (1995) examining Renault’s path toward project orientation. Later Maylor et al. (2006) brought in a multi-project dimension and a relatively new notion named programmification. Currently, the projectification has influenced the whole society being part of its transformation to project society (Lundin et al., 2015; Lundin, 2016).

Research on project management has passed through some important developments during the recent decades. Turner et al. (2010) discerned nine different schools of thought in project management, affirming that the discipline has become much more diverse than in “classic” understandings (described by the “iron” or “golden” triangle – time, cost and scope/quality). Padalkar and Gopinath (2016) traced trends in project management research over the past six decades and asserted that the literature is rich in multiple paradigms, perspectives, methodologies, and research streams but poor in terms of theories. This is because of the domination of deterministic perspectives. But theory building requires a use of a non-deterministic perspective, addressing the variability in project phenomena through
incorporating the appropriate theoretic and methodological approaches. Some appropriate approaches have been mentioned, namely the “Scandinavian School” and “Rethinking Project Management” (Jacobsson et al., 2016). The cited article also calls for a broad, multi-perspective research on projects and temporary organizations.

Several research efforts have been devoted to societal changes with a project view basis and many of them touch upon cases related to how project work is spreading into various areas. Today the world is full of projects and the impetus for the change is that project models spread into new areas – like project management in the public sector (Godenhjelm et al., 2015). Another impetus comes from widening perceptions of what constitutes a project. These developments have widened the project realm leading to rethinking. In the past, there have been numerous attempts to find the definition of a project which is useful everywhere (Lundin, 2016). Recently, it has been argued that attempts to find such an overall definition which fits all purposes is futile. Rather than alluding to a precise definition of what a project is, one should acknowledge the fact that all projects do not share the same characteristics. They might share some but not all characteristics. In line with the German philosopher Wittgenstein, it has been demonstrated that thinking of projects as members of a family is more useful (Lundin, 2016). Members of a family have some traits in common but not all!

In a recent publication (Lundin et al., 2015), the project family idea has been developed and used as a basis for focusing on three major branches of a complex family tree. Rather than defining family groups per se, the distinction is made between contexts for projects: in project-based organizations (PBOs), in project-supported organizations (PSOs), and related to project networks (PNWs). In general, the complexity of these groups follows an increasing order in that the first group is characterized through the way the project-based industry organizes itself. The second group is certainly more wide generally (at least between organizations) and finally, the third group is constituted by a diverse multitude of projects where the development of the group itself is also strong over time (Lundin, 2016). Another way of characterizing the latter group is to say that we are (the world is) in a state of fluidity as described by Bauman (2013) and this adds to diversity.

The implication of the ideas concerning project society is that conventional ways of thinking might have to be adapted as well. Business processes become more unstable in a networking context and the relative importance of what is done in practice changes. There are very few circumstances which are stable. Changes include formation of new networks over time and reactivation or deactivation of previous networks become new components of business processes.

**Linking entrepreneurship and project research**

The review on the developments in the two fields, provided in the previous section, might hint at some similarities. However, most similarities tend to appear on the practice side, whilst the two academic fields have developed quite separately. For instance, it might be a bit surprising but widely quoted names in entrepreneurship do not appear in the project management literature and vice versa. Just one name (Dennis Slevin) appears frequently in both literatures but this is a rare exception. Even though the two bodies of academic literature seem to be rather separated, a closer look revealed several linkages and some trends. First, the linking attempts appear to be steadily growing over time. Second, the linkages appear in quite a wide range of subtopics but some keywords are often referred to, such as innovation, what seemed to be the mainstreaming linking concept. (Knura et al., 2014) Since the beginning of this decade certain indications of further rapprochement can be observed. A good example is an article by Lindgren and Packendorff (2011), proposing a new view of entrepreneurial processes as temporally (also spatially and socially) distinct interactions – seeing them as projects. The afore-cited article draws on
earlier works and concepts, especially on the project-based view on entrepreneurship (Lindgren and Packendorff, 2003). Another simple but notable sign of rapprochement of the two fields is a symposium at EURAM[1] annual conference (in June 2016, Paris, France). This symposium had the straightforward title “Project management and entrepreneurship” and its purpose is “to integrate the segregated communities and to stimulate debates and cross-disciplinary learning on the conceptual, methodological, and pragmatic level between researchers in project organizing and entrepreneurship” (European Academy of Management, 2016).

The transformations described illustrate how the linkages between research on projects and entrepreneurship have developed lately. These are just some separate and possibly isolated cases of the developments but, nevertheless, new and activating openings for the advancement of research can be noted. Openings mean just emerging but still almost unused possibilities.

On the project management side the most important opening is probably projectification and evolution toward project society (Lundin, 2016). This subtopic has deserved adequate attention in academic literature but quite recently Packendorff and Lindgren (2014) broadened the concept of projectification and stated that this multi-faceted phenomenon should be studied “in its own right” and also theorized as a cultural and discursive phenomenon. The argumentation in Lundin et al. (2015) states that most trends in contemporary societies, despite their labeling, have common characteristics – diffusion of revolutionary information technology (IT), new ways of knowledge formation, challenges to formal and informal institutions, and importantly, expansion of looser and often temporary organizational forms – that is, extensive projectification. Projectification occurs and causes transformations of work and management practices on macro-, meso- and micro-levels (including the level of individuals), and thus is ever more challenging the traditional industrial organization. The cited authors show that ongoing overall projectification addresses issues in other fields, particularly in entrepreneurship. Discussing similarities between entrepreneurship and projects, among other things, the authors draw upon the concept of “disposable organization,” wielding high short-term efficiency but only modest adaptive durability. Maintaining a highly efficient organization until it becomes dysfunctional in the changed environment and afterwards forming another, a permanent organization, brings out parallel between start-up venture ecology and project portfolio management (Lundin et al., 2015). Summarizing the argumentation above, it can be claimed that the research of project management and (especially) temporary organizations steadily recognizes entrepreneurial aspects, notably the specificities of creative or innovative activities.

On the entrepreneurship side, some harmonious trends can be observed. Already three decades ago, Gartner (1985) proposed a four-dimensional conceptual framework, describing new venture creation, encompassing individuals, organizations, environments, and processes. The cited article does not use project-related vocabulary but described that entrepreneurial activities are plainly project-alike, including building of an organization. These organizations are supposed to be “permanent” but high “mortality rates” among early-stage entrepreneurial companies is a popular topic in the entrepreneurship literature. Looking at subsequent developments (cf. Lindgren and Packendorff, 2003) seeing entrepreneurship as managing an organization-creation process as a project seems to become more and more popular. Davidsson (2016) scrutinized developments in the field of entrepreneurship research and pointed out that the process of new venture creation is iterative, interactive, often complex and long by duration. Thus, research attempts that focus on a smaller set of process milestones are quickening. Hereby it is worth to note that the term milestone is very common in the project management literature and also seeping into the process management literature (Rosemann, 2014).
Lundin et al. (2015) saw more interesting theoretical (and also practical) matters in the entrepreneurship domain, enabling convergence with project management. One of these is the concept of effectuation, introduced by Sarasvathy (2001). Goal orientation and planning (causation) approach has obvious fit with traditional, as well as with agile project management methods (Salameh, 2014).

To continue this overview, there are possible further fruitful connections between project management and entrepreneurship. Looking at the latest developments, they bear proof that the options are continuously used. For Huff (2016), entrepreneurship provides promising bases for management of innovative project in complex and uncertain environments. Lindkvist and Hjorth (2015) contributed explicating how a cultural project could be legitimized in adverse environment, what can be considered as an entrepreneurial achievement. Martens et al. (2015) proposed a conceptual model, suggesting that entrepreneurial orientation is positively related to the project management maturity. Their findings also contribute to theoretical discussions linking entrepreneurship and project management. Advancing afore-cited findings, Belfort et al. (2016) widened this approach and related entrepreneurial orientation to a typology of project management systems: ad hoc, classic, innovation, and entrepreneurship (also intrapreneurship).

Trokić (2016) claimed that despite of some developments there is still a large gap: frameworks or models for entrepreneurial project management and for using project management in entrepreneurial endeavors are still missing. Accordingly, there is a cogent need for further research to bridge the gap between entrepreneurship and project management. In fact, it is difficult to agree or disagree with the last claim unequivocally. Screening the high-level academic literature, it seems to be quite true – there is already something, however, pertinent frameworks or models are still missing. At the same time, including also professional and more popular sources, the picture changes noticeably. For instance, Auschra et al. (2016) explicitly showed parallels between the creation of new ventures and project-based organizing. A similar contribution is made by Kiznyte et al. (2016), reconnoitering possibilities of using project management methods in the creation of a start-up business plan. Moreover, Ramirez-Portilla (2013) developed a conceptual model, elucidating the influence of project manager’s competences (and personality traits) on the entrepreneurial process. Again, the fact that linkages between entrepreneurship and project management tend to appear in rather professional and popular than in academic literature affirms the persuasion that developments in practice antedate developments in theory, or in other words, a research gap still exists even though it might be less wide.

Here, we revert to the article by Lindgren and Packendorff (2011) because they clearly apply process thinking to entrepreneurship, and through treating entrepreneurial processes as temporary they link entrepreneurship with project management. Using the term “project metaphor” they avoided a possible pitfall – to “squeeze entrepreneurial processes into the project management toolbox” (Lindgren and Packendorff, 2011, p. 52). Thereby, they started to link entrepreneurship and projects via processes and notably, this research direction has emerged. Kuura et al. (2014) maintained that the most recent developments in the “mainstream” of linking entrepreneurship and projects seem to be related mainly to two keywords, whereat the first is process. In the next section, we continue the examination of recent developments by including more explicitly the process vocabulary with the purpose to find new avenues for this research arena by relating both to business processes.

**Entrepreneurship, projects, and processes**

A process view on entrepreneurship is not new. According to a commonly known definition (Stevenson and Jarillo, 1990, p. 23) “entrepreneurship is a process by which individuals – either on their own or inside organizations – pursue opportunities without regard to the resources they currently control.” At first the process perspective focused on the creation of new
ventures (Gartner, 1989). In contemporary understandings entrepreneurship means much more than starting and running a (small) business – it comprises a much wider range of processes and may take place in all organizations, including larger, non-profit, and public organizations. The process perspective developed together with behavioral perspective. Entrepreneurship can be found everywhere, most organizations and people, from a CEO to a municipal clerk, can be entrepreneurial. A wider view provides place for modern phenomena like social and environmental entrepreneurship (Kuura et al., 2014). Moreover, Hjorth et al. (2015) stated that entrepreneurship is not just a creation of new organizations but also experiments in new forms of organization. The last has obvious connection to projects, as organizational change is an example of transition, which is a key concept of the theory of temporary organizations (Lundin and Söderholm, 1995) and a widespread type of projects (Bredillet, 2010).

Process views on project management are even more prevalent. APM BOK (Association for Project Management, 2006, p. 2) specifies project management as "[...] the process by which projects are defined, planned, monitored, controlled and delivered [...]" Projects bring about change and project management is recognized as the most efficient way of managing such change." The ending part of the citation brings out another essential aspect – innovation and change management, exemplifying both project management and entrepreneurship. Further, international standard on project management (International Organization for Standardization, 2012) constitutes: “A project consists of a unique set of processes [...]” and related standard (guidelines for quality management in projects) determines project as "[...] unique process, consisting of a set of coordinated and controlled activities [...]" (International Organization for Standardization, 2003). Moreover, Turner et al. (2010) discerned nine schools of taught in project management and one of the nine schools is labeled as process school. Process school is just one amongst nine and thus it can be claimed that the discipline of project management is not process oriented. As in entrepreneurship, alongside with process perspective, project management also encompasses behavioral perspective, treating projects as temporary organizations (Lundin and Söderholm, 1995).

Applying the process perspective is not an easy task because of a plethora of understandings of the relations of processes and organizations. According to Hernes (2008), the key aspects of the “process understanding of organization” mostly belong to (or originate from) the organization studies but not entirely: some belong to institutional theory, some to more general disciplines such as sociology and philosophy, and some to such a distinct field as technology.

Applying the process perspective on entrepreneurship and project management, the conceptual basis will be built on BPM. Nowadays BPM is a distinct discipline, gradually developed amidst management and information systems and computer sciences (Recker and Mendling, 2016). Similar to entrepreneurship and project management, the history of BPM can be dated back to the ancient times (Dumas et al., 2013). However, compared to the two afore-mentioned disciplines, BPM is younger and even less mature, whereas the most significant developments have occurred later. In accordance with contemporary understanding, the formation of the BPM discipline eventuated only in the twenty-first century (Recker and Mendling, 2016; van der Aalst, 2013).

The rationale of BPM is based upon the speculation that processes in all organizations – business enterprises, as well as governmental bodies and non-profit organizations – play many important roles. Since processes need to be managed, there is a need for developing BPM – the art and science to ensure consistent outcomes and to exploit improvement opportunities (Dumas et al., 2013). Improvements (typically reducing costs, execution times and error rates, etc.) may be one-off or be of a more continuous nature. BPM can be used for improving individual processes, but, in reality, for managing
entire chains of events, activities and decisions that add value to the organization and its
customers. These “chains of events, activities and decisions” are called processes. A
business process is defined as “a collection of inter-related events, activities and
decision points that involve a number of actors and objects, and that collectively lead to an
outcome that is of value to at least one customer” (Dumas et al., 2013, p. 5) and BPM as “a
body of methods, techniques and tools to discover, analyze, redesign, execute and monitor
business processes” (Dumas et al., 2013, p. 5). The last definition also points to different
phases and activities in the lifecycle of BPM and business process, what is quite important
subtopic in BPM (Macedo de Morais et al., 2014).

Looking at existing links between BPM and project management, one should mention
that project management is sufficiently recognized[2] in the BPM field (La Rosa, 2016).
The reason is that in an organization BPM is usually exploited through a (pilot) project.
As business environment, customer’s needs, etc. tend to change, the business processes
should also be changed from time to time. Thus, further BPM initiatives – redesign,
reengineering, improvement, or just change (similar matters are labeled diversely) of
processes, are persistently needed. Because of their temporary and transitional nature, BPM
initiatives are carried out via organizational projects and/or programs, aiming to improve
both efficiency and effectiveness of business processes. BPM initiatives should preferably
be initiated by top-level management, because disconnection with strategy has been
reported to be a major flaw. The implementation of BPM requires cross-functional (project
or process) teams, as well as creation of specialized departments, typically a stand-alone or
integrated BPM unit. (Hernaus et al., 2016) Alongside BPM unit, also different labels are
used: BPM Group, (Support) Office, Center of Excellence, or process team (Jesus et al., 2009)
and lately Business Process Office (BPO) has come into use (Bontinck et al., 2016).

The BPM literature (to which the three articles mentioned before belong) recognizes
project-related matters and tends to emphasize aspects also related to the project
management field – alignment of (portfolios of) projects with strategies, engagement of
top-level management, and particularly organizational changes (or transformations) are
ordinary topics in the project management literature (cf. Aubry, 2015). Evidently terms as
BPO, BPM unit, etc. do not appear in the project management literature, but there is an
obvious counterpart – PMO[3] standing for Project Management Office. PMOs have got
momentous attention in the project management literature, even PMO is still “loosely
defined as an organizational entity assigned a variety of roles or functions in executing the
coordinated management of projects under its domain” (Aubry, 2015, p. 20). Despite of
apparent similarities between BPSs and PMOs, and some examples of combining them in
practice (cf. State of Maine, Office of Information Technology, 2016, p. 3), so far there are no
signs of accordant rapprochements in academic literature.

Looking further for linkages between BPM and projects, the situation seems to be
improving. For one, a BPM book includes a chapter with heading “Project Management”
(Becker et al., 2011). Even though this chapter is dedicated to typical BPM projects, it should
read well for most project managers, here just an assertion: “As with all projects, the process
modeling project requires its own temporary organizational form […]” (Becker et al., 2011,
p. 21). Described role (and type) of projects in BPM seem to be established some time ago
(cf. Becker, 2004) but there are also dissimilar developments. Kostelac et al. (2011) pointed
out that processes and projects are not well related in most organizations and suggested
that projects fit into the framework of process management. Furthermore, do Carmo and
Albuquerque (2014) carried out a case study in a Brazilian court and explored how
the automation of processes improved the productivity of the Project Office and reduced the
communication time. Automation is a common topic in the BPM field (Rosemann and
vom Brocke, 2015) and it is usually done via using business process management systems,
as described by do Carmo and Albuquerque (2014). A peculiarity of the last cited paper is
that it is dealing with a public organization. It is commonly known that BPM field started
dealing with private organizations but the principles also are applicable in public or
governmental organizations (Tregear and Jenkins, 2007), as well as in non-governmental
organizations (Petersen and Bandara, 2015). As it was elucidated above, similar trends also
occur in project management.

Spotlighting existing links between BPM and entrepreneurship appears to be a more
complex task. Despite that, the process view on entrepreneurship could be considered as
mainstream in the literature already for some decades. As pronounced by Davidsson (2005),
the entrepreneurial process is usually divided into two sub-processes: discovery (called also
exploration) and exploitation, and distinctions have been made between internally and
externally triggered processes and (following Sarasvathy’s approach) causation vs effectuation.
Another possibility is to follow the typical sequence and distinguish between the nascent
process and new venture process (Nightingale and Coad, 2016). These issues are not (or not
directly) addressed in the BPM literature but, still, some connections are emerging. For
instance, Le Loarne and Maalaoui (2015) investigated how entrepreneurs anticipate and change
BPM in high-tech companies after a radical innovation. Their main finding was that in this case
BPM is more a matter of “bricolage” than following an established, defined plan.
The cited article has specific value, as it “partly answers the call for integration among different
theoretical backgrounds and approaches that consider BPM” (Le Loarne and Maalaoui, 2015,
p. 152). Bricolage is recognized in the entrepreneurship literature (cf. Davidsson, 2016;
Shepherd, 2015); this contribution really links BPM with entrepreneurship. A notable
contribution was made by Al-Dhaafri et al. (2013), analyzing how organizational performance is
influenced by total quality management (TQM), enterprise resource planning (ERP), and
entrepreneurial orientation. TQM and ERP are as common topics in the BPM field as
entrepreneurial orientation is in the entrepreneurship field, and therefore combining them can
be considered as an attempt of linking entrepreneurship and BPM. As expected, Al-Dhaafri
et al. (2013) relied on classics of entrepreneurial orientation (several works of Lumpkin and
Dess, Covin and Slevin, and others) but do not mention an article by Covin et al. (2006),
examining how the success of entrepreneurial orientation may be affected by strategy
processes of the firm. The article mentioned does not bring in typical approaches of BPM.
Yet, as strategy processes are recognized in BPM, this contribution is somehow an originator of
linking entrepreneurship and BPM. Another contribution by Lemanska-Majdzik and
Okreglicka (2015) targeted (among other things) on investigating of level of entrepreneurs’
knowledge and orientation on processes but they seamlessly insinuate from entrepreneurs to
managers of small and medium enterprises (SMEs) – or in other words, from entrepreneurship
to SME management.

It is not easy to distinguish between entrepreneurship and SME management in research
and this is largely because the two phenomena are also overlapping in practice. As a longer
discussion of their relations would not fit in the scope of this paper, we rely on Davidsson
(2000). His framework (even figuratively) shows significant transition in typical entrepreneurial
process – entrepreneurship smoothly faces out and (small business) management floods in.

Alternative views on process approaches
Some analyses of linkages between entrepreneurship, (management of) projects, and
processes (BPM) conclude that despite of some rapprochements, the potential of further
connections, mutual learning, etc. is not used fully. Therefore, this section presents some
ideas for further convergence of projects and entrepreneurship via processes – or even for
coupling all the three disciplines, using a “chunk” perspective.

The notion of “chunk” in relation to research on temporary organizations was introduced
by Karlos Artto (Artto, 2013) from Aalto University in Finland. The main argument and the
basis for that article is that there is a need for a combination of different theories as well as
propositions from several theories, not just one theory. The purpose of the chunk notion (as a kind of business enterprise like entity) is to set the researched entity free from only one theory which would be used for such an entity (e.g. if we refer to “organization” then we are into an organization design discourse, if we refer to “project” then we are locked into a project management discourse, etc.). In the same vein, empirical boundaries in research are not given but need to be re-conceptualized as part of the research process. Thinking in terms of chunks potentially makes that easier.

Using the chunk concept is complicated as it has no precise meaning. However, the selection of the “almost insane” word chunk with no meaningfulness in this kind of research setting was the intention when Karlos Artto originally introduced it: the purification of the “chunk” concept from any sensible connotations with selecting this word, aimed at the establishment of a space where there is freedom to create something new which cannot be defined at the outset in a prescriptive or expected manner. In other words, the development of the chunk as a concept was meant to be one of chunk itself. However, to continue this development, the concept of chunk needs to be developed. Artto (2013) presented some statements about the concept in the article but, for our purposes, we have chosen to simplify by constructing a slightly different concept but keeping the same terminology as Artto. We specify five tentative general characteristics of a chunk, as presented in the left column of Table I.

As we read the usefulness of the chunk notion, it inherently defines the boundaries of whatever is your concern. And, to complicate the setting more, we can ask that who is the “you” who is concerned? And, the answer is that there are many “you” around. It is like stakeholders that have stakes, but it varies on what. We prefer to see the concept as something you intend to study thereby using theoretical concepts as well as world views or visions of what the world looks like. Thus, a chunk is not something once and for all given but something constructed by the research actor who takes a lot of decisions in the research work. Possibly the word “munch” is more useful in the sense that it refers to the activity to take a bite. Taking a munch covering both entrepreneurship and project means that you choose to see the two theoretical ideas as parts of the same munch. The one taking the bite decides what by defining what the bite should cover. We also adhere to the notion that the bite itself – i.e. the munch – is important and matters – and not only who takes the bite and why: so, we are not talking about organizations or actors as “living organisms” who take bites, but also include “non-living” bites that are in continuous transformation, they matter as well.

<table>
<thead>
<tr>
<th>A chunk in general</th>
<th>A chunk of business processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Is unclear shape and form, dynamic (changing continuously), distributed in many places in many dimensions</td>
<td>Processes are everywhere, more “spaghetti-like” than people think, thus is difficult to capture the complex reality in a suitable model</td>
</tr>
<tr>
<td>(ii) Might cut across boundaries of permanent and temporary organizations; and include events, contextual issues, etc., outside organizations</td>
<td>Only processes can deliver value to customers, thus require horizontal coordination across functional areas; environmental include factors outside of the organization</td>
</tr>
<tr>
<td>(iii) Is an inseparable part of its environment</td>
<td>Environmental factors influence process design and execution, also standardization, mining, etc.</td>
</tr>
<tr>
<td>(iv) May be affected by any future states in the environment</td>
<td>Processes contain choices that may be controlled by the environment rather than BPM systems</td>
</tr>
<tr>
<td>(v) May be hidden or invisible</td>
<td>Processes may be (partly) hidden, thus need to be discovered or “mined”</td>
</tr>
</tbody>
</table>

Sources: Left column – adapted from Artto (2013); right column – constructed by authors, particularly relying on Tregear (2017), van der Aalst (2010, 2013), and vom Brocke et al. (2016)

Table I. The construct of a chunk of business processes
The implication is that the world is viewed as essentially inseparable like in general systems theory (cf. Buckley, 1967; Simon, 1962). Essentially, there is a need to define the limits of your own munch in a tentative way. Future deliberations might lead to rethinking, either to simplification in relation to the munching, the bite taken, and the bite itself as a continuously changing part of the system (e.g. disregarding and excluding things) or to efforts to include other facts or theories in case they seem needed or called for. In that way taking munches implies making choices, and the objects of the choices (munches) are in an ever-changing state as well and relate to other choices and objects in past, present, and future.

Hence, as seen, the concept of chunk is applied in the project management literature. Looking at the entrepreneurship literature, the word chunk appears less often, mostly in specific subfields such as social entrepreneurship and is used for labeling methodological (cf. Weerawardena and Mort, 2006), and not substantial matters. In the BPM literature, the word chunk appears slightly more often and significantly, its meaning is conceptually not too different from the approach in the previous discussion. However, the wording “BPM-chunk” stands for “BP meta-model chunks” (Saidani and Nurcan, 2008). Importantly, in the BPM field the chunk can be viewed as a “black box,” able to transform an input into an output; and chunks can be broken down into their constituent parts and these parts can be federated (Henderson-Sellers et al., 2014).

Considering the aforesaid, the chunk approach has seeped into the BPM field and (notably relying on Henderson-Sellers et al., 2014) partly matching the approach by Artto and this paper. It should be noted that in BPM, chunks (as in the whole BPM field) have quite visible marks of IT. Henderson-Sellers et al. (2014) mentioned projects hundreds of times (an example – knowledge sharing is above) and this is organic because of the essence of software development – a natural and typical project-based activity. Albeit they do not mention entrepreneurship, they mention innovation quite often. Furthermore, a case they analyze is about a small (seven employees) company, what can be classified as entrepreneurial – it aims to grow, operates in a niche market, permanently looks for new niche products to increase its offer, and has to watch technology and business innovations. Growth and innovation in this company is managed by projects. Possibly unwillingly, but the cited source has linkages to entrepreneurship and/or small business management.

Although the chunk approach has vaguely percolated into the examined fields, we believe that there are still unused possibilities, especially for creating mutual understanding and further linking of these fields. Onwards, we present some ideas for further development, particularly the construct of a chunk of business processes, as summarized in the right column of Table I.

The starting point is the primacy of processes, as stated by Tregear (2017). All organizations (not only businesses but also public and non-profit) must deliver value to their customers and need horizontal coordination across (still) vertically managed functional areas, owning the resources of the organizations.

The idea that only business processes, not separate functional areas, can deliver value to customers and other stakeholders of the organization is central in the whole BPM literature. Common definitions of business processes (referred in a section above) emphasize “value to at least one customer” and it should be noted that the customer may be also inside an organization. This has a good match with a notion of internal customers (also internal marketing, services, etc.) in the service literature (cf. Kauppinen-Räisänen and Grönroos, 2015). So, in summary, one can say that (chunks of) business processes are everywhere and might (even usually must) cut across boundaries of permanent and/or temporary organizations. We may assume that business processes are clearly established and visible for all involved actors but the reality might be to the contrary. The real processes are usually more “spaghetti-like” than we think and because of their dynamic nature, not as concrete as a product or piece of data. Thus, it is difficult to capture the complex reality in a
suitable model, because often the business processes need to be discovered (or "mined"). Nowadays more and more information about processes is captured in event logs and thereby processes can be discovered using specific techniques (van der Aalst, 2010).

Considering the aforesaid, we can resume that the characteristics of chunks of business processes match three (i, ii, and v in Table I) characteristics of chunks in general, but some additional clarification is needed about the contextual issues. According to Roeser and Kern (2015), contextual issues appeared in the BPM literature already in the 1990s but predominantly in qualitative approaches, especially related to BPM maturity models. However, in recent years growing interest in contextual issues, including culture, is observed in the BPM literature (Schmiedel et al., 2013), and significantly, in other bodies of literature – for one, service (Weitlaner and Kohlbacher, 2015). On top of that, vom Brocke et al. (2016) proposed an integrated framework for context-sensitive BPM, embodying four dimensions of context: goal, process, organization, and environment. The goal (focus) dimension embraces characteristics as exploitation (improvement, compliance) and exploration (innovation); the process dimension discerns types of value contribution (core, management, and support process) and repetitiveness (repetitive vs non-repetitive processes). Moreover, the organization dimension distinguishes between scopes (intra- and inter-organizational processes) and sizes (start-ups, SMEs, and large organizations).

Considering aforesaid, it can be claimed that environmental factors influence BPM, including process design, execution, standardization, etc. – in other words, the (chunks of) business processes are firmly related to their contexts. Following logical deduction is that the (chunks of) business processes may be affected by any future states in the environment. As claimed by van der Aalst (2013), usually the processes contain choices and may be controlled by the environment rather than BPM systems.

The contribution of vom Brocke et al. (2016) is prominent in several aspects. First, it calls attention to projects; however (as typical for BPM literature), focusing on “BPM projects” but pointing to similarities with project management in general. At that they cite two widely cited articles in the project management domain: Engwall (2003) and Shenhar (2001). In addition to that, the proposed context-sensitive framework for BPM encompasses even more project-related aspects, such as repetitiveness, also variability, creativity, knowledge-intensity, and so on. Most notably, vom Brocke et al. (2016) did not use word “entrepreneur” but the framework they presented includes several “entrepreneurial” aspects – such as exploration (innovation), creativity, also culture, resources, competitiveness, and uncertainty, in contrast with exploitation. Their main word is that one-size-fits-all approach on BPM projects is not suitable, contextual requirements should be sufficiently considered. This refrains to a current “entrepreneurial” trend in BPM – form exploitative to explorative or to ambidextrous BPM (Kohlborn et al., 2014).

Some overall implications of the chunk approach
The above discussions lead to the general conclusion that chunks of business processes are/can be made prevalent. The chunks are not given as alluded to before but rather constructed by actors – practitioners or researchers, who take a bite or (as proposed earlier) a “munch.” It can be assumed that there are innumerable variations to take a “munch” of business processes. Onwards we try to explore possibilities for taking munches covering both entrepreneurship and projects.

As the chunks of business processes in (especially bigger) organizations can be bulky and possibilities for taking munches endless, some methodical basis or framework should be useful. The need for suitable methodologies was claimed in the BPM literature about two decades ago and during this time several frameworks have been developed (all having both advantages and shortages). The most comprehensive taxonomy of generic processes has been developed by the American Productivity and Quality Commission (APQC). The APQC
model covers more than 1,000 processes and its structure is in line with the Porter's value chain (Aitken et al., 2010). Indeed, when you scrutinize the Cross-Industry Process Classification Framework (PCF) (APQC, 2016) it becomes clear that it represents a highly comprehensive and useful framework in the present context. It is intended to allow for objective comparisons of performance within and among organizations, but it also considered useful for the discussion to come on the implications of the chunk approach.

The PCF classifies processes into 13 categories, in which 1-6 are operating (or core, creating value for the customers) processes and 7-13 management and support processes, also labeled (internal) services. Significantly, since the sixth version, the management and support processes are categorized as services, what obviously reflects developments in the service literature (cf. Kauppinen-Räisänen and Grönroos, 2015). The second dimension is the level of the hierarchical process decomposition, allowing distinguishing between categories, process groups, processes, activities, and tasks.

In line with the purpose of this paper, we examined the contents of APQC PCF and ascertained that project-related processes are sufficiently represented. For one, a category “Development and management of capabilities of an organization” includes a group of explicitly project-related business processes, and the next lower (process) level defines processes for the management of portfolios, programs, and projects. The next lower level defines activities (such as develop project plans, etc.) and the lowest level tasks (like identify appropriate project management methodologies). Similarities with the most common project management methodologies are quite obvious here. Projects also appear under other subdivisions of APQC PCF. An example is the management of fixed-asset project accounting – a process “Perform capital planning and project approval,” decomposed into activities like “Create project account codes,” etc. Such projects are typical in PSOs, as accentuated by Lundin et al. (2015).

APQC PCF also distinguishes projects among operating (or core) processes, explicitly under category “Develop and manage products and services,” including a process group “Develop products and services,” where the first process is labeled “Design and prototype products and services,” which are obviously project based (cf. Hollins and Shinkins, 2006). Tasks such as develop procurement plan, generate detailed schedule, etc., can be found in most “standard” project management methodologies, as well as in practical project plans. The word “project” appears more in relation to service delivery processes, what can be taken as a sign of farther relatedness. Thus, it should be mentioned that the convergence with services is also an emerging topic in the project literature (cf. Burström et al., 2014). Notably, the category “Manage customer service” was introduced only in the latest (seventh) version of APQC PCF. This seems to be a response to a contemporary trend – servitization (also hybrid offerings, integrated solutions, product-service systems, etc.) embodying transition from products to services in production firms (cf. Kowalkowski et al., 2016). Significantly, the cited article mentions projects as providers of solutions to problems faced by clients and even entrepreneurial aspects – opportunities, enabling service growth. This also means that projects typical in PBOs, as set by Lundin et al. (2015) are fully recognized in BPM, including practice, (as APQC PDF is intended for practitioners).

Words such as entrepreneurship or entrepreneurial are not used in APQC PCF but considering that it is targeted “[...] to allow the objective comparison of organizational performance within and among organizations” (APQC, 2016, p. 1) and aspects of entrepreneurial orientation (such as innovativeness, risk taking, etc.) are also addressed, it can be claimed that entrepreneurial aspects are also addressed. Aforesaid might be not convincing enough but fortunately, there is something more. As pointed out in previous analysis, an “entrepreneurial” trend is moving form exploitative to explorative or to ambidextrous BPM, characterized by radical process change, process innovation, also enabling of new business models, etc. For example, a task “Identify implications for key
operating model business elements that require change “does not use “business model” but “key operating model business elements” seems to mean the same.

According to Lundin et al. (2015), projects in PNWs represent a proliferating type. PNWs are complex; may be both inter-organizational and interpersonal, and include PBOs and PSOs, as well as individual actors and other temporary organizations. Thus, the nodes of a network might be organizations but also just individuals; and a network might exist or be established. PNW projects may overlap with the other two types (PBOs and PSOs) and typically cut across organizational boundaries. Our examination shows that APQC PCF contains several activities, addressing networking issues – for example, collaborate with suppliers and partners, coordinate strategies with internal stakeholders, and more of the like.

An important matter we want to focus (see Figure 1) is that projects in PNW contexts are the most variable and complex. Since they are less studied, they are also the most interesting for researchers, as well as for practitioners. It might be claimed that projects in PBOs and PSOs are special cases since the contexts are overlapping with each other as indicated in the figure.

Furthermore, projects in PNW contexts are of particular interest since project work might also include constructing or reconstructing networks opening up for entrepreneurial initiatives by “project makers” (which refers to individuals acting as a type of network brokers).

**Coordinating process chunks via choreography and orchestration**

The previous analysis and discussions ascertained several linkages between projects, processes, and entrepreneurship. However, the examined fields appear to be still quite separated, dealing with their “own” problems in their “own” ways, and despite some obvious overlapping, the “glue” seems to be still missing. We propose an approach that should be capable to link the separated fields.

The linking approach is based on the following premises: entrepreneurship should be perceived as network-creation, rather than organization-creation (Sydow et al., 2015); PNWs present the most comprehensive type of project contexts (Lundin et al., 2015); and both entrepreneurship and projects involve vast chunks of processes that need to be coordinated. Thus, the question boils down to how to coordinate the chunks or munches of business processes. Fortunately, the BPM field has suitable methods to offer – process orchestration and process choreography. Although their labels may hint at beaux arts, their roots are in technology (mostly IT), they are widespread in the BPM field (cf. Dumas et al., 2013), and

![Diagram showing types of business processes in projects and methods for coordination](image-url)
they are supported with specific techniques, tools and standards, such as Business Process Model and Notation (Object Management Group, 2011). Both orchestration and choreography are targeting coordination of processes but there is a crucial difference: orchestration presumes central coordination of activities within roles in organizations but choreographies focus on interactions between roles. It means that choreography is not realized by a central coordinator, it is rather interaction between a set of independent roles. Thus, if coordination is carried out by a central person (or machine-automat), this is a case of orchestration; if several roles are acting independently, this is a case of choreography (Decker and Weske, 2011).

Even though distinguishing between orchestration and choreography seems to be the mainstream opinion in the BPM field, it has been called to question – claiming that both mean coordination. In our view, there is a useful difference even though there is some overlapping as indicated in the Figure 1. Depicted overlapping comes from a premise that choreography denotes interaction between independent roles (or actors). The reality is that in the current paradigm it is hard to find independent actors – in a state of networking, value co-creation, etc., the traditional weak ties (Lundin et al., 2015, pp. 126-127) may appear stronger than expected. It means that the degree of independence of actors lessens and choreography shifts toward orchestration. There is also an opposite trend – traditionally strong ties may appear weaker, causing transition from orchestration to choreography. Thus, we believe that there is an area where orchestration and choreography overlap, as described in Figure 1.

In a quite recent publication, Ferraro and Iovanella (2015) developed the relationships of orchestration and choreography in inter-organizational innovation network context and made several interesting contributions. Their approach is process-oriented but goes beyond the usual frontiers of BPM, incorporating influences from different approaches. Even projects are mentioned very seldom and entrepreneurship not at all, they treat processes that are both project-alike and entrepreneurial. Therefore, we consider their clarification of the differences between orchestration and choreography (as demonstrated in Table II) the most consummate and fitting with the ideas of our contribution.

Moreover, Ferraro and Iovanella (2015) brought in another useful concept – scale-free networks. These are systems that spontaneously organize themselves, adapting to constantly changing environment. It is important because this is in line with the chunk (and/or munch) approach we proposed before.

It can be claimed that Figure 1 presents a new approach on project management, challenging it to be seen as coordination of chunks or munches of processes. Moreover, following the idea about primacy of processes (as put by Tregear, 2017) that figure can

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Orchestration</th>
<th>Choreography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership/organization(s)</td>
<td>Individual/hierarchical, single</td>
<td>Diffused/heterarchical, multiple</td>
</tr>
<tr>
<td>Assets control</td>
<td>Hub controls</td>
<td>Broad sharing</td>
</tr>
<tr>
<td>Outcomes and market opportunities</td>
<td>Clearly defined</td>
<td>For all network members</td>
</tr>
<tr>
<td>Sharing of benefits in creating value</td>
<td>Asymmetry for hub and members</td>
<td>Ontology and membership driven</td>
</tr>
<tr>
<td>Innovation leverage and coherence</td>
<td>Inter-organizational, explicitly invoked</td>
<td>Inter- and intra-organizational, information-driven</td>
</tr>
<tr>
<td>Nature of coordinated processes</td>
<td>Centralized</td>
<td>Distributed, peer-to-peer</td>
</tr>
<tr>
<td>Control and execution of processes</td>
<td>Process model and role patterns</td>
<td>Interaction and collaboration</td>
</tr>
<tr>
<td>Coordination models and orientation</td>
<td>Node</td>
<td>Network</td>
</tr>
<tr>
<td>Focus</td>
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</tbody>
</table>

Table II. Comparison of process orchestration and choreography in network contexts

**Source:** Adapted from Ferraro and Iovanella (2015)
describe also entrepreneurship. Our preceding discussions of linkages indicated that both core and support processes are essential for entrepreneurship, as well as networking, which is regarded increasingly important. Entrepreneurial organizations, no matter if they are small and nascent or big and mature, represent PBOs or PSOs, or most probably PNWs. It can be claimed that PNWs represent the overall category or the general case, embracing both PBOs and PSOs as special cases. Moreover, as processes are everywhere, one can put into this figure even public administration but as this is beyond the scope of this paper, we do not discuss such possibilities. However, hereby is indicated a possibility for further research.

We believe that the presented approach – coordinating process chunks via choreography and orchestration – may be useful for both practitioners and researchers. In practice it may open the way to integrate process and project management, including creation of commensurate supporting bodies. Here is almost direct link to research. Both in BPM and project management literature one can find numerous empirical, as well as conceptual studies about both types of supporting bodies, also maturity models and much more. Nevertheless, studies concerning both process and project management seem to be still missing. For instance, a research question – are BPM and project management maturity levels related and if yes, how – is possibly interesting for the two research communities, and the results are probably useful for practitioners, helping them in reaching higher maturity levels. This is just one example but similar, still, unused possibilities are nearly infinite.

To allude to qualities of the proposed chunk and/or munch approach: let us imagine an organization, medium-sized and sufficiently mature, yet rather entrepreneurial, providing project-based services and having production on line, covering a part of a supply chain – that is, an inter-organizational network. As argued before, such an organization represents a massive and complex chunk of processes. The chunk is even more massive and complex if one includes also processes that cross the boundary of the focal organization – these processes need to interact with the partners in the supply chain, and the clients of services (projects or rather solutions to their problems). This means that hundreds of processes (the APQC model includes over a thousand) are executed simultaneously. Even though practitioners do not use notions like munch, they have realized that nobody is able to handle the whole chunk. Thus, in practice suitable munches are taken from the chunk and assigned to specific roles – such as project managers, account managers, etc. Munches can be taken using different logic – service logic for the project managers, clients for the account managers, etc. The underlying reason for that is one – all processes (including sub-processes) along a particular dominant logic must be coordinated, using orchestration or choreographies, as described in Figure 1.

**Summarizing ideas and suggestions**

In the very beginning of this paper we ascertained that separating research streams and specializing in narrow research fields are common practices in the academic world. Implicitly we also indicated that practices of this type are detrimental for the development of academia as well as for practice. This is the general problem in line with the paper.

Discussing research efforts on projects, entrepreneurship, and business practices, we illustrated that these fields are not totally isolated but that there are untapped opportunities to combine them for improved research. One way to do so would be to act in accordance with the notions of chunks (or munches) to break out of the “silos” (meaning conventional areas and traditions of research and practice). We illustrated how this could be done in a tentative way using the example from the three themes in focus for this paper: projects, entrepreneurship and processes.
It certainly happens that individual researchers and research institutions do break out from the silos or “mental prisons” (to exaggerate a bit) by refocusing and by going over to areas not previously covered in their research. However, as indicated in our discussions there are strong counterforces (individually as well as institutionally) preventing this from happening to any significant extent. This is possibly true for a whole range of researcher activities. A well-known example, illustrating how high thresholds are, concerns what methods are used. Quantitatively oriented researchers tend to use quantitative approaches for their entire career rather than trying something qualitative. Researchers also tend to stick with theoretical areas where they feel at home, etc.

This is rational in the sense that the individual and the institutions have invested efforts and money and other resources in what they have and are. But it might be detrimental for knowledge development and innovative research. The problem might further be aggravated by changes occurring in the real world. In our view, research should be in line with what is happening out there, and this is of high importance for the social sciences since much of what is happening has implications for the social world. Research should take the fluidity in the real world into account.

Alluding to the main theme for our paper again, we indicated that the researcher overlap between the areas in question is close to absent. One way to organize research in line with ambitions to be interdisciplinary might be to make use of competent researchers available in the three areas. A simple setup is to combine one researcher from each of the three fields (projects, entrepreneurship, and business processes) and put them to work by let them come to agreements on an appropriate chunk, research questions, methods, etc.

Incentives to do so are not at hand, so if the talk of interdisciplinary research is to be for real, special financial resources should be devoted to such “crowd-sourcing” research. Another obstacle is that constructing and initiating a team is by no means easy. To make use of the notions of choreography and orchestration, the project researcher has to be open for all three types of contexts apparently relevant for project research and the researcher on processes should be able to focus core processes as well as support processes.

At that, there needs to be appropriate publication opportunities for this type of research. If universities adapt their reward systems from publication in narrow research journals to publication of crowd efforts, the publishers are more than likely to follow suit.

One concluding remark: since the approach described in this paper is a bit unconventional, the authors would like to receive feedback from fellow researchers and reflecting practitioners in terms of critical remarks, examples or counterexamples. A debate on how to make research to be in line with the developments in society over time and on how to attack areas useful for that society is welcome.

Notes
1. European Academy of Management (EURAM) is a learned society, founded in 2001, aiming at advancing the management discipline in Europe, having members from 49 countries in Europe and beyond.

2. For one thing, the cited article answers a question: “[… ] why hasn’t BPM become a structural organizational management discipline, alongside disciplines such as project management, risk management […]?”

3. PMO is a generally known abbreviation in the project management literature, used even in headings, and now also appearing in the BPM literature (see cf. Bontinck et al., 2016), albeit different labels are also used there.
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Patterns of project-based organizing in new venture creation
Projectification of an entrepreneurial ecosystem

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Abstract

Purpose – The creation of a new venture is at the heart of entrepreneurship and shares parallels with project-based organizing: embedded in an institutional context, founders have to assemble a team that works on specified tasks within a strict time constraint, while the new venture undergoes various transitions. The purpose of this paper is to explore parallels between both streams of research and an increasing projectification of entrepreneurship.

Design/methodology/approach – The study is based upon a case study of the Berlin start-up ecosystem including the analysis of interviews (n = 52), secondary documents, and field observations.

Findings – The paper reveals that – shaped by their institutional context – patterns of project-like organizing have become pertinent to the new venture creation process. It identifies a set of facets from the entrepreneurial ecosystems – more specifically different types of organizational actors, their occupational backgrounds, and epistemic communities – that enable and constrain the process of new venture creation in a way that is typical for project-based organizing.

Originality/value – This study thus elaborates on how institutional settings enforce what has been called “projectification” in the process of new venture creation and discuss implications for start-up ecosystems.

Keywords Institutionalization, Ecosystems, New venture creation, Projectification, Project-based organizing, Temporary organizations

Paper type Research paper

1. Introduction

The continuous increase of project-based organizing or “projectification” (Midler, 1995) can be observed not only in functional areas like research and development or typical project businesses such as construction, consulting, and in the creative industries, but it goes far beyond that, reflecting our zeitgeist of temporal acceleration and time-boundedness, and is thus having a deep effect on management, work, and society (Jensen et al., 2016; Lundin et al., 2015). Projectification also influences how entrepreneurs create new ventures in terms of the expectations and rules that are set forth explicitly and implicitly by their entrepreneurship ecosystem (e.g. Ács et al., 2014; Autio et al., 2014). At the same time, entrepreneurs are an essential part of ecosystems: they will help to co-create interfirm networks and regional clusters and be part of them if they appropriate more value doing this than through other alternatives (Pitelis, 2012).

Given the development toward project-based organizing, which we will trace in some detail by looking at one of the leading European entrepreneurial ecosystems, it comes as no surprise that scholars have started analyzing new venture creation by applying a project-based view (Lindgren and Packendorff, 2003; Midler and Silberzahn, 2008). The process of new venture creation indeed shows various parallels to what is described as
project-based organizing, leading to a temporary organizational form characterized by time and budget constraints and geared toward fulfilling goals in a team environment (Bakker, 2010; Lundin and Söderholm, 1995). Similar to project leaders, entrepreneurs aim to navigate their business to success by controlling budgets, building relationships, and managing human resources (Kuura et al., 2014). Survival in terms of a sustainable business model and a more permanent organizational state are fundamental goals for a newly created venture. In contrast to projects in other contexts, which are characterized by an institutionalized termination (Lundin and Söderholm, 1995; Müller-Seitz and Sydow, 2011), the temporary organizing effort of an entrepreneur ideally leads to setting up a permanent organization if the newly created venture is successfully launched. More importantly, and this includes the case of serial entrepreneurs, the entrepreneurial process itself can be characterized in terms of the typical features of project-based organizing, including a series of distinctive sub-projects and project-like[1] practices such as milestone planning and budget control. Despite these parallels with regard to outcome and process and the interdependencies between the entrepreneurial process on the one hand and the management of projects on the other, research in the respective domains rarely takes these into account, nor is much learning observable across these research domains (Ferriani et al., 2009; Lindgren and Packendorff, 2003; Mìller and Silberzahn, 2008). Against this background, Kuura et al. (2014) identified a “linkage gap” between research on entrepreneurship and projectification, which we aim to address. This gap is problematic not only from the perspective of scholarly efficiency but also with regard missing theoretical explanations for empirical observations such as the development of entrepreneurial ecosystems. Alluding to Alvesson and Sandberg (2011), we challenge the assumption that entrepreneurs have agency to largely (co)create and shape their entrepreneurial ecosystems in their favor (e.g. Pitelis, 2012) by drawing on theoretical strands from project-based organizing, specifically on how macro-level institutions on the level of ecosystems or organizational fields shape actions of organizational and individual actors.

The process of new venture creation we are interested in is taking place within an institutional context, namely an entrepreneurial ecosystem, defined as a geographically co-located hotspot of start-ups, more established businesses locally headquartered and experienced in spinning off entrepreneurs, research universities and public research organizations, as well as value networks among those organizations (Adner and Kapoor, 2010; Clarysse et al., 2014; Mason and Brown, 2014; van Looy et al., 2003). In addition, these ecosystems are characterized by various organizational actors that are critical for the development of start-ups (e.g. public and corporate incubators, venture capitalists, business angels, accelerators, etc.), provide different occupational backgrounds (e.g. natural scientists, programmers), and engaged in developing an epistemic community (e.g. events within the start-up ecosystem) (see e.g. Autio et al., 2014; Sine and David, 2010). Like any innovation ecosystem (Carayannis and Campbell, 2009; Wright, 2014), start-up ecosystems are thus positioned at the interface of often only loosely coupled knowledge ecosystems on the one hand and business ecosystems on the other (Clarysse et al., 2014). Previous research indicates that the institutional environment needs to be considered as an important factor in order to understand the process and practice of new venture creation (Tolbert et al., 2011). Hence, we argue that the notions and patterns of project-like organizing will affect the way in which new ventures are created in such systems. In particular, we assume that entrepreneurial ecosystems suggest the adoption of project-like activities which culminate in certain patterns and forms of organizing. Thus, we analyze if and how such ecosystems enforce projectification within the process of new venture creation. With the aim of gaining deeper insight into the institutional influence on start-up processes and practices, we ask to what extent, how and why an entrepreneurial ecosystem evokes and shapes patterns of project-based organizing in new venture creation.
While focusing on answering this research question, we will also discuss the ambivalence of this particular projectification trend for entrepreneurship research and ecosystem policy. Our analysis is based on an explorative case study of the Berlin ecosystem, as one of the leading European hotspots of start-up activities supported by established companies, universities and research organizations, a broad range of support organizations (including business angels, venture capitalists, and incubators) as well as different layers of value networks among start-ups (Clarysse et al., 2014; van Looy et al., 2003). Informed by a structuration lens (Giddens, 1984) on evolutionary and coevolutionary processes (Jacobides and Winter, 2005; Lewin et al., 1999; Murmann, 2012; Nelson and Winter, 1982), we account for the agency involved in the entrepreneurial process, highlighting the fact that entrepreneurs or start-up teams, as knowledgeable agents in the process of organization-creation, are the driving force behind the development (Pitelis, 2012). In the process, these agents refer to more or less institutionalized structures – like those in and of (intermediary) organizations, interorganizational networks, industries, professions and regions, even more broadly, organizational fields, in particular to the rules and resources of these systems allowing or asking for project-like forms of organizing. Thereby, we not only account for how the structures, rules, and resources are enacted by agents and enable and constrain entrepreneurial agency but also how they are reproduced, thereby either institutionalized further or transformed (Barley and Tolbert, 1997). Within our qualitative research design, we conducted 52 interviews with entrepreneurs, some of them serial entrepreneurs, members of supporting organizations, investors and accelerators/incubators. Additionally, we analyzed various related documents including webpages, press releases, and formal procedures and participated in numerous start-up events.

We contribute in several ways to previous research on entrepreneurial processes as well as on temporary forms of organizing. First, we develop an integrative understanding of how project-based organizing affects economic activities, being part of an institutionalization process in itself: the nature of project-based organizing, particularly its prescriptiveness and time-boundness with regard to milestones and deliverables, informs the entrepreneurial process in favor of short-term orientation and incremental development. Second, we elaborate on differences between institutional influences in the new venture creation processes, accounting for science-based and non-science-based contexts (Pisano, 2010), which are characterized by distinctive actor-related influences. Based upon these insights, we finally propose a recursive understanding of how the projectification of an entrepreneurial ecosystem unfolds like a patterned institutionalization process and how it is (re-)produced by structure and practice in an entrepreneurial setting. By highlighting the influence of start-up ecosystems in terms of shaping entrepreneurial activity toward project-based organizing, we open up a discussion on the (dis)functionality of such institutional pressures.

The paper is structured as follows: in the theory section, we introduce folds in research on entrepreneurship and temporary organizing, before illustrating our perspective of new venture creation as a structuration process shaped by institutions of an entrepreneurial ecosystem asking for project-like organizing. Subsequently, we present our methodology, drawing from the case of the Berlin start-up ecosystem. Then we present the findings of our qualitative analysis and illustrate differences between science-based and non-science-based start-ups. Finally, we discuss the implications of our findings for entrepreneurship research and policy, their limitations, and directions for future research.

2. Theoretical background

2.1 Commonalities of new venture creation and project-based organizing

Shane and Venkataraman (2000) describe the entrepreneurial process as consisting of the discovery, evaluation and exploitation of opportunities regarding the future delivery of
goods and services. To be able to exploit these opportunities, an entrepreneur needs to build the necessary supporting organizational structures (Gartner, 1985). This process of new venture creation with its different sequenced activities including discovering opportunities, building organizational structures, and exploiting ideas (Bhave, 1994; Burgelman, 1983; Kazanjian and Drazin, 1989) shows various parallels with project-based organizing, which, however, have hardly been recognized by previous research in both domains (as an exception, see Kuura et al., 2014). For example, different sequenced activities such as target formulation, milestone-setting, hierarchical planning techniques, and cost-controlling are inherent to both project management and entrepreneurship. In start-ups, these activities are mirrored by “pitching on the opportunity” (target formulation), sequential go – no-go phases, often driven by investors (milestones), and the analogously accompanying management practices common to projects (Lundin et al., 2015). One reason why actors in entrepreneurial settings might welcome practices of project-like organizing could be that projects are often celebrated “as a superior alternative to ineffective, rigid, boring bureaucracies” (Packendorff and Lindgren, 2014).

In their 4T framework, Lundin and Söderholm (1995) define four concepts (time, task, team, transition) to demarcate projects, as a form of temporary organization, from other organized settings. Transferred to the entrepreneurial context, these concepts can help to clarify the projectified character of new venture creation: time is normally limited (e.g. time-limited financing; importance of time-to-market); new ventures are typically created by (small) teams; the project of new venture creation also includes transitions like the development of the business model over time, and changes in organizational structures as well as product or service adaptations; and, finally, the founders execute rather unique tasks (e.g. development of a business model, product-market-fit), which are essential for the enactment of the new venture. Arguing from the perspective of entrepreneurship research and approaching the parallels in a processual way, Ajam (2011) names three crucial phases of launching a new business: the business concept stage (utilizing project-based organizing in terms of business planning techniques, understanding of stakeholder expectations and requirements, realistic time and cost targets, risk evaluation and feasibility study), the development of the business concept stage (including project-based organizing relating to the work on financial, legal, and personal aspects), and the project delivery stage (implementation). Obviously, these phases of new venture creation appear to be highly projectified, as already becomes apparent in the commonalities of their language. One example is new product development (NPD), which draws from project-based practices and which is, at the same time, an important, more often than not decisive aspect of new venture creation (Kuura et al., 2014).

Despite these apparent parallels, the application of a project-based view on entrepreneurship, and particularly on new venture creation, is quite rare in contemporary research (Lundin et al., 2015; Packendorff and Lindgren, 2014), one reason being that ventures are not intentionally temporary. Midler and Silberzahn (2008), for instance, highlight the role of projects during start-up development, studying learning effects between projects. Lindgren and Packendorff (2003) also propose a project-based view of entrepreneurship, characterizing even entrepreneurial acts as temporary projects, focusing on the possible seriality of entrepreneurship in an individual’s lifetime. In a later work, these authors describe entrepreneurship as a temporary organizing process, containing temporally, spatially and socially distinct interactions, which they metaphorically call “projects.” However, Lindgren and Packendorff (2011, p. 52) emphasize their wish “to view entrepreneurial processes as” being a “discontinuous, discernible and disaggregated series of events” rather than squeezing them into the project management toolbox. In line with this argument, our aim is not to simply apply a project-based view and to identify projects wherever reasonable. Rather, we point to the role of entrepreneurial ecosystems and how they bring project-like notions and patterns into the process of new venture creation.
2.2 Institutionalization of new venture creation and practices of project-based organizing

From the perspective of sociological institutionalism, institutions are “not just formal rules, procedures or norms, but the symbol systems, cognitive scripts, and moral templates that provide the ‘frames of meaning’ guiding human action” (Hall and Taylor, 1996, p. 947). In our view, institutions characterize entrepreneurial ecosystems and the abovementioned conceptualization of institutions provides a solid foundation for our perspective on new venture creation as shaped by project-based organizing. Yet, we argue that processes of institutionalization are subject to the duality and recursiveness of structure and action (Giddens, 1984), implying that institutions not only guide individual and collective action, but also rely on their reproduction (and eventually transformation) with the help of agentic practices. Contemporary research acknowledges the potential fruitfulness of including a structuration perspective for the analysis of project-based organizing (Floricel et al., 2014; Lundin et al., 2015; Manning, 2008) as well as entrepreneurship (Sarason et al., 2006; Sarason et al., 2010), not to mention (neo-) institutionalists who increasingly draw on this (Lawrence et al., 2009).

The process of new venture creation takes place within the institutional context of a more or less entrepreneurial ecosystem: “Institutions influence whether and how potential entrepreneurs open a business” (Herrmann, 2010, p. 736). In the early phases of the entrepreneurial process, for instance, founders quite often rely on continued external funding to secure the survival of the new venture and to establish a steadier and more permanent organization. A new venture thus relies, like any organization, temporary or permanent, “on one or several organizations, which found, create or necessitate its creation” (Bakker, 2010, p. 480). What is more, the granting of external funding is always connected to different institutionalized expectations like the existence of a founding team, the compilation of business plans, and the practice of pitching. To borrow another well-known term from institutional theory, not alien to a structuration perspective, nascent organizations need legitimacy to ensure their survival (Aldrich and Fiol, 1994; Tornikoski and Newbert, 2007) on their way to a more permanent state. To comply with institutional expectations in the start-up process is one way to achieve this legitimacy. Also, the occurrence of the phenomenon of entrepreneurship in general underlies informal societal institutions like the acceptance of new venture creation as a thriving force of economic development as well as of formal features such as property rights and financial and educational capital (Fuentelsaz et al., 2015). Of course, entrepreneurs are not only influenced by institutions, they also shape institutions themselves (Sine and David, 2010). They do this either in certain moments of time as institutional entrepreneurs or institutional workers (DiMaggio, 1988; Lawrence et al., 2009), or by their everyday actions (Sydow and Staber, 2002).

Against this background, it comes as no surprise that both fields of study, project management as well as entrepreneurship, have been approached from a (neo-)institutional perspective (Dille and Söderlund, 2011; Hwang and Powell, 2005; Tolbert et al., 2011). Obviously, there are interactions taking place between the entrepreneur and business associations, venture capitalists, consumer associations, and scientific organizations as well as competitors (Herrmann, 2010; Sine and David, 2010) as part of the entrepreneurial ecosystem, producing and reproducing institutions. Thereby, it has become a commonly shared requirement that entrepreneurs have to develop a business plan – following certain specifications in content and length – to meet the expectations of investors, customers, and future employees (Sine and David, 2010). Often investors also require a marketable product before investing, leading to the dilemma of early-stage capitalization. Moving within established norms (e.g., providing detailed milestone planning) provides entrepreneurs with legitimacy – confronting them with less resistance and giving them more support, for example, from investors. Sine and David (2010, p. 7) therefore propose that industry and professional organizations, certification/standard-based organizations, social movement
organizations and religious organizations are the “key normative actors that can affect entrepreneurial processes and outcomes.” Rules and sanctions, often imposed by powerful actors like the state, can facilitate (e.g. supporting specific organizational forms) or hinder new venture creation (e.g. credit requirements). We assume that entrepreneurial firms increasingly seek to create legitimacy by adapting to institutional requirements, including the project rationale of supporting organizations in the ecosystem like venture capitalists, business angels or governmental agencies. Institutions, in turn, provide entrepreneurs with means and resources; they even enable certain actors to become entrepreneurs and create entrepreneurial opportunities – in summary, they support, manipulate, and constrain entrepreneurial action (Sine and David, 2010).

We analyze these processes of institutionalization, applying a structuration perspective that considers practices as ordered, recurring social activities, enabled and constrained by structures (Giddens, 1984) and that has already been applied repeatedly, also in research on not only on entrepreneurship but also on projects and temporary organizing (e.g. Manning, 2008, 2010; Sydow and Staber, 2002). Such a conception not only permits the analysis of (re) produced practices but also focuses on dynamics and contradictions, which is helpful for an understanding of fast-changing new ventures in their institutional context, i.e. their entrepreneurial ecosystem. Our qualitative study sheds light on this institutionalization and how it shapes the entrepreneurial process in favor of project-based organizing by reinforcing project-like notions and structural properties such as time, team, task, and transition (Lundin and Söderholm, 1995).

3. Research context and methods

3.1 Research setting

To generate new insight into how ecosystems shape the new venture creation process in favor of project-based organizing, we chose a case-study approach (Eisenhardt, 1989; Yin, 2013). We selected the Berlin start-up ecosystem as the setting for this study because the geographical area is rich in both emerging new ventures and institutionalized actors such as investors, intermediaries and other supporting institutions that influence the process of new venture creation. Moreover, it is often said that Berlin has developed a start-up climate or culture. As already mentioned, during the last few years the German capital’s start-up scene has blossomed into one of Europe’s most flourishing centers for new venture creation, comparable only to London or Paris (EY, 2014; McKinsey, 2013b). In addition to the more than 100 institutions, around 20 incubators, 20 accelerator programs and several dozen co-working spaces are on offer in the Berlin area. Figure A1 shows the rise of these programs in the past ten years and Figure A2 offers a more detailed overview of the emergent actors and programs within the Berlin start-up ecosystem.

3.2 Data collection and analysis

Qualitative data were collected between 2013 and 2016. Since we are sensitized by structuration theory, we analyze practices and their recursive relationship with structure from the respondents’ perspective (Barley and Tolbert, 1997; Jarzabkowski, 2008; Sydow and Staber, 2002). We utilized different data sources (see Table I) for triangulation purposes in order to heighten construct validity and to prevent post hoc rationalization and potential biases (Lincoln and Guba, 1985; Yin, 2013). First, we conducted 52 semi-structured interviews with representatives of the Berlin start-up ecosystem, among them founders (38), investors and/or intermediaries (14) such as university incubators, accelerator programs, and investment funds. We identified potential interviewees at different events and via their websites, who were contacted and then interviewed. The interviews are based on two interview guidelines, focusing on the founding process of a new venture on the one hand, and the institutional influences with a focus on project-like notions and patterns on the other.
The questions differed slightly with respect to the background of our interviewees (founders vs investors/intermediaries). The interviews took place during on-site visits or via telephone and lasted on average 45 minutes. Some interviews were conducted by two members of the research team to allow them to gather more adequate information and remember the information after the interview. All formal interviews were recorded and transcribed verbatim for subsequent analysis.

Second, we screened a broad range of non-scholarly publications and field documents on entrepreneurship with respect to their emphasis on projects. These included press releases, newspaper articles, founders’ magazines, guidelines of investors, documents shared on semi-open online platforms. Such secondary data gave us further insight into the Berlin start-up ecosystem. The screening of these publications and documents is deemed useful as a source from which to reconstruct institutional pressures and project practices from several different angles. Third, we attended more than 30 field events, such as entrepreneurship summits, start-up pitches, workshops, conferences, meet-ups, etc. This non-participant observation gave us a better understanding of the Berlin start-up ecosystem and allowed us to complement our formal interviews with around 30 short impromptu interviews.

The analysis of our data did not occur in a linear fashion, but can be roughly divided into three stages: in the first stage, to heighten reliability (Yin, 2013), we collected all data – interview data, field notes and secondary documents – in a case study database. Cyclical reading formed a basis to comprehend how the process of new venture creation is shaped institutionally in the Berlin area. The second stage included writing up condensed descriptions of the venture creation process in science- and non-science-based start-ups. Thereby, we focused first of all on the entrepreneurial practices that are typical of project-like organizing, employing three selection criteria: most importantly and with reference to Lundin and Söderholm’s (1995) 4T framework, we inquired about practices relating to temporariness, e.g. to organizing tasks within given time constraints, or any other of the three concepts. In addition, we investigated the practices identified with regard to their prescriptive character, which is typical of professionalized project management. Finally, we did the same with regard to the linearity assumption, which is also typical of project management approaches. Then, we focused on the identification of institutional influences by the ecosystem. As a result of this analytical step, we came up with a list (including narrative description) of project-like practices and a list of potential institutional influences. In the third stage, we went back to our “raw data” for a systematic and combined analysis. We converted all our “raw data” in MAXQDA. Using such a software program for analyzing qualitative data offers various advantages such as being able to reproduce the coding, providing access to all members of the research team, and easy categorization (e.g. condensing or changing categories) during the process of data analysis. The coding procedure was guided by our initial lists of practices and institutional influences from the

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>Science-based start-ups: 14</td>
</tr>
<tr>
<td></td>
<td>Non-science-based start-ups: 24</td>
</tr>
<tr>
<td></td>
<td>Intermediaries: 14</td>
</tr>
<tr>
<td></td>
<td>Total: 52 formal interviews</td>
</tr>
<tr>
<td></td>
<td>30 short impromptu interviews</td>
</tr>
<tr>
<td>Documents</td>
<td>Press releases, newspaper articles, founders’ magazines, guidelines of investors, documents shared on semi-open platforms</td>
</tr>
<tr>
<td>Field events</td>
<td>More than 30 field events observed: entrepreneurship summits, start-up pitches, workshops, conferences, meet-ups</td>
</tr>
</tbody>
</table>

Table I. Data sources

IJMPB 12,1
second stage. Hence, we systematically screened our data for project-like practices within
the new venture creation process which are recurrent and associated with start-up
development as well as institutional influences that shape this process. In the next step, we
explored links between the identified institutional influences and the project-like practices
(as an illustration, see Table II). Thereby, it turned out that a contextualized interpretation of
the data was crucial, i.e. that we should interpret the codes within the interview context, in
particular with reference to two settings: science- and non-science-based.

We are also aware that our interviews, especially with founders, faced the difficulty that
founders tend to have a strong personality and believe in their visionary acting
(e.g. Hayward et al., 2006). Thus, it turned out that reflecting on the influence of external
institutions is quite difficult for them. We took care of this issue by interviewing
different non-founders as well, such as representatives of institutional actors, and by further
data triangulation.

4. Findings
4.1 The ecosystem(s) of new venture creation
Various institutions such as founding and support programs and intermediaries such as
incubators and accelerators in the Berlin area are increasingly influencing the local process
of new venture creation. Due to political (e.g. German reunification), technological (e.g.
internet technologies), economic (e.g. financial crisis) and social changes (e.g. immigration),
the Berlin start-up ecosystem has been subject to various transitions since the late 1980s
(I-35; I-36). The support of new venture creation by universities and other research
organizations has become more professional, and various incubator and accelerator
programs have located to the Berlin area since 2007 (I-36), leading to a more diverse
ecosystem and increasing its “institutional thickness” (Amin and Thrift, 1994). Table II
shows an overview containing information about these institutional conditions and how
they contribute to project-like organizing during new venture creation. For instance, support
programs for new venture creation have become more differentiated. Whereas “back then, in
the 1980s, the federal government supported high-tech ventures” (I-36) – programs mostly
focused on the local or national level by providing state grants, their number has not
only increased since then but they are now also of a transnational nature (e.g. Horizon 2020
by the EU) (I-35; I-36). Of similar importance is the fact that universities have started to
increase their professional start-up support. In contrast to today, in the 1980s “there were no
services for graduates” (I-36). A further indicator for the development of the epistemic
communities as part of the Berlin start-up ecosystem is the rising number of pitching events
in the Berlin area. Whereas pitching events in the 1980s and 1990s were quite formal and
rare (I-35; I-36), today they are heavily institutionalized, have become a regular meeting
point, and provide a strong basis for shaping the behavior of entrepreneurs. Furthermore,
within the community lots of meetings and workshops are taking place, addressing various
topics related to the process of new venture creation (e.g. project management techniques).

Another facet of the changed ecosystem is the increase in accelerator or similar support
programs that focus on network building. In the 1980s “there were no networks like today”
(I-35). The programs mentioned are organized either by big established companies or by
universities. They often set specific goals to founders, require the nomination and tracking
of milestones (I-12; I-26), foster transition (e.g. by accelerating the founding process), and
represent a unique event during the process of new venture creation. Similarly, business
plan competitions confront founders with project-like requirements; i.e. they have to plan
budgets, introduce their team, and work out strategies for goal-fulfillment. Although one
business plan competition has existed since the 1980s (“Businessplan-Wettbewerb Berlin”),
the number of competitions has increased significantly during recent years. Examples of
these are founding competitions by universities, competitions sponsored by established
<table>
<thead>
<tr>
<th>Development of the ecosystem</th>
<th>Evidence</th>
<th>Resulting project-like practices</th>
<th>Illustrative data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation of support programs at different levels (local, national, EU)</td>
<td>Start-up support by universities, IB-Bet (local), EXIST program (national, Horizon 2020 EU)</td>
<td>Range: short horizons (during proposal and grant), usually one time participation</td>
<td>We set them [the start-ups'] milestones (I-12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Form: high goal instead of process orientation, task clearly defined, mostly team demanded</td>
<td>Indeed, first we received EXIST support. And now we have used this kind of support relatively often. […] These programs are becoming more and more frequent […] Taking all different support together, it was sufficient (I-28)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Content: milestones, work packages</td>
<td>In EXIST proposals, milestone planning is required and we check this one way or another. We use quarterly reports (I-12)</td>
</tr>
</tbody>
</table>

Increasing number of pitching events in Berlin

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Resulting project-like practices</th>
<th>Illustrative data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various meetup-events in the last years (I-35; I-36)</td>
<td>Parallels between pitching founder and project manager (experience and confidence regarding the upcoming challenge; presentation of a vision to stakeholders and employees)</td>
<td>We had experiences with the EXIST stipend […] it was a project for one month (I-6)</td>
</tr>
<tr>
<td></td>
<td>Short-term measurability (goals, milestones, results)</td>
<td>Pitching is, in my opinion, one of the most important skills of entrepreneurs […] It is a fact that you have to present to various audiences (I-9)</td>
</tr>
</tbody>
</table>

Emergence of incubators in Berlin

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Resulting project-like practices</th>
<th>Illustrative data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different types of incubators have located in Berlin since around 2007</td>
<td>One time participation of the start-up, time-limited, task clearly defined, team demanded</td>
<td>In fact, we are active in the Health-IT-scene in Berlin and receive lots of feedback. This is very important, e.g. we are often at Bayer's incubator (I-21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We offer you a detailed schedule (homepage of garage incubator Berlin)</td>
</tr>
</tbody>
</table>

Emergence of accelerator programs in Berlin

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Resulting project-like practices</th>
<th>Illustrative data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different accelerator programs have located to Berlin since around 2013 (I-32)</td>
<td>One time participation of the start-up, emphasis on &quot;transition&quot; (acceleration, fast change), founding team in focus during selection</td>
<td>They promise: Come to us and in the limited time – 3 months – you can learn entrepreneurship (I-32)</td>
</tr>
<tr>
<td>Increasing number of business plan competitions</td>
<td>Time-limited</td>
<td>Many people ask me: why should anyone participate in a business plan competition? I reply: For us it was extremely beneficial, as a venture capitalist became aware of us because they had to rate our business plan. It's about these small milestones towards success (I-13)</td>
</tr>
<tr>
<td>Increase since the 1980s (I-35; I-36)</td>
<td>Preparation of time schedules derived from goals with presentation of milestones and expected results</td>
<td></td>
</tr>
<tr>
<td>Development of the ecosystem</td>
<td>Evidence</td>
<td>Resulting project-like practices</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>---------------------------------</td>
</tr>
<tr>
<td>Evolution of diversified events for entrepreneurs</td>
<td>Increase confirmed in expert interviews (I-35; I-36)</td>
<td>Project-overlapping relationships (latent vs evident relationships) Relationship maintenance (e.g. network citizenship behavior) Initiation of new projects</td>
</tr>
<tr>
<td>Increased presence of venture capitalists in Berlin</td>
<td>Increase since 1990s, even more traditional banks now advertise founding support</td>
<td>Founders have to manage these important stakeholders Project-like expectations to founders: time schedules with goals, milestones and results; clear vision and tasks VCs act like external “steering committee”</td>
</tr>
<tr>
<td>Availability of crowdfunding</td>
<td>Establishment of respective platforms in Berlin since 2011(I-2)</td>
<td>Participation on crowdfunding is time-limited, highly results-driven</td>
</tr>
</tbody>
</table>

Table II. Patterns of project-based organizing
companies, and Hackathons. Often business plan competitions serve as a network multiplier for founders (I-4). In line with the increase in such competitions, different venture capitalists have chosen Berlin as their place of residence. The management of the relationships with venture capitalists often shares parallels with project-like organizing, e.g. incorporating aspects of stakeholder management and being related to goals and milestones connected to the granting of budgets. Crowdfunding has developed over the last few years as a quite novel way of raising capital for a new venture, sharing commonalities with project-like organizing such as the time-limited duration of the fundraising itself and the frequent focus of the capital payment on results.

4.2 Project-like venture creation in science- and non-science-based ecosystems: two illustrative vignettes

Our analysis suggests different patterns between science- and non-science-based start-ups regarding how the ecosystem influences project-like new venture creation. Science-based ventures rely heavily on scientific research and intellectual property rights generated by research, characterizing them as high-tech ventures. In this subset of start-ups, close interorganizational relationships exist between the science-based new ventures and research institutes either within or outside universities. Against this background, the preservation of knowledge, e.g. by registering patents, plays an important role. Government funded pre-venture programs support science-based new ventures in their early lifetime. For instance, since 2007, students and researchers who are associated with a German university and have a science-based business idea have been able to apply for the “EXIST program,” which supports the start-up process for one year. The support program includes grants, coaching, office space, and other services.

In contrast, non-science-based ventures are often related to digitalization, development of software-based products and services like apps or online platforms. In fact, the so-called “Digital-Tech” cluster represents roughly 85 percent of the start-ups in Berlin (McKinsey, 2013a). Innovation in these ventures is not based on intellectual property rights, but rather on business model innovation and a strong focus on fast marketability and monetization, characterizing them as high-speed oriented. To substantiate our findings, we present one example of each type that is illustrative of our observations in the field. In that sense, the vignettes are rather typical than extreme occurrences and they elucidate how organizing differs, depending on the respective ecosystem.

As an illustrative case of a science-based new venture we look at DiagnoseOne, a start-up in the healthcare sector that is working on a tool to test the risk of apoplectic strokes in an innovative, hitherto unknown way. The use of laser technology characterizes this start-up as a high-tech venture. The idea for the test evolved between 2005 and 2006 during of one of the founders’ doctoral dissertation project in the field of medicine (I-28). The founding team was composed of this physician, a physics professor responsible (since 2006) for developing the measurement methods, and a person with a business background. In 2008, the founders took part in a business plan competition and made second place. DiagnoseOne started officially as a university spin-off in 2009. A first prototype already existed at this point in time – “they had a prototype and it worked under lab conditions” (I-28), and the first efforts were made to patent it. On a project basis, close cooperation with the university was necessary from the beginning to develop the product further. Further project-based cooperation existed with hospitals and indeed continues to do so, e.g. for clinical research and testing. Between 2009 and 2011, DiagnoseOne concentrated on the NPD project to develop a first in-house prototype ready for series production by means of several projects. Raising capital and planning the budget were activities performed in recurrent projects (I-28): in 2009, the first money was raised from a public grant. A public-private investor specialized in high-risk projects followed, who provided further €500,000 in 2010. The next
investment round in 2011 brought further investors in financing product development and commercialization. At the end of 2014, the next investment round took place, which brought the company several million € to promote the product’s entry into the European market. As investors came in, they started to exert great influence on the new venture, as the following CEO quotation shows: “With the money we have to meet our milestones. […] In negotiations with investors I have nothing to say. They decide, and they decide a lot” (I-28). In the case of DiagnoseOne, the “milestones” are the official drug approval and the official certification of the machine. Investors also re-adjust the search for further financing. In 2012, a part of the product became officially patented and licensed, which was labeled as an “important milestone” on the company’s webpage. In 2012, an external CEO was appointed, which led to a further professionalization of the company, e.g. in regard to design, goal setting and vision (I-28), including the introduction of project management techniques: “I changed the environment from a research architecture to a project management architecture” (I-28). Further in-house product development took place and in 2013 customers were consulted about necessary improvements to the first prototype, since the company values them as an important source of feedback (I-28). The CEO called this a distinct sub-project of the new venture creation process. By the end of 2012, the responsible legal authority approved a study for the prophylactic stroke-test, which is also a typical project within a science-based new venture creation process (I-28). In a project-like fashion in July 2015, one of DiagnoseOne’s founders announced that the product’s market entry was planned for 2016. Today, the company has 11 employees, has produced the first machines in a customer-approved design, and has selected reliable suppliers for production. The official approval for the product is still an ongoing issue.

The founders of non-science-based start-ups with whom we talked often referred to themselves as high-speed entrepreneurs; in sharp contrast to the more time-consuming high-tech start-ups that spin out of local universities and research institutes. Many of these high-speed start-ups in Berlin have a focus on e-commerce and online advertisement, often by adapting or even copying successful business models. It is very important for these start-ups to exploit first mover advantages and to become dominant platforms quickly in their specific markets. Not only for these “copy & build start-ups” (I-44), but also for a wide range of other start-up types (e.g. in emerging fields like big data), speed is the major driver, and venture capitalists, business angels, and business incubators become major institutionalizing forces. An example of this high-speed projectification in non-science-based start-ups is SpeedItUp, a firm specialized in app development on mobile phones. Their idea was born within a Berlin-based private acceleration program that shapes the process of venture creation in project-like patterns: as typical of project-based organizing, the team dimension is very important. The first founders come from within the program and external co-founders enter the team at a later stage. During the acceleration phase, the team is in close contact with the program, “so that we sit down together regularly, reflect on the business plan and discuss how the milestones for the next months can be achieved” (I-46). SpeedItUp’s team was founded in 2012 by two managers with many years of work experience in start-ups. Like in most project organizations, there is a task-centricity, specifically, the program aims at gaining speed by allowing the founding team to focus on the core activities that are necessary to accelerate the business idea. “When a young person wants to start a business, there are so many bureaucratic and financial-legal obstacles that need to be overcome before you can start with the actual product. […] We minimize these obstacles for the founding team” (I-47). The acceleration program is highly projectified in the sense that the founding team has to focus on rapid business model development, while the start-up receives a highly structured support program from the acceleration network. As one of the co-founders of SpeedItUp reports: “Accounting, HR, recruiting, everything was managed by the acceleration program, […] so that we could focus on our core business and
execute it immediately” (I-43). Crucial milestones for the acceleration of new ventures within the program are the different rounds of financing. In the beginning, the program provides seed investment, “so that the venture can start and we don’t lose much time with fundraising” (I-46). In this phase, the most important landmarks reinforcing the project-like character of the start-up process are prototype development and the development of a concept. The acceleration schedule aims at making the new ventures ready for the Series A round within the first year (I-49). In the case of SpeedItUp, rapid business development allowed the venture to generate first customer revenue very quickly, so that they did not spend all of the seed funding, but became attractive for Series A funding within their first year (I-43). The next step, after raising Series A funding, was internationalization in the logic of this high-speed acceleration program. Today, SpeedItUp has established two further international offices and employs more than 200 members of staff.

4.3 How different ecosystems shape project-like new venture creation
The process of new venture creation is characterized by various institutional influences embedded in the entrepreneurial ecosystem that are reminiscent of project-like practices. First of all, institutional actors influence the process of new venture creation. The state and its agencies put various constraints on new venture creation, especially in science-based contexts: project-like practices such as developing intellectual property and getting legal permission are directly interlinked with regulations such as laws and official norms. In contrast, in non-science-based contexts these practices are less prevalent. Particularly, salient for non-science-based start-ups is the fact that the dominant institutional influencers are (potential) investors like business angels, accelerator programs, investment funds or other public intermediaries providing financial support. As soon as their money is in the start-up, investors pursue their interest in high returns by influencing the start-up’s strategy in terms of projectification, e.g. by milestone-setting and participating in important decisions (I-24; I-30). Furthermore, investors require a firmly established team and an agreed legal form for the company before money flows (I-26). They therefore have significant influence on the practices of team completion and establishing a legal basis, whereas such matters tend to be settled at an earlier stage in science-based ventures. Due to the necessity for continuing research and fulfilling legal requirements, science-based start-ups need significantly more capital than non-science-based start-ups, and are obliged to raise funds at an earlier stage of their development. Science-based start-ups therefore usually have various investors in their starting phase, while non-science-based new ventures are often able to finance “themselves” by bootstrapping. Beyond this strong influence that they have via concrete financing practices, investors have different expectations of new ventures. For instance, with non-science-based start-ups they expect a prototype to exist already, and also a concept regarding a related viable business model (I-29). For science-based start-ups in particular, investors expect efforts to be necessary to patent ideas (I-30). Further investor-related expectations, quite independent of the context, are the engagement in pitching practices (I-29) and the development of a business plan (I-30). This shows how, in their role as institutional actors, investors influence the sequence and pattern of the new venture creation process in a project-like fashion. Apart from investors, cooperation partners are another source of institutional influence, especially if they play an important role during the NPD. Again, this is especially the case in a science-based context, where close relationships between the new venture and research institutes exist, the latter usually working in a project-based fashion. The practice of raising capital is also conducted in close cooperation with partners, e.g. in the university context (I-27). In contrast, in non-science-based contexts, cooperation partners can become important in a later phase or after the new venture creation process. However, as product and business model development are important in an earlier phase than in science-based contexts, customers assume an important role as influencers of the new venture.
creation process, setting different requirements for the product itself and the appearance of the new venture (I-17, I-21: I-22).

A further institutional influence is the occupational background of founding team members. The qualification of team members supports the use of project management techniques and respective framing of praxis. For instance, programmers and engineers often organize tasks in a project-like manner (I-21), since by their professional training they are well educated in project-based organizing concepts and tools (I-17). As in one of our two case vignettes, we observed cases where CEOs who were recruited later in the start-up process introduced formal project management techniques into the new venture in accordance with their former work experience (I-19: I-28). Overall, occupational background also affects project-like forms of organizing, but does not seem to have a greater impact on science- than on non-science-based start-ups.

The epistemic community influences new venture creation processes by sharing knowledge and reproducing what are considered to be “best practices” (I-21). Within the Berlin community, lots of events are organized, which either directly or indirectly address the use of project management tools, or even explicitly provide guidance, e.g. on how to apply for international state funds. Furthermore, organizing work within projects is shared between the individuals of the community, for instance during competitions or in working as freelancers for start-ups. Again, no significant difference between science- and non-science-based start-ups appeared in our data, thus leading us to the conclusion that institutional actors predominantly account for the difference in project-like activities in the two start-up ecosystems.

Building upon these actor-specific as well as occupation- and community-based institutional influences, we can distinguish between two patterns of new venture creation, which exist parallel to one another.

Table III shows these differences: the new venture creation process differs first of all in characterization – more high-speed oriented with large capital investments and comparatively long time horizons of investments vs more high-tech oriented with a focus on fast market entry and rapid amortization of investments.

The project-like practices employed during new venture creation also differ according to the respective ecosystem. Science-based new ventures are typically influenced by regulative authorities, e.g. the need to obtain permissions that are needed ahead of market entry. Thus, the focus of the start-up is very much on the product development. As for non-science-based startups, the applied project-like practice tends to be less dependent on legal and normative influences, but driven instead by time constraints caused by pressures to make a fast market entry and achieve monetization, often enforced by investors. Against this background, the dominant institutional influences for science-based startups appear to be predominantly of a normative and regulative nature, transmitted by institutional actors. Examples can be found in the patenting and product admission process of the chemical and biological industries.

| Characterization | More high-speed oriented; more capital intensive; longer process (up to 10 years) | More high-speed oriented; shorter process (around 1 year) |
| Kind of project-like practices | More regulative-influenced practices, task focus (product development, patents) | More market-oriented practices, time focus (fast market entry, monetization) |
| Dominant institutional influences | Normative/regulatory influences | Exploitative influences |
| Dominant influencing bodies | Actors (e.g. patent authorities, research institutes, long-term investors), but also professions (e.g. engineering, biotech) | Actors (e.g. short-term investors, customers, accelerators) but also communities (the local start-up ecology) |

Table III. Different patterns of project-based new venture creation
pharmaceutical industries. Major institutional influences for non-science-based startups are the exploitative habits of investors pushing for fast marketability and monetization, as is often the case regarding IT startups. In terms of the influencing bodies, certain actors play an important role in both kinds of startups, yet with different manifestations (patent authorities, research institutes and long-term investors in the case of science-based startups and short-term investors, customers and accelerators in the case of non-science-based startups). In addition, occupational background and profession tend to play a role for both science- and non-science-based startups, where the scientific education and professional training that generally encompass project management approaches and tools are critical for the product development. In the case of non-science-based ventures even more than in the case of science-based ventures, communities in the local start-up ecosystem provide a melting pot of talents, investors, partners, and customers (Grabher, 2002) influencing the activities of start-ups.

5. Discussion

5.1 Practices of project-like new venture creation shaped by the start-up ecosystem

Our research shows that the process of new venture creation in an entrepreneurial ecosystem has become, at least to a considerable degree, project-like: an entrepreneurial team carries out different tasks, and time plays an important role due to limited financing. The process, moreover, is underlain by various transitions, and the new venture creation process has an institutionalized ending: either the new venture becomes permanently established or it vanishes. In our view, the successful creation of a new venture is therefore finished when a more or less permanent organizational state is reached, i.e. once a functional organization has been created (Gartner, 1985). Therefore, the continuity of the new venture (e.g. successful market entry, sustainable income) – or its failure – demarcates its possibly temporary vs its potentially permanent nature. More importantly, the whole process of new venture creation is shaped by institutionalized practices displaying a project-like character. Different institutions within the ecosystem – institutional actors, occupational backgrounds and the entrepreneurial community itself – influence the patterned nature of this process. At the same time, the practices in this process contribute to its further institutionalization, and eventually, once project-based organizing becomes the dominant form, turn an ecosystem into a “project ecology” (Grabher, 2002; Ibert, 2004).

By answering our research question regarding to what extent how and why new venture creation is geared toward project-like organizing by the ecosystem(s), we offer the following contributions: first, we show that the process of new venture creation is characterized to a large extent by attributes that are typical for project-based organizing, as reflected in the contextualization of projects (Engwall, 2003) and the 4T framework of temporary organizations (Lundin and Söderholm, 1995). Thereby, we highlight the fact that project-based organizing reaches far beyond the typical project management context (Lundin et al., 2015). In particular, our analysis shows that, as part of the entrepreneurial ecosystem, the epistemic communities, occupational backgrounds and different actors shape venture creation practices toward projectification (Ferriani et al., 2009; Lindgren and Packendorff, 2003; Midler and Silberzahn, 2008). The projectification is triggered and shaped by the institutional environment (Lundin et al., 2015; Midler, 1995; Packendorff and Lindgren, 2014), both, in science-based and non-science-based new venture creation projects; although different institutional influences within the ecosystem play major roles in both contexts. Our data provide several cues that help us to understand the reasons for the projectification. Most obvious are the imitation and adaption of this form of organizing that gains relevance across industries and more broadly also in society (Lundin et al., 2015). Against this background, intermediaries such as venture capitalists and incubators use project-based organizing patterns for legitimacy reasons and as a form of promising practice. In line with this argument, the project form helps intermediaries...
to tightly control their financial investments and the outcomes achieved, for example, through milestone planning, deadlines and project budgeting. Finally, self-reinforcing effects such as the success of specific start-ups further stabilize and reinforce project-like organizing in new venture creation.

Second, we elaborate on characteristics of new venture creation projects in their early stage in the context of temporary organizing. Specifically, we have identified attributes of science- and non-science-based venture creation processes (Pisano, 2010), which differ regarding dominant institutional influences and the very nature of the enacted project-like practices. Science-based or truly high-tech new venture creation (like in the case of bio-tech clusters, Powell et al., 2002) is characterized by a longer process and greater normative and regulative influences, while non-science-based or often high-speed new venture creation encompasses a shorter process, and institutional influences are more market-oriented and favor rapid exploitation. While short-term investors and the entrepreneurial community heavily influence non-science-based ventures, entrepreneurship policy, public and legal bodies, as well as the professions of the start-up team prove to shape the new venture creation process in favor of project-like organizing in a science-based context.

Third, we contribute to a more integrative understanding of project-based organizing and entrepreneurship (Kuura et al., 2014). By using a structuration perspective, which has been applied before in both domains and takes into account both practices and their recursive interplay with structures of the ecosystem, we contribute to further theoretical underpinning of research on project-based organizing (Manning 2008, 2010). At the same time, we advocate the structurationist approach in entrepreneurship research (Sarason et al., 2006, 2010), showing how the creation of new venture project practices is enabled and constrained by structures.

5.2 Production, reproduction and transformation of project-like practices in start-up ecosystems

On the basis of these empirical findings and theoretical insights, we developed a model of how the entrepreneurial ecosystem shapes the process of new venture creation toward project-like organizing (see Figure 1). Therein, “shaping” is conceived as a specific form of

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**Figure 1.** Practices of new venture creation

Patterns of project-based organizing
institutionalization and describes a set of institutional influences that reaches across organizational actors, occupational backgrounds and epistemic communities, and guides practices in the process of new venture creation. The start-up ecosystem can become relevant, in that it shapes each of these specific activities in a “projectified” way.

Entrepreneurs follow these institutional conditions or “scripts” (Barley and Tolbert, 1997), as they promise to give orientation and provide legitimacy in a phase which usually suffers severely from a lack of these (Tornikoski and Newbert, 2007). These venture creation practices are guided by the entrepreneurial ecosystem, positioned like any innovation ecosystem at the interface of knowledge and business ecosystems (Autio et al., 2014). In the course of time, the project-like character of organizing the new venture becomes more obvious and is stimulated when a further professionalization of project management takes place, e.g. by means of actors such as investors, the community, or the educational background of the employees. There are non-linearities in the recursive process of shaping because institutionalization processes in favor of project-like organizing in entrepreneurial settings lead to repercussions on the entrepreneurial ecosystem. When institutional actors accelerate start-ups (time), determine requirements for team composition and task structuring or encourage business model pivoting (transition), this feeds back to the very same actors and contributes to a kind of projectification spiral with, however, different patterns in science- and non-science-based ecosystems.

5.3 Implications for entrepreneurial practice and policy

To a significant extent, entrepreneurs are project managers, whether they wish to be or not. It therefore seems beneficial for them to use project management techniques reflexively, as “tools for reflective practice” (Huxham and Vangen, 2014). Project-like organizing in the process of new venture creation offers different advantages, especially for venture capitalists: it seems to provide structure and guidance to allow for controllability while managing complex and extraordinary business tasks (Packendorff and Lindgren, 2014). Against this background, it is reasonable that regional and national entrepreneurship ecosystems (Ács et al., 2014; Mason and Brown, 2014) in general and actors supporting young ventures (e.g. venture capital companies, incubators, accelerator programs) in particular have an interest in deepening their understanding of project-based organizing in order to provide structure and guidance which under no circumstances should wear out in using project management techniques.

At the same time, we contribute to a critical reflection of the institutional-contextual and temporal-contextual influences in start-up ecosystems on new venture creation in general (Autio et al., 2014) – and the influence of regional or national entrepreneurship policy in particular (Ács et al., 2014). Our results reveal that entrepreneurial ecosystems, at least if advanced as the one in Berlin, tend to shape the process of new venture creation so that start-ups are guided toward project-like practices (e.g. milestone planning techniques, short-term budget planning) which – in a similar vein to projects – are taking place in face of specific time constraints (e.g. duration of financing rounds). Thus, public policy has an influence on this development toward a “projectification” of the new venture creation process by setting conditions and measures for support programs, financial grants, etc. Without doubt, the implied project-like practices can be functional, not least in terms of creating linkages within and across the ecosystem (Clarysse et al., 2014). However, aside from these functional outcomes, there might be dysfunctional consequences as well, particularly when it comes to creativity. Groundbreaking ideas or disruptive technologies can suffer from bureaucratic barriers and exaggerated structure (Amabile, 1996), not allowing enough freedom for autonomous entrepreneurial activities, as we know from research on internal venturing in corporate enterprises (Burgelman, 1983; Kanter, 1985). Following this argument, it is noteworthy that many emerging start-ups in the Berlin
ecosystem look very much alike, or even copy business models, e.g. e-commerce platforms for clothes, shoes, electronics, muesli. It may be inquired whether this is due at least partially to the uniform, formatting institutional influence of the ecosystem.

5.4 Limitations and avenues for further research

Although our findings certainly exhibit specific features of projectified new venture creation processes within the Berlin area (e.g. with regard to the German early investment situation), our findings are tentatively generalizable to other contexts as well (Eisenhardt, 1989; Siggelkow, 2007), since ecosystems, despite regional differences and specifics (Grabher, 2002; Ibert, 2004), are alike along many dimensions. For example, some of the institutional influences, such as those by internationally operating venture capitalists or national government agencies, take place analogously in various ecosystems. Nevertheless, some limitations of our study should be mentioned. First, even though we found two distinctive contexts in which somewhat differently patterned institutional influences can be perceived – scientific and non-scientific – we neither claim that they are fully mutually exclusive, nor do we argue that these processes are exhaustive, excluding alternative pathways of venture creation. Still, we propose that both processes have their own characteristic features, and that the extraction of particular practices certainly helps to understand these processes better. Second, our method of data collection and analysis involves different limitations, e.g. in terms of quantity and quality, i.e. a bias in the perception of interviewees and interviewers, despite our efforts to triangulate with data from non-participant observation and secondary sources. However, in addition to further interviews, more ethnographic data could help validate our findings, in particular with regard to a finer-grained understanding of the structuration of specific organizational practices (Jarzabkowski, 2008) applied in science-based and non-science-based startups. This may help to analyze further why or for what reasons ecosystems influence the entrepreneurial process toward short-term, project-like practices rather than long-term orientation and permanent organizations.

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Note

1. The notion “project-like” is used as a broader term compared to “project-based,” providing a more gradualist understanding and allowing the analysis of activities, whereby practitioners do not always use project language, but temporary organizing is evident.

References


Figure A1. Quantity of incubators and accelerators in the start-up ecosystem of Berlin (2007-2015)

**Source:** Analysis by the Investitionsbank Berlin
### Appendix 2

<table>
<thead>
<tr>
<th>Time</th>
<th>Institution (anonymized)</th>
<th>Institutional focus</th>
<th>Example quotation</th>
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<td>Entrepreneurship Center Berlin (ECB)</td>
<td>Science-based</td>
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<td>1986</td>
<td>New Venture Center</td>
<td>Science-based</td>
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<td>Be innovative international</td>
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<td>Science-based</td>
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<td>2007</td>
<td>Big Fish</td>
<td>Non-science-based</td>
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<td>2010</td>
<td>Get it!</td>
<td>Non-science-based</td>
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<td>2013</td>
<td>Do it!</td>
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<td>2015</td>
<td>HospitalGo</td>
<td>Science-based</td>
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*Big Fish:* “We identify proven business models that focus on basic needs. We quickly build companies for these business models using highly standardized and optimized processes and then scale these companies to a leading position in our markets.”

*Do it!:* “We do not want to reinvent the wheel – we want you to spin it faster. Once you are chosen you don’t simply ‘join’ a program – you become part of a global family. The Accelerator is a direct connection between two major markets and provides an existing global infrastructure.”

*GoMarket:* “You join GoMarket with an idea. They help you develop, launch and scale a company. From building a great team to ensuring you’ve got all the operational support you need, GoMarket allows you to concentrate on what’s most important: becoming a market leader.”

*Transports Accelerator:* “Transports Accelerator focuses on railway infrastructure and mobility related startups, which introduce new business models or technologies. Opening the world of railways is our goal. Each batch has a topic and your ideas should make us want you. In general we are looking for early stage startups, which are innovative and result-driven.”

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**Figure A2.** Evolution of main institutions as part of the Berlin start-up ecosystem (1983-2015)

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Programming for holistic value creation: collaboration, coordination and perception

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Abstract
Purpose – The purpose of this paper is to holistically explore value creation approaches in a program of cultural projects to inform the practices of project/program management in both public and private sectors.
Design/methodology/approach – The paper brings together the literature on project, program and portfolio value creation to inform a case study conducted with engaged scholarship research methods.
Findings – Three themes of value creation are revealed: managing collaboration, coordination and perception. Effectuation and causation are both observed, demonstrating that a combination of logics underpin decision making in projects.
Research limitations/implications – The results are based on a single case in a cultural context. Further research is needed to determine whether the observed value creation themes apply more generally, and to explore more deeply the use of logics associated with entrepreneurship in project decision making.
Practical implications – The study reveals several non-commercial aspects of value creation that may play a role across a range of project environments. Practitioners may be able to recognize a wider range of value creation and to better nurture these previously unacknowledged types of value.
Originality/value – The study provides new insights on value and decision logic through in-depth analysis of value creation in a program of culture projects.

Keywords Program management, Entrepreneurship, Public value, Value creation, Effectuation, ECoC

Paper type Research paper

Introduction
This study uses a program in a cultural setting to explore value creation in program and project portfolio activities. The holistic management of a portfolio of projects has long been associated with stronger strategic alignment and higher value in the portfolio. The “value” created by programs and project portfolios is complex and multi-faceted; however, few studies have investigated program value and most research on project portfolio management (PPM) frameworks focus primarily on financial and commercial value, providing little guidance for the management of programs and portfolios with non-commercial aims such as public value (Benington, 2011; Moore, 1995).

The purpose of this paper is to extend our knowledge about how value is created through multiple projects by exploring a non-commercial program in the public sphere.

A case with non-commercial outcomes has enabled this study to identify types of value that are often overshadowed by financial and commercial metrics in commercial organizations. The findings are relevant to both commercial and non-commercial environments and provide greater understanding about managing the types of value that are created through multiple projects in programs or portfolios. The case study was the European Capital of Culture (ECoC) program in Aarhus, Denmark, a program that created...
cultural activities and events during 2017. The concept of a one-year celebration of European culture and identity was initiated in 1985 by the European Commission (European Union, 2015). In 2012 Aarhus was designated as the Danish host for the 2017 ECoC (referred to as Aarhus 2017), and a commercial foundation was established to head the delivery and management of this €60.2m initiative (Aarhus 2017, 2016). The program was planned to include more than 350 cultural, community consultation and administration projects, with financial support provided by multiple rounds of funding during 2013–2015.

Studying cultural projects enables researchers to observe the creation of a wide range of value types, from the individual to the societal level in areas as diverse as wellbeing and economic value (Crossick and Kaszynska, 2016). Culture may also add value to the public sphere by asking difficult questions about society rather than simply giving the public what it values (Benington, 2011).

The research reported in this paper provides a novel link between two different perspectives: program organization – particularly temporary organizations – and entrepreneurship. The findings address the call for such linkages in further research (Kuura et al., 2014). This study draws on the field of entrepreneurship by employing effectuation theory, introduced by Sarasvathy (2001) to explain alternative approaches to decision making in entrepreneurial situations. Effectuation principles have subsequently been applied in project management (PM) research (Huff, 2016; Nguyen, 2015; Brettel et al., 2012; Nguyen et al., 2018) and this study suggests that effectuation may have a particular role to play in public and community-based projects. In brief, effectuation principles can be considered the inverse of the traditional rational approaches that underlie common PM approaches – in effectuation theory these rational approaches are said to adopt a “causal logic.” Such causative approaches focus on creating up-front definitions of project aims and results, focus on return on investment and promote extensive planning to avoid risks. In contrast, “effectual logic” supports project evolution based on available resources, allowing for affordable losses, while experimenting and forming partnerships to create opportunities and share risks. This study explores the use of both effectual and causal logic in ECoC decision making.

The next section provides an overview of the research context, the ECoC Aarhus 2017. This is followed by a discussion of the background literature and a description of the methodology. Findings are presented according to three themes for creating value – collaboration, coordination, and perception – and the discussion then turns to the types of value and the types of logic underlying decisions made during the ECoC. Application of the findings to commercial environments, implications for research and practice, and limitations of this study are then discussed. The final section presents the conclusions.

Aarhus 2017 – ECoC

The award of the ECoC for 2017 was intended to provide Aarhus and the surrounding region with a cultural and a capability boost by providing a platform to “rethink” society on a grand scale (Aarhus 2017, 2012). Aarhus announced their candidacy in 2007 and a project organization was established in 2008 to prepare the bid for the selection process that led to the designation of Aarhus as ECoC in 2012. After 2012 the organization was transformed (Hansen and Laursen, 2015), setting up a commercial foundation funded primarily by state, regional and municipal funds, with some financial input from foundations and the commercial sector. In a timeline of Aarhus 2017 (Figure 1), the transition from project to program marks a change in character and level of activity in the program organization. The foundation had a board of politicians and professional experts who were ultimately responsible for the ECoC. The foundation operated a secretariat to oversee all aspects of the ECoC, including artistic programming, project co-funding, promotion, fundraising and a small proportion of events in 2017. In total, 90 percent of the projects were selected by the program organization and executed by
various cultural institutions and other actors throughout Aarhus and the surrounding region. Other major cultural and sports events were affiliated with the Aarhus 2017 narrative without Aarhus 2017 co-funding these activities.

The Aarhus 2017 ECoC was centered on the theme “Let’s rethink,” with three main areas of focus: the city, values and creativity (Aarhus 2017, 2012). The three areas were complemented by six strategic objectives that provided directions for the development of the ECoC and explicitly stated the anticipated effects and value to be created, for instance:

1: Aarhus 2017 will support the long-term development and also underpin the significance of arts and culture. The cultural program will contribute to a strengthening of the development of a European culture.

3: Aarhus 2017 will employ creativity, innovation, knowledge and experimentation to fuel human development and economic growth. (Aarhus 2017, 2012)

Value creation goals were stated as strategic objectives covering six impact areas: cultural, image and identity, economic, social, organizational and political and governance and funding (Aarhus 2017, 2015).

This paper refers to the group of projects funded under the Aarhus 2017 budget as a “program,” as identified by Hansen and Laursen (2015), and following the convention used by Näsholm and Blomquist (2015), who studied the 2014 ECoC in Umeå, Sweden. The projects in the program had a shared vision but were run and managed independently from the Aarhus 2017 program organization. The program organization was dissolved during 2018; however, because the projects were independent they were able to extend their activities beyond this time frame.

The high profile of the ECoC led to the initiation of a research project, “rethinkIMPACTS 2017” (RI2017), to evaluate and learn from Aarhus 2017. RI2017 is a strategic cooperation between Aarhus 2017 and Aarhus University and follows similar ECoC evaluations such as Liverpool 2008 and Umeå 2014 (Garcia et al., 2010; Wåhlin et al., 2016). The study reported in this paper contributes to RI2017 by addressing the lack of knowledge about the management of value in the non-commercial sector in the program and portfolio management field. This study focuses on how value is created and managed in a program with a primary focus on public value.

Literature background
This section reviews the literature regarding long-term value in programs and project portfolios, value creation in a public sector setting – including the legitimacy of public spending – and concludes with an overview of effectuation literature.

Over time programs have been conceptualized in different ways, from up-scaled projects to project portfolios (Lycett et al., 2004; Maylor et al., 2006; Pellegrinelli, 1997). The focus here is
on programs as the coordination of a collection of projects (Pellegrinelli, 2011; Thiry, 2002), which some organizations might label as a “large project” (Vereecke et al., 2003).

Programs have long been associated with realizing value, but most studies focus on business value (Williams and Parr, 2004; Winter and Szczepanek, 2008), particularly commercial success (Jugdev and Müller, 2005), leading to a suggestion for broader evaluation frameworks (Barclay and Osei-Bryson, 2009). Commercial value is also emphasized in most portfolio studies and frameworks; however, “best practice” studies show that a narrow focus on financial value is associated with lower portfolio performance (Cooper et al., 2001; Killen et al., 2008), leading to calls for wider definitions of value and new frameworks that include strategic and longer term aspects (Meskendahl, 2010; Kopmann et al., 2015). However, research on the management of value in projects and portfolios is largely influenced by commercial measures, providing recognition and influence for only a subset of the potential types of value generated by the portfolio. This limits the quality of decisions and provides very little guidance for managing portfolio value in non-commercial environments.

PM researchers are beginning to take a more holistic view of value construction (Laursen and Svejvig, 2016). A review of strategic value management in projects and portfolio concluded that there is a “need to delve deeper and continue to find better ways to comprehensively identify and measure strategic value” (Martinsuo and Killen, 2014, p. 56). At the project level Artto et al. (2016) highlighted the value of non-financial aspects such as coordination structures and image, and proposed that new PM approaches are needed to support value creation. Ang et al. (2016) explored the creation of value at a portfolio level, highlighting the wide range of value types perceived by multiple stakeholders and noting that the value created is not always anticipated or articulated, and therefore not adequately measured or included in decision making.

Outside the PM field value creation is being addressed in ways that might also inform PM research. In PM research related mainly to the for-profit sector value has been defined as a representation of benefit/cost (Laursen and Svejvig, 2016, Morris, 2013), where benefit may be regarded as “an outcome of a change that is perceived as positive by a stakeholder” (Bradley, 2010), and cost as “the outlay or expenditure (as of effort or sacrifice) made to achieve an object” (Merriam-Webster, 2016). Thus, the definition of value encompasses both benefits and costs. In practice, however, other terms such as benefit, outcome and worth (Schryen, 2013) are used interchangeably with value. From this perspective, value is considered subjective and relative to the stakeholder (EN, BS, 2000), implying that value for one stakeholder may vary over time. But value has different characteristics in the for-profit and public sectors (Cole and Parston, 2006; Moore, 2013). The goal and motivation for public organizations is to achieve a social mission by providing ever-improving services (Cole and Parston, 2006), while the goal in the for-profit sector is to maximize shareholder wealth (Moore, 1995). In relation to public spending, Moore (2013) argues that it is the public opinion that justifies investment in areas such as culture. This adopts an instrumental perspective on public value, meaning that public value focuses on what the public values today, but it might be important to also (or instead) focus on long-term public value that creates value for future generations (Benington, 2009, 2011). This conceptualization relates to how public spending is legitimized and legitimacy is known to differ across the lifecycle of an organization; indeed, a startup has to be perceived as legitimate if it is to acquire new resources (Fisher et al., 2016). A short-term organization such as a program may have to follow a similar path of meeting the expectations of different audiences with different norms, standards and values in order to be perceived as legitimate.

With such a wide range of perspectives on the concept of value, it is unsurprising that views on project and program performance and value creation differ widely. In the public sector, goals are more likely to be related to evaluating the efficiency and effectiveness in
achieving a social mission, while in the for-profit sector performance is based largely on the financial bottom line (Moore, 1995). The for-profit sector looks to create the most value by improving the firm’s competitive advantage (Prahalad and Hamel, 1990) or by positioning products or services in the market (Porter, 1985), while public sector performance improvement focuses on finding better ways to achieve the social mission (Cole and Parston, 2006; Moore, 2000). Using multiple case studies, Moore (2013) found that techniques from the for-profit sector fell short when applied to the public sector, in that they were unable to address the complexity and the need for balancing goals when achieving a social mission.

Despite some differences in the ways various types of organizations view and manage value, both for-profit and public organizations aim to achieve value creation.

In the for-profit sector value creation occurs at various levels, such as micro, mesa and macro (Lepak et al., 2007). Such levels are also evident in the ways that service to citizens (micro level) may create outcomes such as public health that are of value to both the general public and the economy (mesa and macro levels) (Kelly et al., 2002; O’Flynn, 2007). Other common themes in value creation include recognizing the duality of creating and realizing value (Lepak et al., 2007), value creation as a process of enabling resources (Love et al., 2014; Pang et al., 2014), and value as an outcome of applying capabilities (Barney, 1991). Programs have been discussed as value creating systems (Winter and Szczepanek, 2008; Winter et al., 2006) in the understanding that focusing on the customer’s needs, or the use of the project’s product delivery, means focusing on the outcomes and hence the creation of value. This thinking is reflected in the post-"New Public Management" wave in creating public value that focuses on the citizen as a shareholder (Horner and Hazel, 2005; Kelly et al., 2002). Some recent studies challenge these normative perspectives on creating public value (Bryson et al., 2016), while other authors highlight the central role of collaboration across sectors in the creation of public value (Page et al., 2015).

Collaboration and networking are also emphasized in entrepreneurship studies and reflected in the theory of effectuation. Sarasvathy (2001) observed that entrepreneurial decisions followed a different type of reasoning from the expected causation-based decision making. Effectuation was identified as an inversion of the causation-based reasoning proposed for the creation of new ventures. Effectual logic is based primarily on four principles: "Available means," also called the "bird-in-hand" principle (Sarasvathy, 2008), where goals are driven by the resources that are available; "affordable loss," acknowledging that some losses may be incurred, but promoting decision making to limit potential losses to manageable levels; "partnerships," emphasizing the role of partnering in tackling uncertainty and creating new ventures; and "adaptability" or "leveraging contingencies," where the unexpected is considered as a new opportunity for developing value (Sarasvathy, 2001). Sarasvathy extended the definition of the principles to include a fifth principle called "pilot in the plane" that emphasizes the role of the human in shaping the future (Sarasvathy, 2008). Studies in the entrepreneurship field suggest that these four or five principles support decision making and that effectual logic is more likely to be used when by expert entrepreneurs than novices (Read et al., 2009).

However, Sarasvathy’s model of effectual logic has been criticized for not meeting traditional quality criteria for a theory (e.g. Arend et al., 2015), particularly that there is insufficient evidence of the explanatory role of the theory and the theory itself does not meet quality criteria in social science. Chandler et al. (2011) investigated the dimensions of effectuation in entrepreneurship, and identified effectuation-related constructs of experimentation, affordable loss, and flexibility that show partial alignment with and validation of Sarasvathy’s principles. Their study also exposed a causal construct on pre-commitments that co-exists with the effectual approaches. Although effectuation and causation are often presented as opposing logics that could be incompatible, most entrepreneurial decisions employ a combination of both logics (Reymen et al., 2015).
The role of effectuation in environments outside entrepreneurship is also of interest, and new evidence on effectuation theory is coming to light from project-based research, such as studies of PPM (Nguyen, 2015; Nguyen et al., 2018), types of projects (Huff, 2016) and research and development projects (Brettel et al., 2012). Brettel et al. (2012) found that three of the effectuation principles were more likely to be applied when uncertainty was high, but there was little evidence of the use of the “partnerships” principle. Nguyen et al. (2018) focused on the three principles supported by the Chandler et al. study (available means, affordable loss and adaptability) in project and portfolio management settings. They found that the level of innovativeness was associated with higher use of affordable loss and adaptability principles, but it did not seem to affect the use of the available means principle. These studies are beginning to shed more light on the roles of effectuation and causation in project environments.

This literature background has emphasized the need to create value through projects – but also has highlighted the complexity of managing value creation across a program of projects with multiple stakeholders. Decision making in such environments is challenging. In some environments an alternative type of decision logic, effectuation, may be useful. This study therefore considered the role of effectuation and causation logics when managing projects in the cultural sector.

Research methodology
This study aimed to explore how value creation is practiced in the Aarhus 2017 program. As such, its findings contribute to the research project RI2017 that is formatively evaluating the impacts of the Aarhus 2017 ECoC.

The research was designed as a case study based on qualitative research methodologies (Edmondson and McManus, 2007; Myers, 2009) including interviews (Kvale and Brinkmann, 2009), a research workshop (van de Ven, 2007), participant observation (Spradley, 1980) and document studies (Bowen, 2009). Active dialogue with the Aarhus 2017 organization was part of the collaborative research methodology (Geraldi and Söderlund, 2016; van de Ven, 2007) that used an abductive approach (Dubois and Gadde, 2014; Martela, 2015). This approach involved collecting data with the research question in mind, incorporating theoretical sensitizing concepts such as value creation (Patton, 2002). After coding the interviews, formal theory was applied to inform the theorizing on the basis of the data.

Two kinds of data were used in this study: some were collected specifically, and some were taken from interviews for the RI2017 study that followed Aarhus 2017 from 2013 through 2018. Close collaboration was mutually beneficial, enriching the authors’ understanding of the phenomenon and the RI2017 researchers’ understanding of project value creation. The focus on impacts was a good fit to the present study, as impacts and long-term value can be considered synonymous.

Interviewees were selected using a purposeful sampling strategy with different criteria across organizational levels. At managerial level all managers relating to programming and promotion activities were selected for interview, including the CEO, program manager, communications manager, and the public relations officer, but excluding any managers in charge of administration, staff or volunteers. At the team level, only employees with long-term involvement with Aarhus 2017 were selected; this enabled the researchers to gain comprehensive knowledge of the program, which was still being developed. All projects, civil servants, researchers and others interested in the cultural field were invited to the workshop conducted by one of the authors. One author also participated in RI2017 workshops as an observer, where other participants included top managers in municipalities, cultural actors and researchers.
Data collection
In total, 11 interviews were conducted within the program organization – six conducted by the lead author of this study and seven with the management team as part of the RI2017 evaluation project, as seen in Table I. All interviews were audio recorded and subsequently transcribed for analysis.

The interviews designed specifically for this study were conducted between November 2014 and November 2015. These interviews were semi-structured. The management-level informants were considered experts, accustomed to answering critical questions and communicating an agenda (Richards, 1996). The interviews conducted as part of the RI2017 research were designed to follow Aarhus 2017 on an ongoing basis and were conducted between June 2014 and March 2016. The long time period covered by these interviews and multiple rounds of interviews with the CEO provided unique insights into the reasoning for actions and the increasing trust between the informants and interviewers also provided insights that would have been difficult access by other means.

The research workshop, conducted in June 2015, encouraged participants to document their own value concepts and co-create shared concepts that were recorded on paper and posters. The RI2017 workshop participation took place in May 2014 and November 2016. One author also participated in Aarhus 2017 events, a promotion event in June 2014 for attracting business sponsors, and a public exhibition of the program in April 2015.

Documents collected from the program organization included the final application, also called the “bid book,” from 2012, the strategic business plan from January 2015 and its updated version in December 2015, a report on legacy planning, and press releases. In addition, more than 200 newspaper articles from Denmark and abroad were collected throughout 2015 and 2016.

Data analysis
The transcribed interviews were loaded into NVivo for open coding inspired by grounded theory (Charmaz, 2014). The interviews conducted specifically for this study were coded in their entirety. The interviews conducted as part for the general RI2017 were read in full, but only sections relevant to the scope of this paper were coded.

The coding method applied was open coding using gerunds as codes, and thereby focusing on actions (Charmaz, 2014). The coding took place after the conclusion of all the interviews, with 709 codes applied to the interview data. Documents and field notes also served as background information for the coding, and for input to memos that were written during data collection and analysis and were then applied to explore new avenues during data collection. The background information qualified the statements made by

<table>
<thead>
<tr>
<th>Informant position</th>
<th>Period affiliated with Aarhus 2017</th>
<th>Study foundation</th>
<th>Time of interview</th>
<th>Interview ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO</td>
<td>June 1, 2014 to 2018</td>
<td>RI2017</td>
<td>June 2014</td>
<td>CEO_1</td>
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<tr>
<td>CEO</td>
<td>June 1, 2014 to 2018</td>
<td>RI2017</td>
<td>September 2014</td>
<td>CEO_2</td>
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<tr>
<td>CEO</td>
<td>June 1, 2014 to 2018</td>
<td>RI2017</td>
<td>January 2015</td>
<td>CEO_3</td>
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<tr>
<td>CEO</td>
<td>June 1, 2014 to 2018</td>
<td>RI2017</td>
<td>May 2015</td>
<td>CEO_4</td>
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<td>CEO</td>
<td>June 1, 2014 to 2018</td>
<td>Present study</td>
<td>November 2015</td>
<td>CEO_5</td>
</tr>
<tr>
<td>Program director no 2</td>
<td>April 13, 2015 to 2018</td>
<td>Present study</td>
<td>November 2015</td>
<td>PD_1</td>
</tr>
<tr>
<td>Program director no 2</td>
<td>April 13, 2015 to 2018</td>
<td>RI2017</td>
<td>March 2016</td>
<td>PD_2</td>
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<tr>
<td>Communications director</td>
<td>January 12, 2015 to 2018</td>
<td>Present study</td>
<td>November 2015</td>
<td>COM</td>
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<tr>
<td>Press and event manager</td>
<td>March 1, 2014 to 2018</td>
<td>Present study</td>
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<td>PR</td>
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<tr>
<td>Program employee</td>
<td>2008–2018</td>
<td>Present study</td>
<td>January 2015</td>
<td>PE_1</td>
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<tr>
<td>Program employee</td>
<td>2009–2015</td>
<td>Present study</td>
<td>November 2014</td>
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informants, by elaborating, supporting or, at times, contrasting with statements made during interviews.

The open codes were subsequently grouped into categories, starting with the most populated codes. Each category was a group of similar codes with meaningful concepts. The coding resulted in nine categories, from which emerged three themes (overarching connectors of these concepts). Table II illustrates how codes related to categories that supported the three themes.

**Findings: holistic value creation through a program**

This study identified three primary themes for value creation in managing the program and preparing the ECoC year: collaboration, coordination and perception. Each of these themes is related to three recognized value types: strategic, transformational and emergent value. Exploring the themes and types of value illustrates that both effectuation and causation play a role as underlying logics for decision making in the program.

**Value in collaboration**

One of the strong benefits of an initiative such as Aarhus 2017 is the creation of collaborative capabilities. The value from collaboration and from the development of networks and new cross-organization relations (Granovetter, 1973) was a repeated theme discussed by the interviewees from the Aarhus 2017 program organization. It suggests both transformational and emergent value from executing an ECoC for the individuals and organizations involved.

**Establishing networks.** Establishing networks was highlighted in relationships between individuals, municipalities and even organizations across EU member states. After Aarhus had announced its candidacy in 2007, the collaboration started with all municipalities in the Central Denmark Region and the Administrative unit for this region preparing the joint bid from 2008 to 2012. It was the first time these municipalities and regional administrative unit had worked together after the municipal structural reform in 2007. Preparing the bid was an open process with many activities until 2012, involving meetings and workshops of both cultural institutions and citizens. In this way, an ECoC has a much higher level of

<table>
<thead>
<tr>
<th>Themes</th>
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<th>Code examples</th>
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<tbody>
<tr>
<td>Collaboration</td>
<td>Establishing networks</td>
<td>Unwillingly cooperating</td>
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<td>Internationalization</td>
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<td>Building capabilities</td>
<td>Developing local communities</td>
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<td>Educating municipalities</td>
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<td>Coordination</td>
<td>Setting direction</td>
<td>Programming with expertise</td>
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<td></td>
<td>Clustering</td>
<td>Pulling everything together</td>
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<td>Inviting tourists</td>
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<td>Diversification</td>
<td>Creating the extraordinary</td>
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<td></td>
<td>Grooming</td>
<td>Diversifying program</td>
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<td>Showing true Danish</td>
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<td>Perception</td>
<td>Informing</td>
<td>Programming method</td>
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<td>Engaging</td>
<td>Developing projects</td>
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<td>Establishing narrative</td>
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<td>Legitimizing ECoC</td>
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Table II.

Coding and categorizing
collaboration than other types of cultural initiatives such as a festival. One manager said: “European Capital of Culture is created often from consensus. It comes often from a broad or very imaginative consultation and that kind of creative brainstorming feed into what people want from it” (CEO_5). Individuals and artists connected through these processes, and all 19 municipalities also formed collaborations. The cultural city councilors collaborated formally through committees and also informally across new geographical spans. The network has an unanticipated development as "some of the culture managers had to be dragged into this circle […]To the transformation of them realizing that they are the basis for one another. They can help each other, and they have become colleagues” (PE_1). The cultural managers were a showcase for the synergies of collaborating across municipalities and served as inspiration for other managers in the 19 municipalities.

Projects were required to have local, regional and European dimensions, which included partners from other EU member states. However, not all projects were able establish new connections on their own: “I think we need to work with the projects to advise, to create the international networks and connections, or build the ones they already have.” (CEO_1). Some of the obvious connections made were to other ECoC hosts that the managers knew from the “ECoC family.”

Another dimension to the establishment of networks was that some employees in the Aarhus 2017 organization were seconded from the regional administrative unit and some municipalities. These individuals contributed to creating a network among the municipalities and the regional organization that remain a legacy of the ECoC. The program organization itself was divided into teams, and the internal collaboration was also a source of value creation. The teams complemented each other in identifying stories that help communicate the narrative of the ECoC (PR).

These networks and identified synergies are expected to exist well beyond the finalization of the 2017 program, facilitating future value creation. This suggests that the value of establishing new relationships may be intrinsic, implying that the value of an initiative such as the ECoC is not only created through the use of the project outputs, as suggested by the instrumental value creation perspective (Winter and Szczepanek, 2008; Winter et al., 2006), but it also has an emergent nature. The networks are also a foundation for building new capabilities.

**Building capabilities.** Building capabilities covers a category where networks and learning are operationalized. The ECoC offers a fast track to gain experience in collaborating with international partners on EU funding applications, as the ECoC is a brilliant platform for marketing oneself and cultural offerings that would not receive much attention in trivial situations. One of the managers said: “being designated European Capital of Culture gives you a platform for you to present yourself internationally […] it is a platform for promoting Danish culture” (COM). The platform has intrinsic value, but the greatest value is achieved by actually using the platform, for example, for promoting urban regeneration projects. Municipalities are often engaged in promoting projects, and engaging in a bid process is a good opportunity for municipalities to gain experience for applying for EU funds. Such experiences form capabilities that support EU funding of future projects, and there are rich opportunities for improving these capabilities among Danish municipalities (COM). The level of experience and capabilities with EU funding vary across municipalities, and part of the programming effort is to ensure that the entire region develops strong capabilities in these areas. In this way, the ECoC provides a new avenue for municipalities to access EU funding.

The ECoC was a combination of a locally anchored initiative through Danish managers, seconded employees from Danish public organizations and international highly skilled managers from the cultural sector. Some of the employees had worked up to ten years with the
ECoC, longer than any other area in their careers, and they had brought back experiences and capabilities for hosting cultural programs and major events, as well as facilitating cultural development and EU collaboration. In this way the region’s overall capability has increased as a result of the process itself (Laursen, 2018). Value in collaboration is not only in the intended and unanticipated establishment of new networks among people and organizations, but also in the value of boosting organizational capabilities.

**Value in coordination**

Coordination of activities to create synergies is at the heart of program management and in this way it brings about a change greater than the sum of all projects. Two significant findings from this study were coordinating for a diverse year-long program where everyone had a defined role and securing a strong legacy. Thus, coordination was related to both the programming of activities during 2017 and long-term projects, such as the soft city projects that were primarily focused on long-term change and the legacy of Aarhus 2017 (PD_2).

**Setting direction.** Setting direction means creating a common thread for all projects that were co-funded by the ECoC program organization by having a clear artistic and program direction that guided funding and communication. The overall direction was given by the Aarhus 2017 slogan “Let’s rethink” that the bid book had presented, along with three areas for rethinking: the city, values, and art and creativity. The structure of these areas was communicated differently during the programming period, but the areas continued to communicate the direction to projects applying for funding. It was the responsibility of the program organization to make it coherent, as the CEO explained:

> So there has to be that kind of professional expertise to pull together what a European Capital of Culture can be, to give it a kind of more homogenous whole for it to have impact […] I think if you’re saying 90% of the projects are external and they are developed by other ideas and other mindsets and other organizations you still need to have some red thread. (CEO_1)

The expertise was provided especially by the CEO and the program director, who both had experience with programming and curating major artistic events.

**Diversification.** Diversification was built into the program from the outset, as the program organization had three guiding values: diversity, sustainability and democracy. Diversification refers to the public’s reception, and therefore it was a premise for programming, as stated by the CEO: “We always wanted to create a program that is open, that is diverse, has different voices in it. That is diverse in not only reflecting different cultures, but the manifold cultures of Denmark; that everyone has their space in that year” (CEO_5). From the outset, there would be room for coordinating a diverse program, as 350 projects and events were predicted in the bid book from 2012 (Aarhus 2017, 2012). These measures were taken to secure not only an enjoyable year of events in 2017 but also to create something valuable that would persist with the citizens in Aarhus and the surrounding region.

An ECoC such as Aarhus 2017 included not only what was in the program, but also projects that were not funded by the ECoC that could contribute to the overall vision. These unofficial, yet complementary, projects may produce more radical content than ECoC funded projects, as one manager asked: “Why do you want to be official? Why don’t you stay unofficial and then you can do whatever you like” (PD_1). Through these associated projects, the experience and capabilities of the program management team contributed to developing the local artistic community and thereby making Aarhus 2017 a driver for capability development. Overall, projects adhering to the purpose of rethinking were treated positively, in line with the diversity and democracy values.

**Clustering.** Clustering refers to timing the program, both on a small scale and overall. The program organization coordinated and put together the program for the benefit of tourists by programming two or three highly interesting events together: “So people want
to come to Aarhus for a weekend. And from that we bring them right into the region to see all the other projects. We give them the opportunity to do that” (CEO_3). This form of coordination would allow for more value to both tourists and the projects.

On an overall scale the program was divided into four main seasons, as seen in Table III, which served as a guide for planning activities during 2017. Each season had one mega event that expected an average of 60,000 participants, and across the program 12 full-moon events were planned, one for every month, each expecting 15,000 participants. This coordinated timeline ensured the year had the right momentum (CEO_4), and the mega events ensured that the program provided something extraordinary: “What we needed to do is to make sure that we have those really spiky, interesting moments that have two great famous maybe, or very good artists or organizations or cultural engagers working” (CEO_3). The mega events were to be something the participants would remember, similar to the shows at the 2012 Olympic Games in London (CEO_1).

The publications by the program organization clearly show the progression of communicating the program and grouping events throughout the year, from the bid book in 2012 through two strategic business plans in 2015 (January and December) to the program book presented in October 2016. One major change was labeling event categories that gave the program a specific structure (Aarhus 2017, 2015). The structure changed throughout the program, as illustrated in Table III. The events and activities planned for 2017 covered the past, the present, and the future, with events centered on celebrations, contemplations and provocations (PD_2).

Grooming. Grooming projects means showing trust and seeing the potential in less developed projects. Receiving seed funding or initial funding from the program organization did not guarantee a place in the program. Projects had to show both progression and the ability or potential for delivering quality content for events or other activities in 2017. Thus, the development of projects was a matter of trusting that artists would be able to develop their project (PD_1). At other times the job was to assist in lifting the projects and giving them energy:

We did a quick speed date wordplay to come up with something that is now a very entitling title and actually gave them a lot more energy. They went of the room feeling lifted, and oh yeah we have a title that is much better. So it wasn’t that it was a bad project, it’s just about helping people repackage those pieces of information or their approach so that they are still lifting. (PD_2)

Thus, aside from ensuring that projects were producing quality content, coordinators also helped projects stay on track (PD_2). The capabilities and funding in a program organization can foster rapid development and transformation given the right circumstances. But a coordinated program also makes it possible to develop a hub and boost local arts communities that might never happen under usual conditions which “might be building some people up that have certain capacities or not building some people up who do not have the capacities or allowing this group here, who may have capacities to evolve to a point, where they do have capacities” (PD_1). Building capacities was a way to secure the legacy of Aarhus 2017, as the capacity to deliver high-quality cultural content will benefit the region for years to come.

Coordination was an ongoing activity, as the projects were funded through three funding pools: seed funding in 2013 for some of the projects that were involved in the development of Aarhus’ ECoC bid and co-funding of projects in 2014 and 2015. More than 100 projects were eventually part of the program. Coordination was a matter of intended transformation, where the program could exercise control over funding and direction.

Value in perception
Perceptions of value can be highly subjective and complex – and for a large and expensive public initiative such as the ECoC, such perceptions are very important as public opinion
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<td>Themes (12)</td>
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<td>Autumn: Look towards the future</td>
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<td>Knowledge, history and cultural heritage</td>
<td>Themes (7)</td>
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<td>Architecture and urban spaces</td>
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<td>Nature, routes and tracks</td>
<td>Food and gastronomy</td>
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<tr>
<td>Design, technology and creative businesses</td>
<td>Nature</td>
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<td>Sport, physical activities and games</td>
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<td>Exhibitions</td>
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<td>Music, sound and sound art</td>
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<td>Perform arts, dance, theater and performance</td>
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<td>Debate and literature</td>
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<td>Gastronomy and food</td>
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hinges on justifying public spending (Moore, 2013). Managing the perception of value was a major theme in the findings.

**Informing.** Informing the stakeholders and managing their perceptions provided a basis for the stakeholders to form an opinion about the ECoC content. Any stakeholder can only form an opinion based on what they know, and stakeholder perceptions of value are one way that the delivered value can be determined. Managing stakeholder perceptions is a specific way of managing stakeholders (Toor and Ogunlana, 2010), and one that suggests Aarhus 2017 needed to be visible and associated with positive experiences so the public could form positive opinions about the ECoC (PR). Political sponsors in particular needed to be made aware of the content being delivered, and thus the ECoC provided reports to the political sponsors from local politicians to the EU. The public is a heterogeneous group, and the perception of value will always be mixed and critical voices will hold politicians accountable for the public spending on culture. Similarly, politicians hold the program management accountable for delivering a success defined by the agreed KPIs. Perceptions of value are one way that value can be "measured"; in the absence of hard measures of the quality of the experience or the impact on the community, both users and the public community at large can form opinions that provide a mirror of the value being proposed by the program or a single project.

**Engaging.** Engaging in positive perceptions is related the activation of the media and ensuring excitement about the program at the right time. The program organization needed support from the media and other external stakeholders, as only by the ECoC being visible and associated with positive experiences would the public think of the organization positively and perceive that it had met the defined success criteria (PR). The ECoC faced a challenge in the organizational division between beneficiaries and sponsors. Thus, the value for ECoC's beneficiaries needed to be visible to the sponsors, and the ECoC needed to communicate to the public and political stakeholders how projects in the ECoC program were creating value even before 2017. The communications team used both social and traditional media on a weekly basis (PR), and they invited international journalists to Denmark; indeed, around 100 articles about Aarhus 2017 were published in foreign media outlets during 2016 alone.

Any negative press coverage about the ECoC had the potential to spill over to perceptions of value of the entire program’s projects. Negative press coverage could have diminished willingness to endorse the ECoC: “It might have a self-reinforcing effect, because it is impacting a general attitude or it might encourage others to join the choir. That is the reason one should not just lean back and let critique be undisputed, one should try and talk about it when it is unjustified” (PR). The Aarhus 2017 organization sought to encounter negative media coverage and pressure from the public by collaborating very closely on communicating a positive narrative from the outset.

A timing challenge for the ECoC was informing the media and the public well in advance of the events planned to take place during the year – all ECoCs face this challenge. However, advising too far in advance could be counter-productive: “It’s like giving someone a Christmas catalogue in May. It is pointless for us to be saying to them ‘Okay, here you go. Choose what you want now.’ Because you are not in the mindset” (CEO_3). The program organization deliberately revealed the program in stages over the course of 2015 and 2016, applying the Hollywood formula with a build-up phase and a climax.

**Telling the narrative.** Telling the narrative was an ongoing focus for Aarhus 2017, aiming to make the ECoC interesting and relevant for the public. The narrative was that Aarhus 2017 was broad:

So it’s not just about the arts, although of course it is about arts and creativity, but it’s also about sports, food, politics, religion, education and language and all of the that make up who we are in terms of our cultural identity or even our national identity. It is a story of all of those things. (CEO_5)
This narrative was often communicated using storytelling (Fog et al., 2010), and the program organization was quick to put positive news or stories on Facebook to show that value was being delivered even before 2017. The Aarhus 2017 program communicated through various channels, such as directly to the public on social media platforms, where they ensured a diverse and even coverage of the projects. The ECoC has been compared to the Olympic Games. However, one major difference is very important for telling the narrative: the public are familiar with the Olympic Games, but often the ECoC is entirely unknown, making communication potentially difficult. The narrative contributed to communicating to the public, as the slogan about rethinking made it difficult to be specific and everything had to be developed (PR).

Achieving success was important for the political sponsors, enabling them to justify spending more than €50m on Aarhus 2017. The sponsors of the ECoC measured the success of Aarhus 2017 through a set of KPIs that captured perceptions from the direct beneficiaries of the program – the citizens and visitors who had the experiences and took part in events. In this way, the perception of value was central to the evaluation of Aarhus 2017, and overall the value in managing perceptions was strategic, especially the increase in international awareness of Aarhus in a branding context.

**Dimensions of value**

The three themes for program value creation covered at least three types of value: transformational, emergent, and strategic, associated with the organizational, ecosystems and societal levels (Ouden, 2012).

Value in collaboration was unanticipated or emerging, as managers from municipalities now had a common raison d’être in the area of culture. Value in coordination sought to ensure the change and impact would take place as intended through having an overall direction, and this could be labeled as transformational value (Gregor et al., 2006). Managing the perception of value was related to ensuring strategic development, labeling it strategic value. The three dimensions are briefly explained in Table IV.

Table IV does not contain an exhaustive list, as there are many taxonomies of value: for example, seven types of value suggested by Ang et al. (2016), the four-by-four model suggested by Ouden (2012) and strategic value in several dimensions (Martinsuo and Killen, 2014). While strategic value and transformational value are relatively well described in the literature, emergent value is relatively obscure. It follows the line of thought that contexts change and the environment reacts, and some outcomes will be emerging (Mintzberg and Waters, 1985).

The findings from this study suggest that transformational value and strategic value may cover both intrinsic and instrumental value. Value is instrumental because executing the ECoC brought tourists to the region and was expected to lead to increased wealth. Simultaneously, the legacy of the program was expected to create value for the public sphere in the longer term through a stronger cultural sector in the region surrounding Aarhus.

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<th>Table IV. Dimensions of value types</th>
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IJMPB 12,1
Decision-making logics

The three themes for value creation in the program and associated dimensions of value were established in a very complex environment, and the level of complexity was a recurring theme in interview data. The case was subject to very high uncertainty and ambiguity, making it difficult to apply value management approaches that have a defined product and existing customers with identifiable profiles (Thiry, 2002). The ECoC had neither product nor customers; the program was being developed and the public as a user group was highly heterogeneous. Artistic programming based on available skills was one part of the solution to managing the program. The findings from this study suggest that traditional PM ends-in-view logic was combined with other logics. Thiry (2015) noted that entrepreneurial methods can be applied for program management; this study concurred with this view and applied an effectual perspective (Sarasvathy, 2001) adapted to the project domain (Nguyen, 2015) in the analysis.

The nature of the setting and the types of decisions required in this case study demonstrate affinity with the four dimensions of effectuation:

1. Means driven: the Aarhus 2017 bid was created based on a range of workshops, including SWOT analyses, focusing on the means at hand. Yet, after being nominated ECoC and taking on the management team, it became apparent that the bid could require a budget of more than €125m, whereas they had estimated a budget of only €66m. They needed therefore to focus on means in terms of funds at hand. In parallel there was also a strong causal drive for two reasons: first, the EU considered the bid book as a de facto contract (note that the first bid was submitted in September 2011 for a year of events and activities starting January 2017) and second, because the municipalities were promised a return on investment of at least one to one.

2. Affordable loss focused: funding artists was partly based on the affordable loss effectual principle, recognizing and managing the potential for loss. For example, it was expected that not all artists who received funding be able to deliver the expected content during 2017, and this resulted in changes to the program. This is an example of effectuation being used to handle uncertainty in a strategic decision about developing a program in advance, recognizing that there were risks involved, and that a degree of "affordable loss" may occur.

3. Partnering: Being an EU initiative, and also due to the public setting, overall the program was not market driven. The municipalities initially competed with each other, aiming to benefit individually from the ECoC and not give away any resources. In time, the power of partnerships became apparent to the participating municipalities and the ongoing value of the collaborations formed a major benefit from the ECoC.

4. Leveraging contingencies: ECoCs are notorious for changes to the management, and this was the case during 2014, with two managers resigning. It was especially difficult when the program director left, but the management brought in knowledgeable manpower and made the best of the situation.

Looking back at the three value creation themes identified – collaboration, coordination and perception – it is notable that the ECoC did not follow traditional and causative ends-in-view logic for funding projects and carrying out activities. The emphasis on the value of collaboration created by the program recognizes the synergies of combining capabilities in line with the effectuation principle of partnering. Effectuation principles also align with the value of coordination. For example, active engagement with artists enabled management to set an entirely new course if a project hit a dead end; in this way the program was managed in a way that allowed leverage of contingencies for unexpected events, in addition to demonstrating the use of means-driven principles in shaping projects and the program. Various types of changes in the environment were used in
communicating the narrative of Aarhus 2017, and thus unforeseen events were widely used in managing the perceptions.

Table V summarizes the links between value types and management themes, denoting whether they were primary or secondary. For example, in the context of Collaboration, the primary area of value creation was Emergent value, with a secondary area of value creation also evident in Strategic value.

The types of value and management themes in Table V should be regarded as part of a contextual setting with a specific set of characteristics. The context provided by the ECoC program created an environment that lent itself to applying effectuation logic in decision making. It follows naturally from the theme “Let’s rethink” that the ECoC was concerned with change, but the specific impacts and the long-term legacy were not pre-defined. The guiding keywords for the content providers – that is, the projects – were “experimental,” “new connections” and “create extraordinary experimental projects.” It was acknowledged and accepted that some projects would fail, primarily in the sense that some would not end up delivering quality content and others may not have been selected to deliver any content at all for the events during 2017. The program content consisted mostly of cultural events, and often the potential event was developed within the project. Thus, it was not pre-defined when funded by Aarhus 2017, and the output was defined by the resources and competences, in line with effectual decision logic. This is in contrast with traditional project logic, where ends are in focus and failures are not welcome.

Discussion and implications
The investigation into how value is created and managed in a program of cultural projects highlighted three primary themes that reveal different levels of intent, temporality and subjectivity. Focusing on value creation in a program of cultural projects has provided a perspective that supported the emergence of non-financial themes. The analysis suggests that such themes are also important in the commercial sector, but often such themes are not recognized or focused upon because of the strong emphasis on financial and “hard” measures. The first part of the discussion summarizes the three themes observed in this study and explores ways in which each may also relate to other environments, including the commercial sector. The discussion then considers how an alternative logic based on effectuation can be applied to the types of challenges exhibited in the ECoC case, especially in managing uncertainty and ambiguity in projects and programs.

Relating value creation themes to the commercial sector
The development of collaborative capabilities created through the ECoC was one of the larger and longer term types of value created; the collaborative value extended beyond Aarhus 2017 into the future. The creation of value through the development of long-term collaborative capabilities is one of the expected benefits from a program such as the ECoC, yet the concept is difficult to measure and so difficult to use for justifying the project or gaining political or public support. However, findings from this study suggest that efforts to identify and measure the value of collaborative capability development could improve planning and decision making. This is particularly relevant in commercial environments where collaborative capability is more important than ever (shown through the increasing use of open innovation

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<th>Collaboration</th>
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Table V.  
Value types and management themes in Aarhus 2017
approaches and alliances, for example), but is rarely acknowledged as a “value” that can be created through a project or program. This study suggests that organizations in both commercial and non-commercial environments may benefit from recognizing the high impact and lasting contributions made possible by improved collaborative capability, and from incorporating such considerations when making decisions.

The second theme, value in coordination, represents a purposeful intention to coordinate across projects to provide diversity in the program. This diversity value is represented in this study by qualitative measures such as the breakdown of programs for different age groups, or the spread of projects representing different media, or the variety of locations for the program. While these measurements are relatively easy to record and communicate, they are a proxy for the perceived value; the reason coordination and balance are considered important is that it is expected that diversity will enable a high percentage of the population to value the ECoC. A positive public perception and a high degree of participation are major indicators of a successful ECoC.

In commercial environments, coordinating for diversity is already strongly exhibited in PPM literature and frameworks. The importance of balance across a program or portfolio of new products, for example, provides a way to manage risk by balancing low-risk and short-term projects with more radical longer term and riskier projects. Similarly, the balance of projects across geographic areas in a commercial program aims to engage and address a wider range of employees and customers. In these commercial environments, balancing for diversity is associated with better success (usually measured in financial terms) of the resulting products (Cooper *et al.*, 2001; Killen *et al.*, 2008). In the commercial world, as in the program studied, the direct value creation from projects lies in the future and may be difficult to estimate or measure. However, this study emphasizes that value in coordination is important for program or portfolio value creation, and that ensuring diversity in decision making has benefits in both commercial and cultural environments.

The final theme is the unexpected “value in perception.” The subjectivity, complexity and the role of external influences such as the media on the perception of value are reflected in this third theme. From a program or PPM perspective, with its roots in the commercial world, it can seem controversial to suggest that “perception of value” represent actual value. There can be a feeling that perceived value could be an illusion, that there may not be any underlying value after all. However, it is often noted that “value is in the eyes of the beholder,” and that each individual has their own perception of what is valuable. This study found that the perceptions of value across the end users become important for value creation by the cultural program, and that due to the level of importance much effort was spent on managing stakeholder perceptions of value. There is some evidence that value perceptions are also important when managing a program in a commercial environment (brand perception and goodwill, for example); however, the creation of program value in such environments is usually expected to be demonstrated in hard measures such as financial performance, market penetration or patents. In the absence of many hard measures of value, the importance of “perceived value” has emerged in this study. The case of Aarhus 2017 also demonstrates the importance of managing the stakeholder perception of value – and how the media and communications related to the program must be managed to ensure that value is created. In commercial environments, the importance of considering perceived value and managing media and communications has not been illustrated in program and portfolio management research. However, such organizations often do recognize perceived value, and they invest in media and communications initiatives. Value will also be perceived in commercial settings, whether business managers recognize that perspective or not (Vatin, 2013). This study of value creation in a cultural program suggests that consideration of perceived value creation is could enhance PPM decision making in commercial organizations.
Effectuation logic in projects and programs

The importance of context is highlighted in the findings about the application of effectuation and causation logics to program management practices. The cultural and public context in this study provided a contrasting perspective from that found in most traditional commercial contexts and offered a rich environment for observing the use of effectuation logic alongside causal logic. This study supports the work of Reymen et al. (2015) and suggests that, instead of a dichotomous perspective (where projects are managed by either effectuation logic or causal logic), the two logics may be used in a variety of combinations depending on the decision context.

The findings suggest a concept of an effectuation–causation decision logic continuum, with pure effectuation at one end and pure causation at the other, and many environments with a mix of both where one or the other decision logics dominate. Figure 2 illustrates such a continuum for project and program decision making to align the logic mix with the context. Context is also central in the model offered by Reymen et al. (2015) that links contextual factors with entrepreneurial decision-making aspects, including the type of logic. Focusing on the decision-making logic, this model is designed to be simple and generic and to emphasize the continuum of the degree of each logic and its relationship to the continuum of levels of uncertainty in projects. For example, Program A uses largely causal approaches, but some effectuation logic is evident—this might be a fairly standard program environment without much change and uncertainty. Program B, in contrast, employs primarily effectual logic—suited for its environment which may be closer to entrepreneurial situations or exploratory projects with, e.g., uncertain outcomes or discovery (Lenfle, 2008; Loch et al., 2011).

Causation principles are readily identified in classical PM (Svejvig and Andersen, 2015) and in the task perspective (Andersen, 2008; Winter and Szczepanek, 2009). Effectuation principles may become similarly aligned with concepts proposed for rethinking PM: learnability, complexity and uncertainty (Svejvig and Andersen, 2015). Concepts from entrepreneurship such as effectuation are particularly suited for advancing research in project, program and portfolio management due to the coherence between the fields (Kuura et al., 2014; Lindgren and Packendorff, 2003). This study suggests that effectual logic can be relevant in both projects and programs; indeed, effectuation can be particularly relevant for program management (Sarasvathy and Venkataraman, 2011) due to the higher degree of uncertainty and ambiguity across the program level.

Implications for practice

Project practitioners who find that classical projects approaches do not fit with complex, uncertain, or ambiguous environments may find this illustration of a continuum of effectual

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**Figure 2.** Continuum for logics of decision making

- **Program A**
  - Causal logic
  - Stable, defined, certain context

- **Program B**
  - Effectual logic
  - Uncertain, ambiguous context

- **Project environment/decision making mix**
and causal decision-making logic useful. By considering where their project fits on the continuum, practitioners may be able to tailor training and consider methods beyond the traditional PM toolbox. Practitioners, such as policy makers, may benefit from considering a contingent approach to the application of decision logics and management methods based on their understanding of how entrepreneurial projects with unknown ends (Sarasvathy and Venkataraman, 2011) are distinguished from traditional projects.

The theme of emergent value could be taken to suggest, provocatively, that project value can develop from what some will regard as pure coincidence. On the contrary, the findings from this study indicate that priming practitioners to spot the potential for unanticipated value creation early might enable them to nurture it and create more value from emergent sources, in a manner similar to the “Opportunity exploitation” identified by Eskerod et al. (2018). This thinking also aligns with the counterintuitive concept of “planned emergence” (Kopmann et al., 2017) which proposes benefits from PM approaches that identify, nurture and steer emergent strategies to take advantage of opportunities in changeable environments.

Collaboration provides multiple benefits for practice including, but not limited to, the improved ability to apply for funding. In project environments, value is best developed through collaborative arrangements that are able to integrate the specific tasks of a project or program. The findings from this study encourage practitioners to establish the important integration mechanisms that will support collaborations across multiple organizations.

Limitations
This study is an explorative endeavor in Denmark after a reform of the public sector and may not represent other contexts. Future research is recommended to explore collaboration, coordination and perception value creation in other contexts including commercial contexts. The synergies in the creative industry in a small internationally oriented country might be different from a large country, with a greater diversity and having minorities that are bigger in absolute numbers. As each ECoC is unique in terms of context, approach and program of activities, it would be recommended to conduct further studies of public programs, perhaps other European Capitals of Culture, for elaborating on managing holistic value creation and coping with ambiguity and uncertainty.

The research reported in this paper does not cover the entire length of the Aarhus 2017 ECoC; rather, it is a study of the time until the peak of events taking place in 2017. The long-term effects, the so-called legacy, and other major societal changes were not evaluated in this study and could be the topic for further research. In addition, future studies may benefit from including a wider base of stakeholders associated with creating and evaluating value in Aarhus 2017; this study was limited to interviews with managers and employees at the Aarhus 2017 secretariat.

Conclusion
This study answers the call for further in-depth research into value creation in non-commercial environments. A public program has provided a rich environment for the scrutiny of value creation in ways beyond those applied in commercial settings, generating findings to challenge and extend the established concepts of value and success in projects and programs. The research reported in this paper illustrates how the management of a program of cultural projects created strategic, emergent, and transformational value, and suggests that these types of value are important in commercial and other settings. The findings highlight the long-term structural value from the creation of collaborative capability through a program; the ways that coordination of a program contributes to value creation; and the value placed on the perception of value that leads to careful monitoring and management of communication.
The identified themes served as the basis for exploring the use of effectuation and causations decision logics first identified in the field of entrepreneurship. These contrasting logics are shown to help manage uncertainty and ambiguity in projects and programs. Both types of decision logic can be effectively combined to best support decision making in projects or programs. To better understand the context and the balance of both types of decision logic, a project or program environment could be positioned along an effectuation–causation decision logic continuum to illustrate the mixing of both logics.

Management of projects, programs and portfolios in both non-commercial and commercial project contexts is often challenging due to complexity, uncertainty and ambiguity that are not best managed through traditional causal project approaches. A unique non-commercial environment enabled the authors to distill findings about the creation of value beyond those emphasized in commercial settings – findings that also have relevance in commercial environments. The findings support the development of distinctive project and program practices that harness the power of both effectuation and causation decision logics and enhance decision making processes to improve the ability to create multiple types of value through projects and programs in uncertain environments.

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The vanishing point? – notes on conceptual colonization and epistemological emptying

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Abstract

Purpose – “Entrepreneurship” and “projects” both represent concepts with somewhat hazy boundaries. Interestingly, they also both represent fields of study in which academics representing those fields have worked very hard so as extend rather than delineate the same. In fact, some parts of the debate on, e.g., entrepreneurship could be criticized for engaging in “conceptual colonization,” insofar as it actively attempts to fit more and more activities under the umbrella term of entrepreneurship and/or projects, with the attendant implicit inference that they are thus fodder and resource for studies of the same. The purpose of this paper is to seek to inquire into this phenomenon.

Design/methodology/approach – In and of itself this could be seen as merely a case of academic (over-)branding, but the author will in the following paper argue that this also leads to “epistemological emptying,” i.e., a state where terms such as entrepreneurship and project start becoming less and less meaningful as they become more and more general, and that the strive among researchers to extend their fields can be seen as a form of symbolic violence against the same.

Findings – The author argues that the author can find conceptual colonization and epistemological emptying by paying critical attention to the manner in which key contributions in the field(s) consistently and uncritically try to extend the boundaries of said field(s).

Originality/value – By reflection on the manner in which field(s) attempts to make themselves more general may backfire and bring about epistemological emptying, the author might develop a more robust discussion regarding the importance of field boundaries and also more critically note power/knowledge ambitions in the field(s).

Keywords Methodologies, Entrepreneurship, Epistemology, Critical project studies, Critical management studies

Paper type Conceptual paper

Introduction

What is a project? Perhaps more interestingly, what is not? Further to that, what is entrepreneurship, really, and where are the limits to this? These are questions familiar (and potentially quite irritating) to each and every researcher working in these fields, and while discussions such as these can at time be incisive and philosophically astute, they can also be bewildering and notoriously vague. This, as there is no one, final answer to them, and as attempts at clarity can end up in creating even more confusion. Yes, we all know that projects are temporary organizations with limits both when it comes to available resources and allowed time-spans. Yes, entrepreneurship is acting upon a perceived opportunity in order to create a new venture – by any other name. Yet, the interesting thing about both these broad definitions might not solely be what they manage to capture, but how they also can be adapted to an ever-increasing array of cases, how the fields that study them may well be inclined to extend rather than limit these and what this means for the development of disciplines.

At play here is a particular form of academic positioning, one that I will contend is important to grasp if one wants to understand how contemporary disciplines function. In academia, the importance of a subject can be measured in many ways. Some disciplines – such
as philosophy and physics—are well-regarded on account of being some of the oldest disciplines we have, as well as for covering wide or critical realms of human knowledge. Other, more specialized fields can be well-regarded thanks to their practical connotations—few would argue against the importance of medicine in general and fields such as oncology in particular, and key disciplines in the engineering sciences are held similar, self-evident regard. There are, however, disciplines for which acquiring standing in academia requires more pro-active marketing and branding work. While we might today view fields, such as psychiatry or programming self-evidently worthwhile, it is also important to note that while their ascension was of course partly driven by developments in technology and knowledge, it was also the result of considerable work in arguing for their own importance from the disciplines themselves. I do not note this to in any way denigrate these fields, quite the opposite. The pedagogical and marketing work that went into positioning programming and psychiatry as serious academic disciplines is rather something to admire, and we should keep in mind that most “new” disciplines have undergone processes much like this.

This, however, does not do away with the fact that the dimension of power is very present in the development of academic fields. As noted by, e.g., Michel Foucault (1975/1979) in his seminal Discipline and Punish, the establishment of a discipline rests on their power to classify and establish norms, as well as their capacity to disqualify and exclude. To establish and build a discipline, then, is something more than merely amassing a knowledge base. It will by necessity also involve establishing the boundaries to be protected by disciplinary knowledge, and this will, over time, also involve playing around with said boundaries. While there has been considerable work done on the protection of such boundaries, for instance, the work done within science and technology studies as well as in ANT (see e.g. Bowker and Star, 1999; Law and Hassard, 1999; Latour, 1999), the issue of extending (or, potentially, shrinking) the same has often received less concentrated interest. Or, more precisely stated, has received interest in some instances rather than others. There is a wealth of studies done on the extension of the field of psychiatry, often in the vein of Foucault (see e.g. Burstow, 2015), and the study of financialization has given us fine examples of how disciplinary performances can extend the power of a specific knowledge regime (see e.g. Palley, 2013). Both cases, however, have extended their power specifically outside of academia, and have drawn upon their connection to practice to build their power base. Both also represent cases where the attendant power game has been less about finding new fields to classify, and more about arguing that a specific methodology can be deployed in novel fields.

Project theory and entrepreneurship, as disciplinary fields, represent a different, and, as I will argue, more interesting case. Neither field has a tremendous impact on the world which they study (at least not if compared with finance or psychiatry), and neither represent a particularly powerful subject in the academic hierarchy—to the chagrin of many in these fields. While many applaud specifically the teaching of project management and entrepreneurship, few would see the study thereof as particularly central to the contemporary academic project, and both fields have had to deal with the indignity of being “marginal” fields, often seen as subfields of other, more established ones—organization theory and economics being the usual suspects. This situation of being both politically central (due to being aligned with the contemporary vogue in higher education for “relevance” (see Bok, 2009) and marginal (due to not having the cachet of older and more established fields) has created an interesting dynamic in the way in which the fields argue for the standing of their knowledge claims, on which I will comment on in the following sections.

The work of conceptual colonization in the study of entrepreneurship
For a layperson, the issue of who is (and who is not) an entrepreneur is neither complicated nor particularly interesting. An entrepreneur, for most people, is simply a person who is self-employed in something akin to a standing concern. While one might accept that there are some
boundaries to this – we tend to work with the implicit assumption that the entrepreneur should have at least modest success in his/her endeavors – the exact nature of these do not necessarily worry a layperson. For the field of entrepreneurship studies, however, the selfsame issue has led to a plethora of commentary. As a result, there has been much handwringing in the field over issues such as what separates a small business owner from an entrepreneurial small business owner and what sets growing entrepreneurs apart from other, assumedly more stagnant, entrepreneurs. This need to classify and define is of course common in academia, in which the capacity to delineate and prove one is working with clearly operationalizable concepts is part and parcel of the academic project. However, which should come as no surprise, social categories such as “entrepreneur” (or, for that matter, “project”) are not as well behaved and easily captured as more objective phenomena, such as “concrete” or “photon.”

For a lively example of this, consider Schumpeter/Kirzner’s debate in entrepreneurship studies. Joseph Schumpeter was, as is well known, a seminal figure in the establishment of entrepreneurship studies as a field and in positioning the entrepreneur as a key, critical agent in economic systems. The existence of entrepreneurs was in Schumpeter’s thinking (see e.g. Schumpeter, 1947; cf. McCraw, 2009) what drove economies onwards, and the lack thereof would hamper the development of the same. At the same time, the entrepreneur was the principal agent of those hallowed “gales of creative destruction” that swept away legacy structures in the economy. This was the entrepreneur as conquering hero, as an agent who captured lighting (or at least innovation) in a bottle and who broke apart tired, old and inefficient systems. Even today, much of this notion of the entrepreneur as the great disruptor still lives on in the cultural unconscious, and drives many research projects on entrepreneurship. That said, this heroic notion has not gone uncontested. Israel Kirzner (1999, 2015) instead suggested that the entrepreneur was a more modest agent (although still massively important), with more modest aims. By recasting the entrepreneur as simply a savvy market operator, one alert to profit opportunities, Kirzner presented the entrepreneur as something more akin to a tinkerer, a stabilizing force in a market economy. Kirznerian’s entrepreneur, then, is an entrepreneur even when doing relatively incremental things, when finding small positions of arbitrage, or when utilizing some small inefficiency in the market. The difference between the two positions can seem rather stark, and much time and energy has been spent debating both the standing of these two theories and their relation (see e.g. Landström, 1999; Roininen and Ylinenpää, 2009). What is more interesting for the purpose of this paper is how complementary they are, and how their conflict in effect enables an extension of the field of entrepreneurship studies.

Whereas the innovation-led theory of entrepreneurship that can be traced back to Schumpeter has allowed researchers to study big, disruptive shifts, the Kirznerian notion of the entrepreneur in effect expanded the playing field of entrepreneurship studies immensely. No longer bound by the conquering hero of creative destruction, entrepreneurship scholars could study far more modest developments, even people who might have before been seen as mere traders, all under the banner of Kirzner. While one might quibble about whether this made the study of entrepreneurs more analytically precise, there is no arguing that it did not greatly expand the accepted domain of the field. This allows for a most delightful interpretation regarding the whole affair. While some have attempted to portray Kirzner’s new theorization of the entrepreneur as something akin to a paradigm shift in the field, another interpretation would state that it was, first and foremost, an entrepreneurial move in and of itself. By massively expanding who could be seen as an entrepreneur Kirzner, a researcher into entrepreneurs, in fact stated that his field of study was considerably larger than previously understood. This is a straightforward case of what I have here chosen to call “conceptual colonization,” as it in effect redraws the boundaries of the field one claims dominion over.

With such an elegant move as a template, many other in the field have explored similar strategems. Consider, for instance, William Gartner’s (1988) beloved article “Who Is an Entrepreneur? Is the Wrong Question.” This very influential article continues the project of
moving away from entrepreneurship as the remarkable action of remarkable individuals, but does so in a markedly different way from Kirzner. Here, Gartner moves away from what he describes as “trait approaches,” and simply states that entrepreneurship is the creation of organizations, and that thus any person creating an organization is, by definition, an entrepreneur. Issues such as whether they know this, or think they are entrepreneurs, or identify as such, are elegantly argued away by stating that it is the behavior itself (as interpreted by the researcher) that makes one an entrepreneur. For an entrepreneurship researcher, this is good news indeed. By moving away from issues such as traits, self-identification and even opportunities, Gartner opens up for the field to study everything from a football team, an amateur opera troupe, a BDSM club, and most anything else that catches the researchers fancy. As most everything in the social world is an organization, and as Gartner has defined the creation of such as entrepreneurship, the field has become near unlimited in scope.

This can then be contrasted with the arguably most influential contemporary text written on the study of entrepreneurship, Shane and Venkataraman’s (2000) “The Promise of Entrepreneurship As a Field of Research.” Interestingly, this starts out by highlighting the problem of defining the field, and even go so far as to refer to “a broad label under which a hodgepodge of research is housed.” They wish to counteract this by presenting a more structured definition of the domain, and attempt to do so by defining the field of entrepreneurship studies as “the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited” (Shane and Venkataraman, 2000, p. 218). In contrast to Gartner, Shane and Venkataraman argued that the creation of an organization is not necessary for entrepreneurship, but for a very specific reason. Opportunities, they argue, can emerge in context of existing organizations, or take a form where they are “sold to other individuals or existing organizations” (Shane and Venkataraman, 2000, p. 219). What at first appeared like a limitation of the field, particularly through the emphasis on goods and services (a less hard limitation than it might at first seem, seeing as most everything can be understood as some kind of good or service), now becomes a de facto extension of the same. No longer does the field of entrepreneurship studies cover all forms of action where an organization is formed, it now encompasses all forms of thinking and acting around opportunity, pretty much regardless of context. Entrepreneurship scholars could now say they had a legitimate interest in everything from the founding of small cultural organizations to the inner workings of a major corporation and the feel seemed overjoyed about this fact (at the moment of writing, Shane and Venkataraman’s article is listed as having 11,852 citations according to Google Scholar, making Gartner’s 4,878 seem paltry by comparison).

It is important to note that the examples above come distinctly from the academic world and the academic literature. This does not mean that the conceptual colonization that occurs within the groves of academe does not have an impact on the broader conversation as well. We might, for example, look to this statement of the matter from the always influential Harvard Business School, and the even more influential Harvard Business Review. In an article entitled “Entrepreneurship: A Working Definition” (Eisenmann, 2013), a definition by Howards Stevenson referred to as “the godfather of entrepreneurship studies at HBS” is proffered. This definition also does away with the entrepreneur completely, and simply states that “entrepreneurship is the pursuit of opportunity beyond resources controlled.” While the entrepreneur is then re-introduced in the explication of this definition – the entrepreneur as the pursuer of opportunity – the underlying theme is very obviously that entrepreneurship is something that can be at least attempted by a far larger group of people than usually assumed. It is for instance self-evident that everyone, with the possible exception of Elon Musk and a minute group of similar billionaires, exist in a position where there lay opportunities “beyond resources controlled.” For most of us, the resources controlled are relatively limited, and we might explore other opportunities. We often do not, and it is through this negation that we are defined as non-entrepreneurs. The definition,
then, might be less about entrepreneurs than it is about a worldview regarding opportunities. This becomes even more apparent if we compare to another HBR article, namely, for our purposes aptly entitled “We Need to Expand Our Definition of Entrepreneurship” (Hagel, 2016), where the extension of the field reaches a kind of zenith (or nadir, depending on your persuasion). Here, it is stated that due to exponentially developing technologies, and the changes these bring, we are in fact seeing a shift from an “employee society” to an “entrepreneurial society,” one in which “(w)e must all become entrepreneurs.” In this brave new world, entrepreneurs “must” exist on every level of every corporation and organization, including but not limited to “NGOs, schools and government agencies.” And, lest we doubt this, the transition is presented as a foregone conclusion: “Make no mistake about it: We’re on the cusp of a Big Shift from an employee society to an entrepreneurial one, as Peter Drucker so perceptively predicted. The forces driving it are too big, too inexorable to turn back.” In the future, then, all will be the purview of the entrepreneurship researcher!

Now, some might protest that the field of entrepreneurship is not quite as homogenous as my capsule history of the same might and that I have exaggerated the way in which entrepreneurship scholars discuss their field. Both these remarks are apposite, but I wish to point out that what I am teasing out here is a tendency in field rather than an absolute truth about the same. It should come as no surprise that researchers often find that their insights can be broadly applied, or that a field will argue for its right to exist. However, which I have tried to show above, entrepreneurship studies have been remarkably talented at attempts to extend the field, and thus colonize various conceptual spheres. Acknowledging this, and being prepared to critically interrogate such a project, may well be a necessary to understand entrepreneurship studies as a broader project.

Everything’s a project!

When it comes to the field of project studies, we first need to contend with the complexities of naming the field. Where entrepreneurship studies, theory and research have often been conveniently called “entrepreneurship,” the same does not hold for the study of projects. Here, terms such as project management, project studies, the study of temporary organizations and project theory are used more or less interchangeably, even when many of the epistemological schools represented in the field are anything but. In addition, great swaths of academia seem not to consider project studies a discipline unto itself, delegating it instead as a sub-field to, e.g., industrial or operations management (the main journals in the field are also often ranked and listed together with operations management journals). The field has a complex history, emerging as it did out of civil engineering and construction, as well as out of major military projects. To a great extent, the academic field of project studies was born out of a great deal of practical management principles and tools, devised to keep major projects on track. Whereas economists such as Schumpeter showed an early interest in entrepreneurs, “founding fathers” of project studies such as Henry Gantt and Henri Fayol had a distinctly more practical bent. In addition, the field was greatly influenced by the introduction of a series of models, developed to solve real-world problems, examples of which might include the “critical path method” and PERT, the “program evaluation and review technique.”

Much of what is published in the field of project theory/studies follows this practical logic, worrying less about the disciplinary boundaries of the field, and more about the latest tweak or test of a specific project model or tool. It is also notable that while the field of project studies has its own major voices – Jeffrey Pinto’s research on success factors, Bent Flyvbjerg’s work on megaprojects, and Connie Gersick’s punctuated disequilibria model come to mind – it has had less of a tendency for seminal, field-defining statements than, e.g., entrepreneurship studies. In part this could be seen as almost a survival strategy. As the field has done well in positioning itself as a useful if not terribly radical sub-field in, e.g., operations management, it has to a great extent made sure not to rock the proverbial boat. By being seen as a practical
field with a great potential to give courses that seem self-evidently relevant, it has managed to secure a safe space in higher education. In contrast to the field of entrepreneurship studies, however, it has not necessarily been as explicit in marketing itself as a panacea.

This does not mean that the field has not engaged in its own form of conceptual colonization. We could for instance look to the widely quoted piece by Lundin and Söderholm (1995), “A Theory of the Temporary Organization.” This paper can lay some claim to having focused and re-energized the study of projects, by recasting the latter from clearly defined engineering activities to something far more general. By emphasizing the temporality of project work, as well as the overall resource limitations of organizations set up to handle a delineated issue, the paper attempted to bring some intellectual rigor to the thinking around projects. However, in doing so, it also introduced a novel extension of the field. If what defines a project is not that people think of it as a project, but rather the temporal and other restrictions inherent in it, a lot more things become projects. Now it mattered not whether or not project management techniques or the Project Management Body of Knowledge were deployed or not, merely if a researcher could make the case that what he or she studies was, in fact, a temporary organization.

As a result, numerous studies emerged that aligned itself with the notion of the project, yet inquired into areas that had not hitherto been considered within the field of project studies. Things such as cultural productions, event management, wildlife expeditions and mountain climbing could now be studied as being projects, giving project researches a considerably extended dominion of all temporary organizations big and small. This was further bolstered with increasing talk of a projectification of society (see e.g. Lundin et al., 2015), making project research a form of social theory. When Winter et al. (2006) lay out “Directions for future research in project management,” all this has become a point of pride.

As they lay out the aforementioned directions, two key ones are a move from instrumental processes toward social processes (including “focus on social interaction among people, illuminating the flux of events and human action, and framing of projects (and the profession) within an array of social agenda, practices, stakeholder relations, politics and power”) and a move toward a broader conceptualization of projects (defined as an extension along the lines of “concepts and approaches which facilitate: broader and ongoing conceptualization of projects as being multidisciplinary, having multiple purposes, not always pre-defined, but permeable, contestable and open to renegotiation throughout”). In other words, not only were projects now a social, even societal arena, but also they may well be indistinguishable from other organizational forms – or recognizable as projects.

When Burke and Morley in 2016 present “On temporary organizations: A review, synthesis and research agenda,” this extension has continued. While they pay less heed to the socio-political dimensions of projects as phenomena and concept, they make quite clear just how extensive the field of studying temporary organizations is. Where project and temporary organizations have normally been seen as occurring inside an existing, permanent organization, now we also learn that they can also be inter-organizational ventures, and that organizations and firms can be entirely project based, making the permanent organization merely a platform for the main event – a plethora of temporary organizations. In 2018, Geraldi and Söderlund pushed the boat out even further, establishing that the field really should be called project studies in an article entitled “Project studies: What it is, where it is going.” This broad school, then, would be one which “includes but is not limited to project management, project organising, temporary organisation, management of projects and the nature of project-based work. […] We observed that research transits the project as levels of analysis, and includes behaviours of individuals and teams at the micro level, as well as projects in portfolios within and outside organisational boundaries at the macro level.” Thus, project studies really is not only just about projects, but also about what notions of time limited organization do to individuals, professions,
organizations, collaboration and society itself. In the end, project studies become something
akin to a theory of post-industrial society at large, to see a world in a Gantt chart and heaven
in a PERT (to paraphrase Blake).

Thus, project studies too seem to follow the path of entrepreneurship studies. As the
fields grow stronger, the field it claims grows larger. What was once a humble concept
turns, slowly but surely, into something that can explain life, the universe and everything.

The vanishing point: on the threat of epistemological emptying
The critical reader, having made it this far, might now ask why all this matters. People in an
academic field can get a little overly excited about the selfsame, and perhaps even
overestimate its importance, but is there really anything wrong with that? The answer to
which would of course be no, not at all. Were we merely talking about a kind of intellectual
vanity, we might at worst conclude that some in the aforementioned fields have large egos,
but the conclusion that there are some academics with oversize egos would not constitute a
novel or original insight. I would, however, contend that there is something more at play here,
a tendency that may in the long-run damage not just the two fields discussed above, but the
broader academic project. I have come to call this tendency “epistemological emptying,” and
find it to be a form of symbolic violence that can deeply affect a field and its practices.

Simply put, epistemological emptying occurs when a concept or a theory becomes so broad,
so all-encompassing, that it ceases to be a way to understand the world, and instead becomes
a way to dominate the same. We might again refer to the notion of “financialization” (Palley, 2013)
to illustrate this process, even though we are here dealing with a more complex interrelationship
between academic thought and industry practices. There was a time when finance was about …
finance. It dealt with the pricing of financial instruments, normally in a rather staid and careful
manner. However, as the use of financial instruments increased and even more exotic such were
introduced, this construction started to unravel. As artists such as David Bowie turned their
royalties into securities such as the Bowie Bond, and cities financialized youth counseling
initiatives (such as Goldman Sach’s bond with the city of New York), it started to look like
everything could be turned into first a contract, then a bond, then a derivative, financializing
everything – or at least making everything potentially understandable through the medium of
financial vernacular and theory (a move now hastened by the contemporary hype for
cryptocurrencies, ICOs and the blockchain). While this might look like a very good situation for
academics who study financial theory, it also led to a profound existential issue for the same.
As theoretical constructs that were not necessarily designed for real-world utilization became
used for everything from predicting the weather to making kindergarten more efficient, finance
became less of an epistemological lens which enabled interesting questions to be asked, and
more an ideological tool to limit what might be said about the world. As everything became
finance, less and less became finance – from an epistemological point of view. Finance was now
just a tool to deploy on anything, not a way to grow human understanding.

Innovation would represent a slightly different case. While financialization may be a case
of a mindset spreading further than might be safe for it, innovation represents a concept, one
with an academic discipline devoted to its study, that has during the last decades been
watered down to a point where it is close to becoming meaningless. Whereas the title of
innovation might at one point have been reserved only for very significant new products or
services, it is today used for almost anything, significantly lessening the usefulness of the
term. As innovation becomes a marketing term, and innovative a general marker,
is also becomes something akin to elevator music, a phrase one simply assumes should be
attached to any- and everything that in one way or another claims to be different and/or
improved. Its power to distinguish phenomena is thus exchanged for something more
general – a moral categorization of sorts – which might well represent a definitional case of
epistemological emptying.
The two cases that have been in the spotlight here – entrepreneurship and project studies – represent cases not unlike innovation. However, both also represent cases where an academic field has actively tried to expand their own fields and aggressively market their favored concept (an issue that could be raised with the field of innovation studies as well). I would also argue that while this may have been very helpful for the identity work of those in the field, and a great boost to the egos of the same, it is not at all given that this has created a healthier field. In fact, I would argue that both entrepreneurship and project studies have in fact been damaged by the tendency to continuously expand reach and suggested importance. In part, this is due to simple economics. With a limited amount of scholars with a limited amount of time dedicated to research and an expanding field, any one part of it will risk being studied by so few people, who will also often form cliques, that few issues ever get studied in enough depth by enough people to push the agenda onwards. The tendency in contemporary higher education to incentivize increasingly narrow specialization will further exacerbate this.

But the issue will also be one of muddying the conceptual waters, i.e., the epistemological emptying I have warned of. As projects become temporary organizations and these become increasingly difficult to tell apart from regular organizations, or vice versa, the very notion of a project starts to be emptied out. It becomes an empty signifier, more useful for stating which academic community the researcher belongs to than what he or she is actually studying. Similarly, when entrepreneurship as a concept moves away from something as basic as a driven businessman starting a new venture, and is used to describe most anyone doing something where an opportunity is somehow present, we inexorably move toward a discourse in which “everyone is an entrepreneur, in the entrepreneurial society.” What is often forgotten, or ignored, is that this would also mean that there is no real need for entrepreneurship studies, as such a complete embedding of the phenomenon would mean that it would require general analysis (such as this might be conducted in, e.g., sociology, political science and history), rather than a specialized field. Similarly, in a truly “projectified” world, the difference between project studies and organization studies becomes eradicated.

We might not be at the vanishing point quite yet. Most people would scoff at the idea that we are all entrepreneurs now, and while most of us have experience with projects, we surely recognize the existence of non-projects as well. Still, fields such as entrepreneurship and project studies need to address the manner in which they consistently attempt to make an increasing number of phenomena fit under their preferred umbrella concept. Without critical attention paid to such conceptual colonization, a field may well extend to the point of becoming increasingly pointless, or abstract to the point of becoming scholasticism. The symbolic violence this does to, e.g., the fields studied – in which an increasing number of activities are declared as being “entrepreneurial” or “projects,” regardless of the wishes of those engaging in them – is one where the surrounding world is not seen as an object of interest, but a resource to be exploited. At this point, it no longer matters if something is a project, or an entrepreneurial venture, just whether a researcher can extract more value from this for his or her project. It all becomes a very cynical move, one where epistemological rigor is abandoned as it does not generate enough results, and where the emptying out of meaning is seen as an acceptable price to pay to extend and fortify the field. It matters not whether meaning vanishes, it matters not what actors think, all that matters is that the land grab can continue. And thus the vanishing point draws ever closer.

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The (enlightened) perspective of an anthropologist on entrepreneurship and the project

An interview with Jean-Pierre Boutinet

Jean-Pierre Boutinet is the author of Anthropologie du projet (2012) and Vers une société des agendas, Une mutation des temporalités (2004). The main focus of his work has been on the study of the project through the lens of his expertise as psychologist and anthropologist. This interview is quite relevant to project studies as it nurtures new thoughts on the relationship between entrepreneurship and projects. Boutinet influences in France on the understanding of the emergence and evolution of the word and the concept of project in the Western world has been tremendous. From this perspective, he offers a fresh critical look at the very central notion of time in the context of the project. He questions how the term project is used today and how we tend to dismiss the essence of its very nature for its creativity and meaning. As his work has been published only in French, it has not been discovered by the project management community at large with the exception of a few scholars (e.g. Garel, 2013; Scranton, 2015). We hence take the opportunity provided by this special section to introduce the important hidden elements of project studies to a larger audience. In short, we believe that Jean-Pierre Boutinet’s unique perspective enlightens the relationship between entrepreneurship and the project.

The format of an interview facilitates a dialogue between these two fields. It allows to critically assess the links between the project approach and that of entrepreneurship in a natural conversation. The interview also situates the notions of entrepreneurship and the project in relation to each other, in their convergence and contrast. The figures of the entrepreneurship and the project are likely to bring creativity and singularity together.

Overall, we would like to know more about how Jean-Pierre Boutinet as a psychologist and anthropologist situates and compares the two notions of entrepreneurship and the project, and about the form which a dialogue between these two notions might take, ideally. The interview is organized in seven sections: convergences between entrepreneurship and the project; convergences between temporalities of entrepreneurship and the project; entrepreneurship, bricolage, improvisation and creativity; entrepreneurship and project management; about the entrepreneurial project: project to be completed and interminable project; space and time in the entrepreneurial project; and from the author of the project to the self-employed person, through the injunction to autonomy.

1. Convergences between entrepreneurship and the project

I: What is your critical view of entrepreneurship and the project?

JPB: spontaneously, if I had to say something about the existing relationship between entrepreneurship and the project, I would say that I see a great similarity between these two figures insofar as both are creative processes that solicit the individual or collective actor’s capacity to afford themselves the means of producing some novel form or other of technico-social
or industrial entrepreneurship, or else some other original achievement. In fact, entrepreneurship constitutes a variant of the project; it is a creative process within an organization. However, entrepreneurship is at odds with two other variants of the project, with which it is not to be confused: the enterprise project (understood to include both for-profit enterprises and non-profit organizations) on the one hand, and project-(based) management on the other.

The enterprise project is characterized by its strong identity-oriented connotations. It is what we could call a benchmark or standard project, insofar as it sets out the values and goals that the stakeholders of the company or non-profit organization subscribe to and cultivate. The enterprise or non-profit organization’s charter and logo are examples of the sorts of markers through which the stakeholders identify themselves and recognize their organization. This benchmark project may be combined with an operational or strategic project, initiated by management and outlining the organization’s political orientation over one or more years; an orientation that members of the organization are then expected to adhere to.

The practice of project-(based) management, for its part, has expanded significantly over the course of the last half century in the organizational fields. It is defined in comparison to both the enterprise project, which anticipates a desired future around values shared by the enterprise collective, and the strategic project, which anticipates the development of the enterprise over the medium term. In contrast to these two figures, project-(based) management is intended as a presentist project, framed by the triple imperative imposed on every project manager or project engineer to control costs, deadlines and quality. In this type of management, the organization’s management entrusts a mission to a team that has been chosen internally, solicited externally or composed from a mix of internal and external participants. This mission is framed by the triple requirement that we have just mentioned and constrained by the short-term perspective of a few months or the slightly longer term perspectives ranging from one to two years, or even more for major infrastructure projects.

Relative to the three figures of enterprise project, strategic project and project-(based) management, we can observe that the entrepreneurial project is a more recent figure, going back only about one generation. Within the projects found in organizations, it comprises a fourth figure that is composed of a process that is more open and much less formalized than the first three figures. Entrepreneurship involving either an individual actor or a collective of actors is deliberately conceived as a long-term process preferring to the near future, the most distant days. This entrepreneurship aims to develop and/or refurbish through a continuous process of evaluating the outcomes already achieved in order to reformulate priorities for new achievements. This is done in regards to the organization’s general objectives, the results already achieved and the current state of the conjuncture. As a result, we find that the entrepreneurial project, in its exploration of a world of new possibilities, has the self-imposed mandate to provide creativity, whereas project-(based) management must remain focused on seeking the efficiencies cost, deadline and quality that are constitutive of its mandate. It should be remembered that the strategic project pursues the objective of maintaining and developing the organization, while the enterprise project is more sensitive to a search for legitimacy and consensus between the actors and project stakeholders.

2. Convergences between temporalities of entrepreneurship and the project

I: we thought it might be interesting to gather up the different notions of entrepreneurship and the project, to spur a dialogue on the question of temporality. The question we might ask is whether entrepreneurship and the project are articulated according to clearly distinct temporalities, or whether these notions are associated with two divergent temporalities.

JPB: entrepreneurship and the project both obey temporalities that tend to bracket the retrospective temporalities of memory in order to privilege the immediacy of the present moment, in particular those when the entrepreneur diagnoses the situation he is confronted
with in his desire to “undertake” (*entreprendre*) and where he anticipates the future that is still to come in the following three ways:

1. cognitive anticipations, working through foresight to inventory the world of possibilities available, here, in the field of entrepreneurship;
2. adaptive anticipations, which are concerned with identifying probable, provisional futures, all other things being equal; and
3. operational anticipations that are concretized in the elaboration of projects, relayed by the determination of categorical objectives, in order to profile an initiative to be implemented in the more or less short term.

While the temporalities of entrepreneurship tend to blend into those of the project, given that entrepreneurship is only a variant of the project, it should be noted that they are nevertheless to be distinguished from the particular temporality of project management which, given the overuse of organizational innovation practices, has evolved toward a formalism centered solely on the presentist temporalities of deadlines and short-term thinking. The temporalities of the entrepreneurial project are, on the contrary, open to still operational futures, bound by yet-to-be-determined reference points and already stated/yet-to-be articulated objectives. The temporalities of project management, for their part, are over-determined by the present time of deadlines that must be respected.

I: Indeed, in entrepreneurship and in project, do we conceive of the past, the present the future in a similar way?

JPB: in entrepreneurship, the past tends to be bracketed; only the present moment is at issue in the situational diagnostic that asks: What can I do given where I am, given this set of possibilities and constraints, and with the means at my disposal and looking toward a future that is still to be decoded and delineated by the potentialities it conceals, including those that I, the author, would like to bring about?

Although entrepreneurship has this sort of presentist connotation that is determined by the process that is to be encouraged and supported, that process nevertheless remains inseparable from the glimpse of the future toward which it is oriented. As a result, entrepreneurship does not lock itself into the present moment but opens out onto the future, given that “undertaking” (*entreprendre*) remains a complex operation that cannot be reduced to the immediacy of the moment.

I: regarding the immediacy of the moment today, in these postmodern times, one has the impression that the entrepreneurial project is trapped in a temporality of emergence, which prevents it from living up to a future that unfolds over the long term.

JPB: more than in confrontation with emergence, entrepreneurship and the project are trapped in the presentism that characterizes postmodernity and, in its two most dominant forms, urgency and immediacy. These two forms of presentism have destabilizing effects on a project that requires not a short but a longer time frame, as in an entrepreneurial project, where the central objective is creativity.

Alongside these two problematic temporalities of urgency and immediacy that have invaded postmodern spaces, another presentist temporality of emergence currently prevails and casts its ambivalent shadow, sometimes perversely, sometimes protectively, upon the entrepreneurial project: the event-based temporality. It could also be seen as a variant of emergence, since, given the importance of communication in postmodernity, the entrepreneurial project is continually confronted with the emergence of events, sometimes an event carrying a disruptive uncertainty and other times an event generating a positive surprise. This unforeseen event will therefore have continually contrasting contours and hence be better regulated in the presence of an entrepreneurial project.
such a project, entrepreneurship will be thrown back on itself, reduced to develop one or
the other form of bricolage or improvisation to both ward off the event and think about its
own future.

3. Entrepreneurship, bricolage, improvisation and creativity
I: Insofar as both entrepreneurship and the project are creative, how do they rely on
bricolage and improvisation?

JPB: bricolage and improvisation, when practiced as part of a project, are forms of creativity.
Yet they are much more fragile and vulnerable to the extent that they depend upon the situation
of a given moment, and so are unable to provide themselves the means of anticipating a more
remote future. The action-based logic that is characteristic of every involvement in a project is
concerned with achieving the goals it has set for itself in an environment perceived to be
complex. To that end, the project’s ability to anticipate plays an essential role in allowing action
to prevent and manage gaps, and therefore unforeseen events that slip between the two phases
of design and realization that structure any project of action.

Of course, bricolage and improvisation will, e a c h i n i t s o w n w a y, h e l p t o r e g u l a t e t h e s e
differences between the design and realization of a project, allowing it to remain focused on its
objectives. What characterizes improvisation is that it always presupposes a prior, already-lived
experience on the basis of which it will be able to stage its work. You cannot improvise on
something about which you are not familiar, or not without high risk: for improvisation is made
possible and beneficial by the fact that it calls on a past that it works to reconfigure. Bricolage is
another form of creation in the present moment, a kind of trial and error, aided by a modicum of
chance, in its generating of solutions to momentary difficulties. In short, improvisation and
bricolage can, temporarily, support the project and stabilize it, even make it more flexible; but
left to their own devices, they will quickly get lost in one or another form of distraction.

I: Does this mean that if we nurture creativity through improvisation, we render the
entrepreneurial project more flexible?

JPB: the longer the improvisation lasts, the more it will weaken the project, risking its
ultimate success. Moreover, the more such improvisation will be deprived of situational
opportunities, the more the improvisation itself is weakened. In any case, a too large and
prolonged place left to improvisation in the entrepreneurial project will compromise the
consistency of the latter.

I: But couldn’t improvisation also help a project temporarily adapt to a new situation?

JPB: Yes, of course! Improvisation can provide a kind of regulation, however only temporarily,
and on the basis of the kinds of past experience that makes the improvisation possible.

I: What is the form of creativity that would give longevity to entrepreneurship and where
does creation remain part of the initial project?

JPB: entrepreneurship benefits from developing creativity that is open to the situation and
its futures, and to the opportunities, constraints and resistances to which the project is subject.
This creativity must also remain attentive to the positioning and diversity of the stakeholders.

I: And what about the bricolage practice within a project?

JPB: bricolage is something else entirely. We engage in a process of trial and error, in the
present moment. We give this a try, and then that, until we find what works. So instead of
looking outside for an elaborate device to solve a problem, I do it myself. Thus, there is an
element of chance in bricolage. As with improvisation, if we prolong the bricolage process
too long, we will weaken the project, though for different reasons. In improvisation, because
I rely on the past, I am not paying enough attention to the current situation, which can
become radically out of step with my practice. In bricolage, on the other hand, I am actively
looking for the right solution, taking temporary and parcelled up initiatives, until
eventually, I am forced to take a step back and embrace the situation as a whole from a
much broader and more critical perspective.
4. Entrepreneurship and project management

I: Is the entrepreneurial pool today bound by the same kinds of constraining formats as project management currently is?

JPB: entrepreneurship, first of all, is an uncertain term, both old and new. It is old in that it is semantically derived from the enterprise and its organizational activity. It is new in the desire expressed by an actor-author to want to testify to his ability to undertake in a postmodern society marked by a persistent employment crises and endemic and structural unemployment, due partly to a shortage of jobs resulting from the increasing influence of artificial intelligence on professional activities. The concepts of enterprise, the entrepreneur and above all entrepreneurship are today enjoying a certain success, both in the economic sphere of small- and medium-sized enterprises and in the societal spheres of micro-enterprising, where self-starter sorts of entrepreneurs seem eager to “create their own job.”

Undoubtedly, what these different uses of entrepreneurship have in common is that they underscore the creative posture of the entrepreneur who intends, by his implication and motivation, to give meaning to the activity of his entrepreneurial project. However, relatively little work has been done on this motivation of the entrepreneurial pool of self-employed persons wanting to be entrepreneurial. Entrepreneurship is still a relatively new economic and societal sector. It is still a new type of project that, still largely unknown, must be distinguished, as we have seen, from both project management and the enterprise project.

I: that’s why in project management, we need to remember that the objects themselves move. We might say that the very purpose of the project lives several different lives over time. It is not a reified object.

JPB: what the project produces is not a reified object. On the contrary, it produces a prototype, that is to say, an original, singular object. The prototype it produces though does have the possibility of being reified over the course of its serialized production. This is where we depart from a project approach. Indeed, the object created by the project is always that of the prototype, and therefore never the product of repetitive work but the result of a singular approach. From this point of view, digital postmodernity, more so than industrial modernity, is led to work on prototypes rather than on serial objects. This also happens to be in line with customer demand, which seeks uniqueness and differentiation. This does not prevent prototypes from subsequently giving rise to a mass production, of which the history of industrial production can provide many examples.

To summarize, entrepreneurship certainly depends on the situation in which it takes place for the emergence of its possibilities and opportunities. However, in order for there to even be a project, it is essential that these possibilities and opportunities be seized by the intentionality of an actor-author engaged in a creative process. Entrepreneurship, absent the emergence of clearly identified opportunities and possibilities, is doomed to failure over the very short term. The same time, entrepreneurship is inseparable from its author, who inhabits and animates it. Indeed, absent that author, or in cases where the author is too bashful, entrepreneurship will soon undergo one form or another of drift or decline. For the entrepreneurial project to be successful, there must be found an intersection, or overlap, of possible emergent opportunities with actors-authors able to grasp and seize those opportunities.

5. About the entrepreneurial project: project to be completed and interminable project

I: in the entrepreneurial project, what is fascinating is this idea of an open future, implying an indefinite duration. This is difficult to reconcile with the classic notion of a business project that has a limited time frame, with both a start and end date. The entrepreneurial project, though, emerges from a whole series of generative back-and-forth. What exactly is going on here?
JPB: these back-and-forths between what the project had previously conceived and what it is now carrying out in practice are essential. They are the methodological hallmark of a project approach and also what might be called the iterativity of the work of conception and implementation. Returning to the contradiction between different kinds of business projects, what earlier I called project(-based) management and entrepreneurial project, we must now add two new ways of distinguishing these two types of project, each with their own legitimacy, namely: the project to be completed and the interminable project.

The entrepreneurial project is of the second type, the interminable project, which is characterized by an action in which the author is involved that has no other purpose than to reorganize, reshuffle or even reorient, in advance either of a predetermined deadline, such as an annual meeting, or as a result of some exceptional situation or crisis that the project is going through. In a way, the motto of the interminable project is the imperative to iterate, as a way to break the continuity that is sooner or later likely anyway to run out of steam. In other words, the question is: How might we return to, or iterate, the fundamentals of the entrepreneurship project, either at regular intervals or in an exceptional moment, in order to again take up or rethink the fundamentals of the project in order to reorient it?

Project(-based) management is part of this family of projects that can only be conceived of through the determination of relatively precise objectives to be achieved within very specific deadlines. This family also includes projects that are to be completed and that are governed by what we call the project cycle that includes a series of structuring steps ranging from an initial situational diagnostic to a concluding evaluation, via the development and actual implementation of the work.

I: the example of the video game industry is very much aligned with the kind of back and forths we are talking about, with its prototype and then alpha and beta versions, all of which allow for adjustments to be made along the way. It resembles an entrepreneurial project, an interminable project.

So maybe compared to what you said at the beginning, the project has finally moved away from a closed to a more open paradigm. It has been made entrepreneurial by its agreeing to move through different trial versions, and by integrating the consumer into the production process.

JPB: absolutely, the prototype is the product of an open project, which gives free reign to uncertainty, whereas a closed project allows itself to be instrumentalized by procedures that misguide creativity at the risk of destroying it even.

6. Space and time in the entrepreneurial project

I: you’ve often said that the project is as much a space as a temporality. And today we see that entrepreneurship is also becoming very much more spatialized in this way, with its makerspaces, fablabs, incubators and shared spaces. Here, too, is there not a way to relate project to entrepreneurship, which is something that becomes increasingly territorialized, increasingly as situated as the project is, and therefore as much a space as a temporality?

JPB: initially the project was essentially spatial, inspired by its original paradigm, the architectural project, as early as in the historical period of the Renaissance. This architectural project aimed at creating a space to inhabit. Since then, without abandoning its spatial attachments, the project has been temporalized, over the short, medium and long term, and become something of our alter-ego, the very thing we cannot live our lives without. However, its spatial attachments cannot be replaced completely, insofar as the project expresses, through the etymology of the term (pro-ject), that art of expelling from ourselves that which we are not indifferent, which is to say, one or another form of concern, throwing, projecting it out in front of ourselves, this expelled pro-ject that remains always a part of ourselves. It is indeed this art of throwing in front of oneself that we find in the two different implications of the French word for design, dessein, namely, dessein (design) and
dessin (sketch), which is to say, the mental design (the thought that we project in our mind) and the graphic design (the sketch that we throw down on paper). The Italians, from the Renaissance onward, have been using two different terms, disegno interno and disegno esterno, for what the English fused into the single formulation design. Certainly, with the advent of modernity, and especially since the enlightenment, we have temporalized the project, sometimes even to excess, having gone so far as even to erase its spatial attachments and privilege its temporal dimensions, as in the development project, event project or career project; indeed, as in any of the variety of those projects of ours that have various deadlines.

Without wishing to impose any sort of competition between time and space, we must recognize that any project is deployed through the intermediate of coordinates that are always and simultaneously spatial and temporal. Hence, the same applies, among others, to the entrepreneurial project. It is within a space still to be identified that the entrepreneurial initiative will take place in a free or determined time frame. However, if I fail to become aware of this space still to be recognized and this time to be tamed, or cognizant of the specific opportunities and constraints that each involve, I will make it difficult for my project to exist.

I: the “entre-“ of entrepreneurship, meaning “between” but rhyming in French with “antre,” a cave, is a space. And the “prendre” of entrepreneurship, which in French is the verb “to take” refers to possession. Thus, entre-preneurship is the taking possession of an intermediary space.

JPB: the “entre” is indeed an intermediate space, a space of mediation, of transition, of creation. Yet “enter” is also a time, a measure of interval duration, the guarantor of freedom and a zone of uncertainty in relation to the precision demanded by its very contemporary and tyrannical competitor: immediacy.

7. From the author of the project to the self-employed person, through the injunction to autonomy

I: Can we have an entrepreneurial project without an author?

JPB: there is no more project without author than there is smoke without fire! From this point of view, the project, embodied by an author, differs from the program with which it is, unfortunately, often confused. The program is composed of injunctions ordered by an institution. It can be likened to a public order, and is impersonal insofar as it is the institution that speaks through it. On the contrary, the project is a personalized, individual or collective initiative; it is always designated and signed. It is therefore important in a project to distinguish clearly between the author and the actor. If the actor participates in the elaboration and implementation of said project, and provided different forms of status according to his involvement, either as a cooperator or as a confrontational, distant or even critical participant, the actor does not directly assume responsibility for this project. The actor cannot, therefore, be the guarantor either of the values on which the project is based or the strategies that guide it, or of the choice of the means taken to implement it or the momentary results obtained. There is thus inevitably a gap between the author of the project and the actors associated with it, or the various stakeholders, for that matter, who contribute intermittently to its implementation, according to their own status and skills.

To sum up then, in any project, and short of any interim shifting of roles that always winds up causing problems, the author is central and the actors are peripheral.

With this distinction between author and actor clarified, it is important to question: How one becomes the author of an entrepreneurial project? In the enterprise project, the author is inevitably embodied by a collective led or regulated by upper management; yet when it comes to an entrepreneurial project, the author inserts himself into an individual or collective actor role. In the latter case, given the evolution of the entrepreneurial project over
time and the weight that a functioning collective can ultimately represent, one of the actors often tends to have a leadership role, in favor of this or that event. However, some collectives, on the other hand, when active in a project know how to persist over time. The entrepreneurial project can also inspire to engage in individual adventures and thus tend to initiate a much more individualized approach. Indeed, the enterprise project requires concerning oneself with the collective, for example, through an appropriate participation mechanism. For example, an enterprise project that becomes too hierarchical, authoritarian or dependent on the enterprise’s directors or administrators condemns itself to inefficiency. These observations could also apply to project management; it becomes inoperative if the project engineer does not take into account his project team. On the contrary, the entrepreneurial project tends to focus on the initiator-entrepreneur without excluding other stakeholders. But one could also envisage the entrepreneurial project being led by a couple of co-opted actors, or even a small group of three to five actors.

I: if we look at the work on entrepreneurship over the past 20 or 30 years, it is precisely because it challenges the heroic figure of the entrepreneur and emphasizes, in particular, that the entrepreneur is an isolated individual who manages to overcome challenges against all odds. Indeed, one of the major criticisms of the entrepreneurial field today is that it has built everything on the myth of a single, desocialized individual who is somehow “alone against the rest of the world.” As a result, current work is more interested in societal forms of entrepreneurialism, such as entrepreneurial teams.

JPB: but entrepreneurship, which can be likened to enterprise creation, aims to promote a creation that endures over time; in other words, it targets not only the launch of the creation. However, for there to be a lasting creation, authors must be put in a position to take responsibility for their shared project. Work collectives wear out over time, which will generate inertia to challenge the entrepreneurial logic if solitary entrepreneurs do not regain control on a temporary or longer term basis. That’s why entrepreneurship finds its natural habitat in more personalized groups, such as very small enterprises and even small- and medium-sized enterprises – but not large enterprises.

Moreover, entrepreneurship does not only have an economic dimension. Nowadays, it has increasingly taken on a social dimension in a chaotic labor market that is threatened by unemployment and where people connect with one another in their search for work, integration or career changes. Entrepreneurship in its social dimension also concerns these people, who are in need of recognition, who might have a taste for a particular professional adventure or hope to test their sense of responsibility, or who seek to assume the role of authors and guarantors of achievements that bear the mark of their own initiative. The development of self-employment over the last ten years is a good example of the individual and social dimension of entrepreneurship.

I: we have one last question that diverges a bit but that is nevertheless linked to the question of the author. In today’s discourses, individuals who are employed or looking for work are enjoined to undertake (entreprendre), to put themselves out there, and to become the actors and authors of what they do. This engenders a dissolution of forms of solidarity. The collective is dissolved by the injunction to shoulder the project; the individual is managed as the author of his own enterprise. In the end, the more we talk about projects, the less we create or implement them. And the more we enjoin people to undertake and put themselves out there, giving them autonomy, the more but we compel them to shoulder the burden of the entire organization.

JPB: the autonomy that goes hand in hand with the project is today being effectively abused. This autonomy has become ambiguous, and in this respect it is a hallmark of the current times that we call postmodern. In modernity, this autonomy was authentically an autonomy of “liberation”; it was a question of liberating oneself from constraining situations, from the confining traditions that imposed a certain way of thinking and acting.
This modern autonomy of liberation, resulting from the Enlightenment, was hailed by the philosophers of the time in response to the existential question of one’s capability to feel free. Emmanuel Kant, for example, questioned himself, by questioning his environment in the 1780s to 90s, with his essay “Answering the Question: What is Enlightenment?” In his response, he placed great emphasis on the Latin adage Sapere aude!, in other words, “Dare to know!” or “Dare to be autonomous and think for yourself, liberate yourself.” His famous response that encouraged autonomy and called on one to “liberate yourself, yourself” has lived on until today. Across all industrialized nations, a desire to liberate oneself of a past that imposed its rules and proscriptions was quite pronounced in the 1960s and 1970s, for example, reaching a peak in 1968. This desire for liberation also led many to resurrect thoughts and actions inherited from ancestral traditions that appeared to have become obsolete.

This desire for autonomy persists, yet has been undermined by the rapid advent of postmodernity in the years 1975–1980. It was also accompanied by the employment and labor crisis, the rise of structural unemployment, a certain impoverishment of workers and their families, as well as the increasing instability of couples and the growing trend of single parenthood, together bringing about many situations of existential and social dependence likely to generate forms of vulnerability. Then, in the face of these different variants of precariousness, the institutions tried to promote another form of autonomy, namely, imposed autonomy, a remedy intended to remove many citizens who had been (or felt to have been) downgraded from the state of dependence in which they found themselves, a dependence which, in passing, was considered too costly for society because it engendered inertia and passivity. This imposed autonomy seeks to oblige the individual to free himself, by himself, from the state of subjugation and without necessarily having the desire to do so. Citizens are summoned through the granting of compensatory assistance to become free, to master their autonomy, be it a young person deprived of social and professional integration or an elderly person seeking care from the community. The “be autonomous!” then becomes synonymous with “take charge of yourself and we will help you.”

We are therefore faced today with two contrasting, even conflicting, forms of autonomy that seek to coexist socially and tolerate each other or, as is more often the case, ignore one another:

- The autonomy through the liberation of the person who takes the initiative to acquire the means to free himself from constraints that seem unbearable to him. For example, the intentional termination of a work contract by the employee who feels too determined by his work and his enterprise. This employee takes the risk of facing a professional mobility that seems emancipatory in view of an eroded situation.

- “Autonomy by injunction” compels a person to leave his situation of social and/or economic dependence. For example, the situation of the unemployed person who has reached the limits of his unemployment benefits, and to whom the French unemployment bureau, Pôle Emploi, offers an extension of the assistance he had been granted, in order to finance further training, on the condition that he empower himself to find a job on his own.

Finally, entrepreneurship today is fueled by these two paradoxical, even contradictory autonomies, each of which is as topical as the other. The entrepreneurial project seeks to achieve a liberating autonomy on the part of an actor who aspires to become the author of what he undertakes. At the same time, counsellors engaged in the integration or reintegration of disadvantaged groups impose entrepreneurial autonomy on them in the form of injunctions that they create their own jobs.

Thus, it is in the face of these two contrasting facets of autonomy that we measure the ambiguity of any recourse to “the project.” The latter can constitute, depending on the
situation, an opportunity for emancipation and self-realization as much as an inappropriate and poorly experienced response to a subjugating societal injunction.

It may be interesting to situate each of these two facets in relation to a logic of responsibility, because each mobilizes a specific form of responsibility, although of a very different nature. In the first case, that of the autonomy claimed, we are dealing with a responsibility conjugated to the first person singular, by which the authentic author claims to assume his responsibility to behave as an autonomous actor-author: I am responsible for my professional autonomy. In the second case, that of an imposed responsibility, we are faced with a responsibility articulate in the second person singular, by which the putative author sees himself made, by another or by society at large, responsible for finding himself in a given state of dependence and for achieving on his own a state of greater independence and well-being: You are responsible for your current state of need and therefore for the possibility of you becoming autonomous.

Thus today, in post-industrial societies dominated by a digital culture that emphasizes the principle of servitude by which the service, we purchase is provided by ourselves, autonomy in its ambivalence confronts these two great figures of responsibility. One figure is that of assuming responsibility, which values liberation; and the other, the imposition of autonomy, by which others force us to account for ourselves. Through servitude, I am more autonomous when providing myself with the services I need; however, at the same time, the digital systems that allow me to be autonomous in this way provide me only a very circumscribed form of autonomy.

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References


A good man is hard to find: project management, entrepreneurship and serendipity

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Abstract
Purpose – The purpose of this paper commentary is to explore the intersection of project management and entrepreneurship through a poetic exploration of Flannery O’Connor’s short story: “A Good Man is Hard to Find.” Through the use of the Japanese Haiku format, this commentary probes the nature and meaning of “projects,” the importance of goals and their limitations, the influence of context across time, and the role of agency and circumstance in entrepreneurship as denoted by the idea of serendipity.
Design/methodology/approach – Poesis.
Findings – Imagination steers the course. Vision sees the possibility; But the mind’s eye sees through a distorted lens that is always misfit. So the unplanned path becomes the project. Always; Accidents happen.
Originality/value – Project Management: Goals with temporary; Collective action; Entrepreneurship: “Organizing collective Action.” Compromise?
Keywords Entrepreneurship, Project management, Agency theory
Paper type Viewpoint

Introduction
This commentary explores the intersection of project management and entrepreneurship through a poetic exploration of Flannery O’Connor’s short story: “A Good Man is Hard to Find.” Through the use of the Japanese Haiku format, this commentary probes the nature and meaning of “projects,” the importance of goals and their limitations, the influence of context across time, and the role of agency and circumstance in entrepreneurship as denoted by the idea of serendipity.

The story[1]

Florida was the Goal. Everyone was not on board.
Grandma demurred.
East Tennessee had Relatives and the Misfit
Was in Florida.
Nobody cared what She said. So they all left next Morning. The cat too!
Grandma was first in. Backseat. Kids on each side. Stone Mountain scenery.
Miles whisk by and Packed lunch eaten as kids
Are out of comics.
Further down the road.
Barbequed Sandwiches at

Red Sammy Butts runs
It. “Tennessee Waltz” From the
Nickelodeon.

A story told. Good boys
In Chrysler need gas. Look right
But do not pay. Darn.

“A good man is hard
To find.” “Everything Terrible.”
“Caused by Europe.”

Past Toomsboro a
Memory: Plantation Nearby
With Secret Panel

Hidden silver worth
The detour Grandma says. Take
Dirt road a mile back.

A road not taken[2].
Sudden washes. Sharp Curves and
Maybe not the place.

Realization
Plantation in Tennessee!
Grandma jolts. Kicks cat.

Cat jumps. Car swerves. Tumbles.
Rolls over right side up. Down
In a ditch. None hurt.

Scrapes. Shock. “Accident!”
A car appears: Hearse-like black.
Three men are in it.

Driver familiar?
“You are the Misfit” Shrieked
Grandmother. “Yes’m.”

“Would have been better
For all of you, lady, if …”
What will happen next?

The boy and father
Taken to the woods. Pistol
Shots. What is there to say?

“Somewheres along the
Line I done something wrong and …
… forget what I done”

“Maybe they put you
In by mistake?” “Nome … It
Was not no mistake.
I found out that crime
Don’t matter. You can do
One thing or another

Because sooner or
Later you are going to
Forget what it was

And just be punished
For it.” Mother, baby, girl
Are led to the woods.

“I call myself the
Misfit because I cannot
Make all I done wrong

Fit what all I gone
Through in punishment.” A shot
Rings out. “Is it right

One is punished a
Heap and another not at
All?” More shots follow.

“Jesus” Grandma cries.
“You ought not shoot a lady.
Take all my money.”

“Lady. There never
Was a body that gives the
Undertaker tips.

Jesus was the one
That raised the dead … He thrown
Everything off balance.

If he did what he
Said, there is nothing to do
But go follow him.

If not, then you should
Enjoy the minutes you have
By killing somebody

Or burn down a house
Or some other meanness. No
Pleasure but meanness.”

“Maybe he did not
Raise the dead” the old lady
Mumbled. Misfit mused.

“I was not there. If
I had, then I would not be
Like I am today.”

Grandmother cries out
“You are one of my babies.”
Touches his shoulder.
The Misfit springs back
Shoots her three times. Other two
Come back from the woods.

“Take her off and throw
Her with the others.” Misfit
Orders. “She would of

Been a good woman
If it had been somebody there
To shoot her every

Minute of her life.”
“Some fun!” one of the boys says.
“Shut up. Bobby Lee”

Misfit says: “It’s no real
Pleasure in life.” Five die here.
Opportunity

Commentary

Project Management:
Goals with temporary
Collective action[3]

So Florida Counts.
Conflicting desires begin
Journey. Is Grandma

The problem? Was not
Attention paid to
Her at the wrong times?

Or not at right times?
Who is the entrepreneur
Here?[4] Grandma steering

From the back? Or the
Ambivalent driver in
The front seat? Where is

Leadership of this
Project? Why did silver
Become the detour?

Imagination
Steers the course. Vision sees the
Possibility

But the mind’s eye sees
Through a distorted lens that
Is always misfit.

So the unplanned path
Becomes the project. Always
Accidents happen.

A good man is hard to find
Who takes advantage
Of chance on road not taken?
Pasteur’s prepared mind.

Is this not what is
Favored? So, do we reach for
Transmundane answers

When expectation
Does not fit the outcome desired?
Misfit is prepared!

Entrepreneurship
Takes advantage of what is.
Not one’s hopes to be[5].

Is an accident
Another’s project?[6] Who is
The story’s focus?

Dialogue requires
Two. Maybe conversation[7]. Or
Colonization[8].

Entrepreneurship:
“Organizing collective
Action.” Compromise?

Or redundant? It
Seems that once a project has
Ambiguity

Which would occur when
Moving into the future,
Then projects become

Entrepreneurship.
Whose goal and what goal is a
Critical factor.

Florida failure
But fun for others. Is there
Pleasure in random
Opportunities?
No. Purpose is required. So
The Misfit posits.

Notes


Further reading


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Abstract

Purpose – A project contractor can promote the success of a delivery project by planning the project well and following a project management methodology (PMM). However, various changes typically take place, requiring changes to the project plan and actions that deviate from the firm’s established PMM. The purpose of this paper is to explore different types of changes and change management activities over the lifecycle of delivery projects.

Design/methodology/approach – A qualitative single case study design was used. In total, 17 semi-structured interviews were carried out during a delivery project in a medium-sized engineering company that delivers complex systems to industrial customers.

Findings – Both plan-related changes and deviations from the PMM were mapped throughout the project lifecycle. Various internal and external sources of change were identified. An illustrative example of the interconnectedness of the changes reveals the potential escalation of changes over the project lifecycle. Managers and project personnel engage in different change management activities and improvisation to create alternative paths, re-plan, catch up, and optimize project performance after changes.

Research limitations/implications – The empirical study is limited to a single case study setting and a single industry. The findings draw attention to the interconnectedness and potential escalation effect of changes over the lifecycle of the project, and the need for integrated change management and improvisation actions.

Practical implications – Efficient change management and improvisation at the early phase of a delivery project can potentially mitigate negative change incidents in later project phases. Changes are not only the project manager’s concern; project personnel’s skilled change responses are also helpful. The findings emphasize the importance of the project customer as a source of changes in delivery projects, meaning that customer relationship management throughout the project lifecycle is needed for successful change management.

Originality/value – The study offers increased understanding of changes and change management throughout the project lifecycle. The results show evidence of plan-related and methodology-related changes and their interconnections, thereby proposing a lifecycle view of integrated change management and improvisation in projects.

Keywords Change management, Improvisation

Paper type Research paper

Introduction

With delivery projects, a project contractor fulfills a customer’s need by delivering a customer-specific solution in the form of goods (tangible), services (intangible), or a combination of the two (i.e. integrated solutions; Brady et al., 2005). For both the contractor and the customer, it is essential that the delivery of these solutions is managed successfully. To promote the success of delivery projects, the supplier company can plan the project well and follow a project management methodology (PMM), both of which have been argued to promote project performance (Lehtonen and Martinsuo, 2006). However, projects rarely proceed exactly to plan or adhere precisely to set methodologies; instead, various changes take place throughout the project lifecycle to adjust the progress of the project in light of new knowledge (Klein et al., 2015). There can be both changes to the original project plans and deviations from the PMM. These changes have to be managed in order for the delivery project to succeed. This paper focuses on different types of changes and change management that occur throughout the lifecycle of delivery projects.
Previous research on changes and change management in delivery projects has particularly focused on the different reasons for changes to occur (Butt et al., 2016; Dvir and Lechler, 2004; Zhang, 2013) and the different tactics used to manage them (Steffens et al., 2007; Whyte et al., 2016; Zhang, 2013). The research on changes and change management typically covers the changes that are needed and made as compared to the original project plan. Literature on improvisation in projects, in turn, deals with the adjustments made in comparison to the PMM. The idea behind improvisation is that, despite the PMMs or formal tools available in the focal firm, project managers often act intuitively, based on their experience and the problem at hand (Klein et al., 2015).

The literature on improvisation in projects is interested in the sources, nature, and effects of these intuitive actions in projects.

Despite the relatively active research on change management in projects and improvisation in general, there are several research gaps that this study has been designed to fill. First, there is a need to better understand the nature of the different changes that occur in different phases of the project lifecycle (e.g. Dvir and Lechler, 2004; Zhang, 2013). In particular, there is a need to account for the whole project lifecycle and for both plan-related changes and deviations from the PMM. Second, there is a need for further empirical research covering improvisation in projects, particularly in complex delivery projects (Leybourne and Kennedy, 2015). Third, there is a need to better understand the roles of different stakeholders, both in change management and in improvisation (Aaltonen et al., 2010; Butt et al., 2016; Tukiainen et al., 2010; Zhang, 2013); for instance, what are the internal and external sources of change and what are the roles of different project actors in interpreting and responding to the changes.

The purpose of this study is to explore the different types of changes that occur during a complex delivery project, the sources of such changes, and project personnel’s experiences with managing them. The focus is on engineering solution delivery projects that solve the same business problem (and can, therefore, be repeated for different customers), but need to be carefully tailored to the customer’s processes during the design and implementation phases. The goal is to map the emergence of different types of changes over the lifecycle of a delivery project, and thereby identify the means to promote effective change management. This paper focuses on two main research questions:

**RQ1.** What kinds of changes do project personnel experience during the project lifecycle, including: (a) changes to the project plan; and (b) deviations from the PMM, and what are the origins of the changes?

**RQ2.** How do project personnel and managers implement change management and improvisation actions in the different phases of the project lifecycle?

The empirical study is delimited to engineering solution delivery projects that were designed by the focal firm and tailored and delivered to different customers globally. Therefore, organization development, product development, and information system delivery projects are not covered. However, as the existing literature on change management and improvisation is somewhat limited, literature examining topics beyond delivery projects is included.

Next, we analyze the previous literature on change management and improvisation, and how empirical studies have covered the issues recently. Then, the qualitative single case methodology is introduced by explaining the research context, data collection, and analysis procedures. Results are introduced on the types of changes faced by the case company, as well as its experiences with managing them. We discuss the results in terms of the different changes and different reasons behind the changes throughout a project’s lifecycle, and the different change management and improvisational actions related to those changes.
Literature review

Delivery projects as the implementation of a planned process

Delivery projects are a way for a project contractor to solve a customer’s problem by delivering a customer-specific solution. Project management (PM) research with a focus on (industrial) delivery projects has traditionally taken planning-centric, normative, and deterministic perspectives (Leybourne, 2017). The idea has been to identify the needs of the customer, plan a project to meet these needs, and control the implementation of the project by following the project plan. A similar planning-centric approach is emphasized by the influential standards and books of knowledge produced by various PM associations (such as APM, 2012; PMI, 2013).

More recently, the adequacy of the planning-centric and deterministic approach to PM has been questioned. Specifically, the uncertainty of projects limits the possibilities of relying heavily on project planning alone (Perminova et al., 2008). Because of uncertainty, it can be difficult to perfectly identify the customer’s needs from the front end of the delivery project, for example, and to include them in the project plan. Similarly, unexpected positive or negative events can occur during the planning and design work phases, thus requiring a change to be made to the project plan. Osipova and Eriksson (2013) argue that uncertainty calls for a flexible (organic) approach rather than a control-centric (mechanistic) approach to PM.

Few projects proceed fully in line with their specific plans, and changes need to be made and managed during their lifecycle (Dvir and Lechler, 2004; Steffens et al., 2007). Similarly, it has been noticed that project managers do not necessarily follow the organization’s PMM, but instead improvise or adjust their practices and thereby deviate from the PMM in order to match the practice to the specific situation (Leybourne and Sadler-Smith, 2006). Both types of changes can take place within projects, and these form the focus of the study.

Changes and change management in delivery projects

In this paper, we acknowledge that various types of changes may take place during a project. Previous research has predominantly focused on reactive changes to the goals or the plan of the project, and their management (e.g. Dvir and Lechler, 2004; Steffens et al., 2007). Some studies adopt a broader perspective on deviations – not only those that deal with the official goals and plans, but also planned actions. Deviations concern “situations, regardless of consequence – positive or negative, large or small – that deviate from any plan in the project” (Hallgren and Maaninen-Olsson, 2005); however, not all deviations require change management.

Changes in delivery projects may take place for various reasons (Butt et al., 2016). For example, customers may request changes, the project team may come up with new or better ideas, or managers may require novel solutions later on in the project (Dvir and Lechler, 2004). Some of the problems and consequent changes in projects take place because of faulty or biased assessments and decisions made during project planning (Pinto, 2013). Furthermore, the project owners’ assumptions about the future may be wrong (Zhang, 2013), or events that take place in the environment may alter stakeholders’ expectations or affect the ways in which certain decisions manifest in practice (Aaltonen et al., 2010; Zhang, 2013). All of the previous examples demonstrate how changes occur for various reasons and why change management is required throughout the lifecycle of delivery projects; however, more research on this topic is needed (e.g. Dvir and Lechler, 2004; Zhang, 2013).

Successfully leading a project requires change control and risk management during its execution (Pinto, 2013). Various aspects of change management and control have been covered in earlier research. For example, configuration management is a relevant change management tactic when the changes deal with the project’s deliverable (Whyte et al., 2016). The lifecycle of the project has been pointed out to require coordination across functions and iteration over the project phases (Zhang, 2013). Some studies concern the ways in which
Project managers and personnel cope with unexpected events that occur as a result of stakeholder involvement in the projects (Aaltonen et al., 2010; Tukiainen et al., 2010). Using data and information on the asset (i.e., the project deliverable) is also needed (Whyte et al., 2016). Communicating changes to stakeholders is the key to keeping them engaged and promoting a positive project culture (Butt et al., 2016). Many such studies indicate that there is a need for managing and coordinating the changes and that project personnel need to consider the broader implications for the stakeholder network. Previous empirical studies have covered relevant aspects of changes and change management in the context of various types of projects—specifically delivery projects. Table I summarizes an analysis of the key contributions from empirical studies closely linked with this research and points out the research opportunities and gaps justifying further research.

The existing research summarized in Table I raises three main issues that drive this research effort. First, flexibility is needed in all the project phases (front end, planning, execution, and delivery/commissioning) (e.g., Olsson, 2006). As the benefits of front-end planning may be lost through changes made during project execution, there is a need to study the changes and change management over the lifecycles of projects further (e.g., Dvir and Lechler, 2004; Zhang, 2013) in order to understand the emergence and consequences of changes, and also to learn from them for the sake of forthcoming projects (Wu et al., 2005). Second, previous research has pointed out the centrality of external stakeholders, particularly in the context of delivery projects (Aaltonen et al., 2010; Butt et al., 2016; Tukiainen et al., 2010; Zhang, 2013). As stakeholder relations are characterized by unexpected events causing changes, there is a need to be clearer on the sources of changes, whether they are internal or external, and how these are experienced and managed in delivery projects. Third, there are indications that different types of changes need to be managed differently (Steffens et al., 2007), and that the measures concerning change need further development (Dvir and Lechler, 2004). These previous suggestions indicate that there is space for further in-depth studies about different types of changes, and their identification and description in different contexts.

**Improvisation and adjustment in PMMs**

Organizations often follow PMMs to their project-based operations. These methodologies can be based on the standard project models and methodologies of the professional associations (APM, 2012; Garel, 2013; PMI, 2013), or be more or less tailored to or created for an organization’s specific needs (Jerbrant and Karrbom Gustavsson, 2013; White and Fortune, 2002). Even if the organization lacks a formal, written PMM, it may still follow typical, fairly established, and commonly agreed-upon ways of managing projects. In this paper, we take a broad perspective of PMMs and acknowledge that they can be either formal or informal approaches to an organization’s management of projects, and they can be built upon the organization’s or individuals’ established routines.

Sometimes, the suitability of PMMs to environments with dynamics and variety between the projects has been questioned (Morris et al., 2006). Besides changes made to project plans and goals, project personnel can deviate from the behavior instructed by the PMM. Even with agreed-upon PMMs or formal tools, project managers often act intuitively based on their experience and the problem at hand (Klein et al., 2015). Consequently, they sometimes choose to observe the current situation and act based on its requirements, instead of strictly following the guidelines of a PMM (Jerbrant and Karrbom Gustavsson, 2013). This type of intuitive, spontaneous, and context-dependent practice is called improvisation (Klein et al., 2015).

Project managers and project personnel can have personal reasons for improvising, but generally, they are inspired by the perceived inadequacy of existing PMMs or tools to address different situations, or by uncertainty preventing the implementation of a project
<table>
<thead>
<tr>
<th>Research design, data, and context</th>
<th>Key findings for this study</th>
<th>Gaps/opportunities for this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butt et al. (2016) Two case study, action research; qualitative data from meetings, documents, etc.; infrastructure and renovation project</td>
<td>Relevance of communication routines for stakeholder engagement and evolution of project culture</td>
<td>Focus on communication and stakeholder relations – not other aspects of change control</td>
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<td></td>
<td>Customization of routines for the needs of the project</td>
<td>Construction-centric data need for studies on other project types</td>
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<td>Different kinds of changes and change management; relevance of change management throughout the lifecycle of the projects</td>
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<tr>
<td>Dvir and Lechler (2004) Questionnaire study; data from 448 projects: different project contexts and types</td>
<td>Positive effects of good project planning are almost completely overridden by the negative effects of goal changes. Combined effects also significant</td>
<td>Need to study causes of goal changes and develop the change variables further</td>
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<td>Contextual issues relevant in the planning process</td>
<td>Need to study the lifecycle of projects to understand the interactions of planning and changes</td>
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<tr>
<td>Steffens et al. (2007) Exploratory research, embedded case study with seven projects; interviews, project documentation and change database; telecommunications product development</td>
<td>Decision criteria for different changes</td>
<td>Need to study the link between types of changes and their control (decision criteria), i.e., contingency view to change management</td>
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<td>Different decision-making approaches for different changes and projects, even within the same company</td>
<td>Need to understand also other project personnel and not just the managers’ views</td>
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<td>The dangers of too formal change management</td>
<td>Explore the issue in other industries and economies</td>
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<td>“Stage iteration” over the lifecycle of the project because everything cannot be planned in the beginning</td>
<td>Need for in-depth studies on decision-making patterns regarding changes and stakeholders’ conflicting interests and objectives concerning them</td>
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<td>Different levels of planning and iterations</td>
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<td>When project size/complexity increases, issue management becomes more relevant</td>
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<td>Optimization in change decisions due to tensions between stakeholders’ expectations</td>
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<tr>
<td>Whyte et al. (2016) Qualitative multiple case study: interviews, documentation, workshop; three organizations delivering complex product systems using digital technologies</td>
<td>Different approaches to configuration management in different organizations</td>
<td>The idea of “baseline” must be clearly understood and agreed upon</td>
</tr>
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<td></td>
<td>Lifecycle aspect of configuration management is relevant, particularly if the organization is involved in post-project services or operations</td>
<td>Itemization of the subsystem of the complex product and related information requires mapping and frameworks</td>
</tr>
<tr>
<td></td>
<td>Information of the asset (and related big data) is important for managing changes</td>
<td>Models for developing the validity of asset information in digital systems are needed</td>
</tr>
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<td></td>
<td>Mapping of change orders, their internal and external causes, and cost effects</td>
<td>Need to learn from past projects to anticipate changes in the front end and planning of new projects</td>
</tr>
<tr>
<td>Wu et al. (2005) Embedded case study (three subprojects): qualitative analysis of 1,038 change orders and statistical analysis of their cost effects; a highway project in Taiwan</td>
<td>Different engineering properties – different change concerns</td>
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</tr>
</tbody>
</table>

Table I. Examples of empirical studies on changes and change management in projects and their contribution to this research
plan (Klein et al., 2015). It can be argued that improvisation, to some extent, takes place in every project (Baker et al., 2003), and that improvisation in project work is inevitable (Luhmann, 1995).

Improvisation should not be considered a binary action; rather, there are different degrees of improvisation in different projects. Building on the work of Weick (1998), Klein et al. (2015) categorize improvisation into four groups: linear PM, bricolage, pluralist PM, and pure improvisation. At one end of the continuum, linear PM refers to situations in which the degree of improvisation is low, and improvisation refers mainly to minor adjustments made to the existing structures. At the other end of the continuum, pure improvisation refers to situations in which the degree of improvisation is high, and organizational tools and structures play a secondary role. In pure improvisation, there is a potentially radical departure from existing plans and the desired outcome is the main concern of the improviser.

Although the body of literature covering improvisation in general is extensive, there are relatively few previous empirical studies focusing on improvisation in project-based organizations, as noted by Leybourne (2006) and Leybourne and Sadler-Smith (2006), for example. Table II presents a summary of the existing empirical research on improvisation in PM closely linked with the scope of this study, thereby demonstrating the need for additional empirical research on improvisation in different contexts and different project types.

The previous research raises three main issues that drive this research effort. First, there is a general lack of empirical research focusing on improvisation in project-based organizations (Leybourne, 2006; Leybourne and Sadler-Smith, 2006). Second, there is a need to study improvisation in different projects and contexts. In particular, there is currently a heavy emphasis on the financial services sector in the existing empirical research, which demonstrates the need to study improvisation in other contexts as well—complex delivery projects, for example (Leybourne and Kennedy, 2015). Third, the research focus of the previous empirical literature is mostly limited to the viewpoint of the project manager (or similar, such as the project portfolio manager). Consequently, the roles of other actors in improvisation, such as the project team members, remain unclear.

**Research method**

*Research design and case organization context*

We employ a qualitative research approach and follow a case study strategy. Case study designs are suited to answer “how” questions and to explore the key phenomena in real-life settings (Yin, 2009). The research is designed as a holistic single case study (Yin, 2009, p. 46) and the unit of analysis is a complex delivery project of an engineering company. The rationale behind employing a single case design is to study a representative case (Yin, 2009, p. 48); in this study, we focused on a typical project carried out by an ordinary company that designs, sells, and delivers systems for industrial customers in the engineering industry.

We used purposeful sampling to choose the case organization (Silverman, 2010, p. 141). We sought out an organization with an established history in project-based deliveries. The chosen case organization (referred to hereafter as EngineeringCo) is a medium-sized engineering company. EngineeringCo delivers tailored engineering solutions as customer-specific projects, both as individual devices and as factory-level systems. It is a typical example of a manufacturing company that offers its customers both tangible products and intangible services with different levels of tailoring and technological complexity.

Purposeful sampling (Silverman, 2010, p. 141) was also used when choosing the case project. Together with a representative from the case organization, we sought out a typical, but complex (as perceived by EngineeringCo, in comparison to the different projects carried out in the past) delivery project that had been recently completed or was almost complete.
At the time of the study, the chosen case project was near completion. According to the interviewees, the complexity of the case project arose from:

- the size of the project (both in financial terms and its number of subsystems);
- a project schedule that was considered as demanding by the project personnel;
- the customer’s requirements considered as demanding and atypical and the customer’s actions considered as uncertain by the project personnel;
- the tailoring and engineering requirements (a complex solution to be delivered; technical complexity); and
- the challenges linked to the requirements of the installation site, i.e., the old factory building where the project was to be delivered.
Overview of the case project

The case project was a factory-level solution delivery consisting of multiple systems and subsystems. Its lifecycle was typical of that of EngineeringCo’s delivery projects (and of similar delivery projects in general). First, there was a sales negotiation phase and a project planning phase, which took place partly simultaneously. These two phases together are called “pre-project phases” in the following subsections. After the project planning phase, the engineering phase began. Partly simultaneously with the engineering phase, the procurement phase began with the components and subsystems to be procured. The manufacturing phase began with the most urgent components and subsystems as soon as the necessary engineering specifications and designs were ready. After the procurement and manufacturing phases, some of the subsystems were tested and then transported to the customer’s factory, while some other subsystems were directly transported to the factory. Finally, when the first shipments arrived at the factory site, the installation and implementation phase began. Here, “installation” mainly refers to the physical installation of the components, subsystems, and systems. “Implementation,” in turn, refers to the efforts to make the different subsystems and systems work together optimally as a factory-level solution. After the installation and implementation phases, commissioning will take place.

In the case project (and in the context of EngineeringCo generally), PMM refers more to accepted norms and typical behavior than to a formal PMM. Although all of EngineeringCo’s project deliveries are tailored solutions, they follow similar lifecycles and project managers tend to manage their projects in much the same way, leading to an accepted norm-based approach to PMM.

This study took place during the later stages of the installation and implementation phase, when the project was relatively close to commissioning. When discussing the success of the project with the interviewees, most of them were quite satisfied and considered the project to have been relatively successful. There had been difficulties throughout the project’s lifecycle, particularly in the installation and implementation phase, but interviewees emphasized how, despite the challenges, a solution meeting the customer’s scope requirements had been delivered to the customer’s site on time.

Data collection

The primary data consist of 17 semi-structured interviews with the case project’s core project personnel. The interviewees included the responsible project managers (three people), the main people responsible for the project’s different business functions, and several operative employees implementing the project. Interviewees from different organizational levels were included to avoid managerial bias. Data collection is summarized in Table III.

A semi-structured interview protocol was followed. The interview protocol focused on the whole lifecycle of the delivery project. The interviewees were asked to describe the different changes and deviations throughout the project lifecycle, the perceived reasons for

| Project supplier | EngineeringCo: a medium-sized engineering company delivering tailored engineering solutions as customer-specific projects |
| Case project | A demanding factory-level solution consisting of multiple systems and subsystems |
| Interviews | 17 individual interviews, average duration: 75 mins (42–93 mins) |
| Interviewees | Job profiles of the interviewees: project managers, managers, planners, supervisors, sales people, operational and assembly workers |
| Areas of responsibilities covered | project management, sales, planning and design, procurement, manufacturing and assembly, safety, installation and implementation |

Table III. Summary of data collection

Lifecycle view
those changes and deviations, the response actions taken by project personnel, and the relationships between the project personnel. The interview protocol included the thematic areas to be covered, but the exact wording and the order of the questions varied between the interviews, depending on the flow of the discussion.

The interviews were recorded and transcribed by an external service provider. The interview data were supplemented with project documentation, particularly project plans. After the interview data collection, a workshop was organized to summarize the key results of the interviews and enable an open-ended discussion on the project and its changes. Besides serving as an additional data source, this workshop was designed to validate the research findings and the authors’ interpretations.

Data analysis

The analysis of the data followed a three-step process. In the first coding round, an inductive approach was taken, and all the sections related to changes to project plans and deviations from PMM (and the project phase in which the change occurred) were coded using open coding. In the second coding round, the open codes were re-coded according to the types of changes, the reasons for the changes, and the different types of response actions taken by the project personnel. The coding framework after the second coding round is summarized in Table IV.

In the third phase, four main change management patterns were identified inductively from the data for the different response actions concerning the two types of changes (plan-related and PMM-related): creating alternative paths, re-planning, catching up, and

<table>
<thead>
<tr>
<th>Coding category</th>
<th>Description</th>
<th>Details and examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>The relevant project lifecycle phase</td>
<td>When (in which project lifecycle phase) did the change or deviation take place?</td>
<td>Sales negotiation, Project planning, Engineering, Procurement, Manufacturing, Testing, Logistics, Installation and implementation</td>
</tr>
<tr>
<td>The type of the change: a plan-related change</td>
<td>Was it a change to the original project plans, or a deviation from the PMM?</td>
<td>Plan-related changes, for example: A new project schedule, Work design tactics (job order, overtime work, etc.), Deviations from the PMM, for example</td>
</tr>
<tr>
<td>The reason(s) behind the change: External</td>
<td>What were the reasons for the change or the deviation, as perceived by the interviewee?</td>
<td>External, i.e., the reason(s) for the change originated outside of EngineeringCo, for example: Customer’s actions or requirements, Supplier’s actions or requirements</td>
</tr>
<tr>
<td>Internal</td>
<td></td>
<td>Internal, i.e., the reason(s) for the change originated within EngineeringCo, for example: Simultaneous projects, Problems in internal communication</td>
</tr>
<tr>
<td>The response action taken by the project personnel: Change management action</td>
<td>How did the project personnel response to the change or the deviation?</td>
<td>Change management action – response action to a plan-related change, for example: new/modified project plans (e.g., a modified schedule)</td>
</tr>
<tr>
<td>Improvisational action</td>
<td>Who were the people active in responding?</td>
<td>Improvisational action – response action to a deviation from PMM, for example: Alternative work design tactics</td>
</tr>
</tbody>
</table>

Table IV. The main coding categories used in data analysis
optimizing project performance. The four change management patterns emphasize how the different reasons behind the changes led to the different types of response actions taken by the project personnel.

During the coding process, the interviewees' discussions revealed the possibility of the changes and the change management actions being interconnected. A representative example of the interconnected changes was identified among a few potential alternatives based on its repeated emergence in most of the interviews. To illustrate the interconnections of this example, we mapped the changes, their underlying reasons, and the change management actions onto a flow chart.

For the purposes of this paper, selected interview quotations were translated from the original language to English. The original quotations were mostly used verbatim, but the quotations were modified so that the anonymity of the case company and the case project were retained. We additionally used cross-tabulation of the key results to highlight key findings in the data.

Results
Plan-related changes and deviations from the PMM throughout the lifecycle of the case project

An overview of the different changes identified throughout the lifecycle of the case project is presented in Table V, and an analysis of the changes in each of the project phases is presented in the following subsections. Further analysis of the interconnectedness of the changes is then introduced, and the management actions (change management and improvisation) are analyzed throughout the project lifecycle.

As Table V demonstrates, both changes to the project plans and deviations from the PMM took place throughout the lifecycle of the case project. In addition, there were different internal and external reasons behind those changes. The different changes and reasons for the changes are discussed further next.

The pre-project phases. Three important changes took place in the early phases of the project: a major change in the project schedule, a deviation from the desired (typical) resourcing of the project, and deviations from the desired (typical) ways of working by EngineeringCo, forced by the challenging customer requirements.

Regarding the schedule change, in the sales negotiations phase discussions were ongoing between EngineeringCo and the customer about a demanding, but relatively typical (from the perspective of EngineeringCo), project schedule. In the earlier bidding phase, EngineeringCo's personnel had calculated a rough estimated schedule. Then, because of the demanding schedule, project personnel had already begun planning the project in greater detail, based on this schedule. In the very last phases of the sales negotiations; however, it turned out that a representative of EngineeringCo's top management had agreed on a new schedule that was several weeks shorter than the already tight original schedule. This was considered a difficulty by the project team – not only because of the shorter schedule, but also because the project team had already planned the project activities based on the original schedule. As one of the project managers explained:

Well, what could we do? We had to accept the new schedule and start to look for ways to speed up the schedule. We started from the new deadline and worked backwards. When do we have to start shipping material to the site? When do we have to start procurement? Which activities could be started a bit earlier or finished a bit faster?

The resourcing of the project deviated from the EngineeringCo's typical ways of working as well. Due to the turbulent nature of project-based business, EngineeringCo subcontracts out a majority of its engineering and a large part of its manufacturing work. To manage the
Lifecycle phase and change (including the type of change)

**Pre-project phases**
Plan-related change:
A demanding schedule change negotiated by top management without the project team knowing

Deviations from the PMM:
Several requirements set by the customer. For instance, requirements for documentation, reporting, and prohibited materials

Deviations from the PMM:
Changes to EngineeringCo’s desired/customary project resourcing.

**Engineering, manufacturing, and procurement phases**
Plan-related change:
Delays and quality issues in the schedule of the engineering work

Deviations from the PMM:
Work methods prohibited by the customer create difficulties and require innovative actions in the manufacturing phase

**Installation and implementation phase**
Deviations from the PMM:
Changes and modifications in system installation and implementation

Perceived reason for the change
Internal = the reason(s) for the change originated within EngineeringCo
External = the reason(s) for the change originated outside of EngineeringCo

**Pre-project phases**

External:
The high importance of the project for EngineeringCo and the strong bargaining position of the customer enabling the customer to set requirements for EngineeringCo

Internal:
Lack of internal communication between the top management of EngineeringCo and the project team representatives

External:
The high importance of the project for EngineeringCo and the strong bargaining position of the customer enabling the customer to set requirements for EngineeringCo.

Internal:
Lack of internal communication between sales and other departments of EngineeringCo

Internal:
EngineeringCo’s strategic choice to rely heavily on subcontracting in engineering and manufacturing

Simultaneously ongoing projects combined with the demanding nature of the case project made it difficult to find suitable subcontracted resources.

**Engineering, manufacturing, and procurement phases**

Internal:
Some of the subcontracted designers were less experienced than usual

The different experience levels were not sufficiently taken into account when planning the project schedule, particularly after the schedule change

External:
The high importance of the project for EngineeringCo and the strong bargaining position of the customer enabling the customer to set requirements for EngineeringCo

The customer’s background in a different industry, where the prohibition of specific materials and work methods makes sense. For the systems delivered by EngineeringCo, these types of requirements are mostly unnecessary

Internal:
The customer’s requirements being agreed to without considering the manufacturing aspects of EngineeringCo

Internal:
Because of the delays in engineering work, different tactics were used in the manufacturing phase in order to catch up on some of those delays

**Installation and implementation phase**

External:
Incomplete/incorrect data (e.g. about the factory building) provided to EngineeringCo

Incomplete and changing customer requirements

Internal:
Errors in engineering specifications and mistakes in equipment installation or manufacturing quality

Fewer experienced personnel than usual

External:
Customer failing to follow the agreed-upon schedule on making factory building modifications

Table V.
Summary of the different changes throughout the lifecycle of the case project
potentially negative side effects of subcontracting. EngineeringCo tries to collaborate with the same partners from one project to another. However, at the same time as the case project, EngineeringCo was delivering several other major projects. This challenging situation, together with the relatively large size and demanding nature of the project, forced a deviation from the typical ways of working (i.e. the typical resourcing; the PMM) and created several challenges for the project team.

The customer had a strong position in the sales negotiations phase. This was particularly due to the large financial importance of the project for EngineeringCo and the size difference between the customer and EngineeringCo. This situation led to several alterations to the work methods in the later phases of the project. Specifically, EngineeringCo’s delivery contracts typically adhere to the company’s own templates. In this case, however, the customer’s contract template was used instead, which required EngineeringCo to deviate from its standard work practice. For instance, the usage of several materials was prohibited and more detailed documentation and reporting was required than what was typical in EngineeringCo’s own PM methodology.

The engineering, manufacturing, and procurement phases. After the pre-project phases, the project progressed to the engineering, manufacturing, and procurement phases. Here, the most important changes were related to the schedule and quality of the engineering work, and the related adjustments to the manufacturing work.

When estimating the schedule for a project, EngineeringCo relies on the expertise of its key personnel and knowledge gained from working on similar projects in the past. A similar approach was followed in the case project. Because of the size of the project and the other simultaneously ongoing projects, EngineeringCo had to subcontract engineering work to subcontractors with whom it had little or no history of collaboration. This, together with the demanding nature of the project and the extremely demanding project schedule, led to several major delays in the engineering schedule, according to the interviewees.

There were also several problems with the quality of the engineering work. In hindsight, most of the interviewees linked the quality issues to three elements: the inexperience of the (subcontracted) engineers, the incomplete information about the factory site where the solution was delivered, and the customer’s requirements. One interviewee explained the demanding nature of the factory site:

[...]

The engineering challenges experienced during the engineering, manufacturing, and procurement phases all caused issues in the installation and implementation phase. When discussing ways to control the progress and the quality of the engineering work, a principal designer described the limited possibilities of noticing potential faults in the designs and specifications. According to him, he just had to trust the accuracy of the other designers’ work:

[because of time pressure and tight schedules] It is not possible to check all the details of all the designs. Based on my experience, I should know where the potential [problematic] issues are.

Regarding manufacturing, the challenging and atypical customer requirements affected the manufacturing operations of EngineeringCo as well. In particular, several material choices and work methods were prohibited by the customer. As a manufacturing planner explained:

The use of [a specific work method] was prohibited in the project contract [...] It meant extra work for us, when we had to go through specifications and look for places where those work methods should be changed to a different work method.
For the most part, it was simply a matter of going through the specifications and making the required modifications, as explained above. However, there were several situations in which these modifications could not be made and the prohibited work method was the only way to manufacture the specific elements. These situations required the manufacturing planner to instruct the manufacturing employees to alter the approaches to their work; that is, to explicitly instruct improvisational actions. Improvisation was required because the manufacturing employees would follow an engineering specification by default, and carry out the manufacturing based on those specifications. As the manufacturing planner explained:

Then there were cases where [the prohibited work method] could not be avoided. We had to instruct the employees that in these cases, with this work number and this project number, you should not follow the specification but instead use [another work method].

In terms of the improvisational actions instructed, mistakes were made. Employees manufactured some elements by following the specifications and forgot the instructions that were specific to this project. Thus, work had to be redone.

Most of the interviewees considered the customer’s special requirements relatively unnecessary, particularly because the customer’s background was in a slightly different industry in which there was a need to prohibit the use of specific materials and work methods in their products. However, in the systems provided by EngineeringCo, those requirements were not needed. To further complicate matters, not only were the requirements unnecessary, but some were impossible for EngineeringCo to fulfill. As one interviewee explained:

It would also be important to take into account the manufacturing viewpoints in the sales negotiations phase. So it would not happen that we have agreed on something and then later it turns out that we can’t fulfill those obligations.

The second group of manufacturing-related changes dealt with the delayed engineering work. The criticality of the installation and implementation phase was regularly emphasized by the project personnel. Consequently, the delayed engineering work put pressure on the manufacturing phase to catch up some of those delays. Several re-planning tactics were used to achieve this, including the modification and prioritization of job queues, hiring contract workers, and overtime work. In fact, a big part of the project’s delayed schedule was compensated for during the manufacturing phase.

The installation and implementation phase. The installation and implementation phase was considered to be the most problematic by a clear majority of the interviewees, both as it related to EngineeringCo’s delivery projects in general and to the case project in particular. The interviewees explained how different issues in the earlier phases of a project might not be immediately noticed and might only become apparent in the installation and implementation phase, thereby causing several deviations from the preferred approaches to the work and changes to the project plan.

An illustrative example is an error in the engineering specifications of several of the project’s systems. The case project was delivered to an old factory building, which created several difficulties for the engineering functions. One central item of information regarding the measurements of the factory building was missing from the specification data provided to the engineers. It was not until the installation phase that the assemblers noticed that the systems could not be installed as planned, due to the incorrect measurements. As an assembly supervisor explained:

Yep, the floor plans of the factory did not match the original specifications. We had to modify the system and build alternative solutions at the site. It does not look good to do those things at the customer’s site, you know. And of course it took time.
Having had problems in the installation and implementation phase of its delivery projects in the past, EngineeringCo had proactively prepared for this to occur in this phase of the case project. For example, the company had tested many subsystems before transporting them to the customer’s site, and had invested more in the planning and resourcing of the installation and implementation than it normally would. Despite these efforts, several challenges still took place in this phase. Various reasons for the difficulties in the installation and implementation phase were identified by the interviewees. Errors in the engineering specifications or issues with the quality of the manufacturing work in the earlier phases could not have been noticed before the installation and implementation phase on-site. This was partly because some of the subsystems were too large to be tested before they were transported to the site. As an experienced assembly supervisor explained:

Yes, you can prepare better and plan better. Still some fixing etc. takes place every time. You just can’t picture how the system will work in real life just based on the specifications and sketches; you have to see it in reality.

The sentiment professed in the quotation above was shared by many of the interviewees. The interviewees perceived that a certain level of improvisation was inevitable in the installation and implementation phase. Many of them described how EngineeringCo’s systems “don’t work perfectly immediately after you switch on the power.” As the aforementioned assembly supervisor stated:

For instance, you notice that two subsystems don’t work correctly in synchronization with each other. Then you just take a pen and a paper and try to figure out what could be done to improve the situation.

What makes the nature of the installation and implementation phase problematic is the uncertainty related to the changes and deviations. As many managers and designers emphasized, and a clear majority of the interviewees agreed, when the schedule of the installation and implementation phase cannot be followed, it is problematic for the company. One of the managers described the following:

Having learned from earlier projects, we had built a buffer of several weeks into the project schedule, because we wanted to have extra time in the installation and implementation phase. In addition, we really focused on calculating the schedule and resourcing this phase. But still, all the extra buffer was used.

Other reasons for the challenging installation and implementation phase were errors in the installation work. Similar to the engineers, a number of the employees working on the installation were either inexperienced or not familiar with working with the case company. This was problematic because the control of the installation phase relied to a certain extent on the employees’ experience. As an assembly supervisor explained:

Yes, in theory you just check the specifications and install the system following that. But in practice not everything is written and you just have to know how our systems are designed and how they work.

As the company’s PMM relied on people knowing its standard work practice, it is clear that subcontracted engineers with limited previous experience were unfamiliar with the methodology, thereby causing deviations to occur. Lastly, several issues in the installation and implementation phase were caused by the customer’s behavior since the customer lacked experience in the field of systems delivered by EngineeringCo. Notably, the customer’s project team lacked expertise in the earlier phases of the project, which caused them to make several wrong decisions. In the later phases of the project, the customer strengthened its project team, after which time it demanded several
changes be made to the system design. EngineeringCo had to respond to the requests, which
meant additional changes had to be made to the installation and implementation phase
timeline. As an example, major changes were required to be made to several items of
safety-related equipment, but only after the equipment had been almost completely installed.

Another group of changes originating with the customer related yet again to the old
factory building. Because the building had previously been used for a different type of
business, it was not entirely suitable for the new systems. It was decided that it was the
customer’s responsibility to arrange for the required modifications to be made to the factory
building. However, the customer struggled with this responsibility and several renovations
were delayed – some by several weeks. From EngineeringCo’s perspective, this required
additional changes to be made to the original project schedule. As the project manager
responsible for the installation and implementation phase described:

For instance, one room of the factory building required a new floor, because the old one would not
support the weight of the new systems. It turned out, however, that the floor work would be delayed
by almost a month. We couldn’t do anything about it, we just had to figure out alternative tasks to
be done while waiting for the new floor to be built.

Interconnected changes throughout the lifecycle of the case project. The case project featured
some patterns in which many of the identified changes were clearly interconnected, and
thereby caused an escalation of the changes – or at least increased the possibility of such an
escalation occurring over time. A clear majority of the interviewees described episodes
where “a later event occurred due to a change or deviation earlier in the project.”

Interconnections were especially evident when the interviewees discussed the problems
in the installation and implementation phase. Having learned from numerous previous
projects, EngineeringCo – and its project managers in particular – had a strong feeling that
the biggest challenge would be the last phase of the project lifecycle. A thought similar to
that expressed in the following quote was shared by many interviewees:

Our projects progress very well until the shipments leave the factory and we start installing the
system. Then we can spend weeks or months “fumbling” at the customer’s premises, in front of the
customer’s eyes.

When further analyzing the interconnected changes, a clear majority of the interviewees
expressed the view that many of the issues causing problems in the installation and
implementation phase could trace their roots to earlier in the project lifecycle. These issues just
had not become visible or topical until reaching the installation and implementation phase.
Figure 1 shows an example of the interconnected changes and related actions in the case
project. The figure is divided into the perceived reasons for changes, the different changes
throughout the project’s lifecycle, and the respective change management and improvisational
actions performed by project personnel. The arrows illustrate the relationships between the
changes and the change management actions, as perceived by the interviewees.

The example in Figure 1 shows that several changes took place in different phases of the
project lifecycle and that different personnel performed different actions to react to those
changes. This path of actions finally led to the problems experienced in the installation and
implementation phase, which were most visible to the outside the project.

Change management and improvisation throughout the lifecycle of the delivery project
The previous subsections have discussed the two types of changes and touched on the
respective change management and improvisational actions taken throughout the lifecycle
of the case project. Table VI summarizes the change management and improvisational
actions employed by EngineeringCo in relation to those actions.
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Figure 1. An illustrative example of interconnected changes and change management and improvisational actions.
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<thead>
<tr>
<th>Lifecycle phase and change</th>
<th>EngineeringCo’s change management and improvisational actions</th>
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</thead>
<tbody>
<tr>
<td><strong>Pre-project phases</strong></td>
<td></td>
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<tr>
<td>A schedule change negotiated by top management without the project team knowing</td>
<td>The project managers had to estimate a new schedule for the project (re-plan) The fear of significant financial sanctions increased the importance of the project schedule even further. This led to project managers focusing more heavily on schedule planning and on emphasizing the importance of meeting the targets. (re-plan, optimize)</td>
</tr>
<tr>
<td>Several changes made to EngineeringCo’s standard work methods. For instance, documentation requirements and prohibited material choices</td>
<td>An atypical contract had to be taken into account by all departments (create alternatives, optimize)</td>
</tr>
<tr>
<td>Deviations from EngineeringCo’s preferred resourcing of the project</td>
<td>The less experienced project team members created uncertainty in the project schedule (as they were not completely familiar with EngineeringCo’s solutions). Later, the designers and project managers realized that this should have been taken into account in the project schedule by adding time to some tasks (re-plan, optimize) In many phases of the project lifecycle, responsible personnel had become used to working with more experienced employees. The responsible personnel had to alter their ways of managing and controlling the work of the less experienced personnel (create alternatives, optimize)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Engineering, manufacturing, and procurement phases</strong></th>
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<tbody>
<tr>
<td>Delays in the schedule of the engineering work</td>
</tr>
<tr>
<td>The personnel responsible for the manufacturing phases followed the progress of the engineering phase actively and reacted correspondingly (catch up, optimize)</td>
</tr>
<tr>
<td>Prohibited work methods required by the customer caused difficulties in the manufacturing work</td>
</tr>
<tr>
<td>Work design tactics in the manufacturing phase</td>
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<table>
<thead>
<tr>
<th><strong>Installation and implementation phase</strong></th>
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<tbody>
<tr>
<td>Changes and modifications in installation and implementation</td>
</tr>
<tr>
<td>Schedule modifications due to customer’s actions</td>
</tr>
</tbody>
</table>

Table VI. Change management and improvisational actions taken by EngineeringCo throughout the lifecycle of the case project
The analysis shows that managers and project personnel were active and responsive during all project lifecycle phases when changes took place. Indeed, it was not just project managers who responded to changes, but assembly workers, supervisors, designers, and other project personnel figured out their own unique ways to resolve change events. Four somewhat different change management and improvisation actions were identified as responses to changes, all oriented toward achieving the best possible project performance: creating alternative paths, re-planning, catching up, and optimizing project performance.

Re-planning can be considered a rather typical change management action as a response to plan-related changes, and it was performed mostly by project managers. Following this change management action, project managers reacted to changes in the project plans by creating new, adapted, and feasible plans. An illustrative example was the project managers' response to the schedule change demanded by the top management of EngineeringCo.

The three types of improvisational action were all highly interconnected and focused on the need to deviate from the typical ways of project work in EngineeringCo. Regarding alternative paths, the project personnel sought for alternative ways of working due to, for example, work methods prohibited by the customer. Catching up, and optimizing project performance were more improvisational in nature and were mostly performed by other personnel groups, not project managers.

Discussion
In this paper, we have explored the different types of changes that emerged during a complex delivery project, the reasons behind those changes and the project personnel’s experiences when dealing with them. The case project – despite experiencing a variety of unforeseen events and carrying out various changes – fulfilled its promise to the customer, and is thereby a good example to show that even with updates and modifications, project success is possible. Below, we discuss the main findings in light of the previous literature.

Different types and sources of changes
In the first research question, we asked:

RQ1. What kinds of changes do project personnel experience during the project lifecycle, including: (a) changes to the project plan; and (b) deviations from the PMM, and what are the origins of the changes?

We purposefully sought out changes to the project plans and deviations from the PMM. Although both types of issues have been covered in previous research, they have either been addressed in separate papers, or not clearly differentiated. This paper has revealed the dynamics and drivers of changes during the delivery project and the interconnections of different changes over time, thereby increasing understanding about the path-dependent nature of changes and change management.

The findings of this study highlight the need to understand and track changes and change management over the lifecycle of a project, instead of describing them merely cross-sectionally. The study demonstrates how changes took place throughout the lifecycle of a delivery project, with the first changes having actually taken place before the official start of the project, and the final changes occurring in the late stages of the installation and implementation phase. The evidence from the case study responds to the identified need to study changes and change management throughout the lifecycle of a project (e.g. Dvir and Lechler, 2004; Zhang, 2013) and thereby offers a novel, dynamic view to changes and change management.

In this study, we have argued that different types of changes occur in delivery projects. In particular, both plan-related changes and deviations from the PMM took place throughout the project’s lifecycle (Table V). Although the existing literature has acknowledged the existence of both types of changes, they have been studied mostly separately. The findings
from the case project offer an example about project personnel resolving the emerging challenges successfully by using change management actions and improvisational actions selectively. Where the PM research and practitioner literature have traditionally followed normative and planning-centric perspectives (Leybourne, 2017), the findings suggest that understanding the role of improvisational actions is important, for the project personnel to master the dynamics of change in complex and uncertain delivery projects.

The reasons behind the changes were identified as internal or external, from the perspective of the project contractor. This follows the generally accepted view that changes can be due to both the project contractor’s own behavior and external environmental factors. Concerning the external factors causing the changes, the role of the customer was heavily emphasized by the interviewees. In this case, the customer compelled the project contractor to make changes for three different reasons: stating partly unclear and changing requirements, by setting atypical requirements during the sales negotiation phase, and by not keeping its own commitments during the installation and implementation phase. The problem of having unclear requirements, and to some extent the setting of new requirements, is discussed in the existing literature (e.g. Dvir and Lechler, 2004). The customer’s failure to adhere to its own commitments, however, has not been explicitly addressed by existing studies. This issue was also perceived as problematic by the interviewees; the interviewees discussed how difficult it is for the project contractor to properly complain about the customer’s behavior, or make strong demands. Whether this was a unique phenomenon witnessed in one project implemented by a single company should be studied more in future research.

The findings revealed that many of the changes were interconnected and that changes initiated in the early phases of the project transformed into other changes later. For instance, the schedule delays in the engineering phase caused subsequent changes to be made during the manufacturing phase. Similarly, the incomplete information gathered about the installation site in the earlier phases of the project was one of the reasons for the challenges experienced during the installation and implementation phase. The interconnected changes included both plan-related changes and deviations from the PMM, highlighting again the importance of taking into account both types of changes and the dynamics of changes over the lifecycle of the project.

Although the escalating plan changes and PMM deviations could have potentially led to failure, the case project demonstrated that various change management and improvisational actions were used successfully in order to keep the project on the right track. The examples of path-dependency between the changes suggest that changes in projects should not be treated as isolated events or episodes, but rather their interdependencies should be understood as well. The results also highlight the importance of information sharing within the complex delivery project to ensure that all the various implications of the plan changes and PMM deviations are considered, even when moving from one phase to another within the project lifecycle. In a similar vein, poor or ineffective communication between the project actors has been identified as a reason for critical changes in construction projects (Yap et al., 2017). The findings of our study highlight that effective information sharing is even more crucial in situations in which different personnel are responsible for different phases of a project, which is typical in industrial delivery projects.

Improvising and managing changes over the project lifecycle

The second research question inquired:

RQ2. How do project personnel and managers implement change management and improvisation actions in the different phases of the project lifecycle?

To answer this research question, the change management and improvisational actions performed by the different project personnel were identified (Tables VI and VII). By distinguishing between the two types of actions and mapping them by the active project
actors, this study contributes to the general need to study improvisation in project contexts, especially regarding delivery projects (Leybourne and Kennedy, 2015). This paper offers evidence on change management and improvisation as a shared responsibility among project personnel (instead of project manager’s task), and on four different patterns of change management.

Our findings raise the need to consider change management and improvisation from the perspective of the whole project team (or project personnel even more widely), instead of focusing only on project managers. The improvisation literature in particular (Table II), and to some extent the literature on change management as well (Table I), has focused on the role of the manager – particularly the project manager – in performing the improvisational or change management actions (e.g. Leybourne and Sadler-Smith, 2006). According to the findings of this study; however, project managers were not the only project actors active in performing change management and improvisational actions; instead, different actions were performed by different project personnel. In fact, improvisational actions were taken more often by other project personnel than they were by the project managers, as illustrated in Table VII. Here, the two types of actions are distinguished so that “change management” refers to the responses to the plan-related changes and “improvisation” refers to the responses to the deviations from the PMM.

As Table VII shows, project managers mainly carried out change management actions, whereas middle managers and experts performed both types of actions, while operational employees engaged in improvisational actions. This finding contributes to the existing literature that focuses on managers and project managers and is yet another main finding that should be tested in future research.

In addition to different personnel performing different change management and improvisational actions, Table VII also reveals a different focus between the two types of action. In change management actions the focus was mainly on scheduling and customer aspects, while in improvisational actions the focus was mostly on project scope and system functionality. Both the role and the focus aspects contribute to the previously expressed need to understand the nature of improvisation in project contexts better (Leybourne, 2006; Leybourne and Sadler-Smith, 2006), suggesting that different change management and improvisational actions should be designed for different purposes.

Due to the uncertain, dynamic, and turbulent nature of projects, the improvisation of and adaption to the changing requirements of the external environment are essential for project organizations (Leybourne, 2017; Lindkvist, 2008). The four patterns of change management and improvisation actions – creating alternative paths, re-planning, catching up, and optimizing

<table>
<thead>
<tr>
<th>Project actor</th>
<th>Change management actions</th>
<th>Improvisational actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project managers</td>
<td>Schedule modifications</td>
<td>Improvisational work and instruction of improvisational work to meet difficult/</td>
</tr>
<tr>
<td></td>
<td>Negotiations with the customer related to the changing requirements and their fulfillment</td>
<td>incompatible customer requirements</td>
</tr>
<tr>
<td>Planners and manufacturing</td>
<td>Work design tactics</td>
<td>New ways of managing the work of less experienced employees</td>
</tr>
<tr>
<td>employees</td>
<td>Work design tactics (e.g. overtime and altered work instructions) to make up for schedule</td>
<td>Improvisational work and instruction of improvisational work to adapt to</td>
</tr>
<tr>
<td>Middle managers, work supervisors</td>
<td>Work design tactics (e.g. overtime and altered work instructions) to make up for schedule</td>
<td>challenging situations in the installation and implementation phase</td>
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<td></td>
<td>delays</td>
<td></td>
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<tr>
<td>Assembly</td>
<td></td>
<td>Improvisational work to achieve an optimally functioning system in the installation and implementation phase</td>
</tr>
</tbody>
</table>

Table VII. Examples of change management and improvisational actions performed by different project personnel
project performance – show how this adaptation can take different forms in different phases of the project lifecycle. The results demonstrate that these actions are not only performed by the project managers, as emphasized in most of the previous literature, but by other project personnel as well. Nor is the need for adaptation limited to the external environment; rather, the actions of the project organization itself can also necessitate later improvisation.

**Conclusions**

This study has contributed to the existing body of research on change management and improvisation in delivery projects. The case study provided evidence of the internal and external reasons for changes, described two types of changes (plan-related changes and deviations from a PMM), and highlighted the interconnected nature of changes. As a whole, the study has responded to the calls to understand changes in projects over a project lifecycle (e.g. Dvir and Lechler, 2004; Zhang, 2013), to acknowledge both internal and external reasons for changes and to study improvisation in a project context (Leybourne, 2006; Leybourne and Sadler-Smith, 2006), delivery projects in particular (Leybourne and Kennedy, 2015). The primary contribution of revealing the lifecycle view to changes and change management complements a cross-sectional and static approach to changes and suggests researchers and practitioners to acknowledge path dependencies between changes and change management.

The study has revealed the distributed responsibility for different types of change management and improvisational actions among project personnel, and the different purposes of the actions. The results of the successful and, yet, constantly changing case project showed evidence that change management and improvisational actions are not only performed by project managers, but also by middle managers, work supervisors, and operational employees. The case study suggested that project managers mainly perform change management actions and operational employees mainly perform improvisational actions, whereas middle managers perform both types of actions. The focus of change management actions was mainly on scheduling and customer aspects, while the focus of improvisational actions was mainly on project scope and system functionality. In all, these findings draw attention to project personnel as micro-level change agents, differing in their championing and scope of influence in managing changes. Thereby, the study contributes by pointing out the actor-centric view to change management.

Finally, the results have demonstrated four different patterns of change management and improvisational actions that were performed due to the changes: creating alternative paths, re-planning, catching up, and optimizing project performance after changes were made. Understanding of such tactics that project personnel use contributes to research in two primary ways. First, they offer more fine-grained knowledge of the practice of change management and improvisation than categorization through the degree of improvisation only (e.g. Klein et al., 2015). Second, they could be further developed into change management templates that combine previously identified change management practices of configuration management (Whyte et al., 2016), coordination (Zhang, 2013), coping mechanisms (Aaltonen et al., 2010; Tukiainen et al., 2010), using information (Whyte et al., 2016), and communication (Butt et al., 2016). The discovered change management and improvisational tactics could be further elaborated to guide project personnel in dynamic contexts.

Our study has several implications for managers and PM practitioners. First, practitioners should be aware of the two types of changes and the internal and external reasons for them so that they can identify the changes and drivers in practice. Second, the study has identified two types of change-related work practices – change management and improvisational actions – and four alternative patterns of these practices, offering potential ways to guide personnel in adopting appropriate actions for certain types of changes. The study has also shown how different project personnel have a tendency to follow one or another of the two ways of reacting to changes, and that the two types of change-related actions focus on different purposes.
This again may be relevant, when educating project personnel for their change management tasks. Third, the study has emphasized the role of the project customer as a source of changes, and discussed why it is difficult for the project contractor to prevent customer-related changes from occurring. Findings concerning the sources of change are helpful for project personnel when they need to justify and explain their responses to customer-driven changes.

The single case research design limits the generalizability of the findings, meaning that the extent to which the findings reflect a phenomenon unique to an individual company’s single project can be questioned. Therefore, these findings should be tested in a variety of industries and contexts and by using different research designs. The choice of the case company and the case project may cause validity limitations, too. We have justified the choices, described the characteristics of the company and project, and offered background information of the lifecycle of the project, to improve validity.

It is possible that some findings concerning the interconnections between changes and the improvisational responses reflect the particular nature of the PMM in the case company (i.e. it being an established routine, instead of a formal guideline). For example, a more formal PMM with its capability requirements could have been reflected in other kinds of changes and change management and improvisation tactics, and avoidance or easier mitigation of path-dependent changes. Therefore, it would be of interest to study and understand if the use of a more formal PMM would cause different results in terms of changes and change management patterns.

Finally, there is a limited amount of research on improvisation in projects (Leybourne, 2006; Leybourne and Sadler-Smith, 2006). Many of the few existing studies have focused on the financial industry and a need for research on improvisation in delivery projects has been expressed (Leybourne and Kennedy, 2015). This study is among the very few answering to that call and acknowledging the role of improvisational actions in delivery projects. The findings of this study, especially the alternative patterns of change management, the actor-centric view and the different purposes of the two types of response actions should be studied further and tested with different types of delivery projects.

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APM (2012), Body of Knowledge, Association for Project Management.


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Delivering new nuclear projects: a megaprojects perspective

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Abstract
Purpose – The purpose of this paper is to make recommendations for policy makers, promoters and project managers on how to structure and deliver new nuclear build programmes, by drawing on the megaprojects literature and salutary lessons from previous megaprojects.
Design/methodology/approach – This paper is underpinned by the extant literature and an analysis of public domain data from three proposed new nuclear power plants in the UK. It identifies the main challenges facing new nuclear build projects and subsequently proposes lessons that can be learnt from megaprojects, in order to plan, structure and deliver new nuclear build programmes successfully.
Findings – The paper argues that megaprojects are simultaneously trait-making, rather than trait-taking, possess a temporality and timescale in excess of typical infrastructure projects, suffer from high levels of uncertainty and ambiguity, are organisationally complex, costly and are highly likely to destroy rather than create value. Second, it argues that the challenges facing new nuclear build are not merely technological but also institutional, political and societal in nature. The nature of these challenges is exemplified using three proposed new nuclear build projects in the UK.
Originality/value – This is the first paper to draw on both extant megaproject theory and on an analysis of the public domain data from three proposed new nuclear power plants in the UK. It makes contributions to megaprojects theory and practice, and specifically to nuclear new build projects. Importantly, it proffers recommendations for how new nuclear build programmes around the world might be structured, planned and delivered to minimise the risks of failure.
Keywords Planning, Megaprojects, Complex projects

Introduction
The UK government faces an acute energy dilemma; that of accessing sources of energy that are both cheap for consumers, non-damaging to the environment and secure against geopolitical risks. An aging fleet of nuclear power plants that currently generate approximately 21 per cent of the UK’s electricity (Department of Business, 2017) are due to be decommissioned by the mid-2020s leaving a sizeable gap in the generating capacity available to the National Grid. Coupled with this, the last of the UK’s coal fired power stations will go off-line around the same time (Vaughan, 2017). The options for new energy generation are three-fold: gas (either imported or from the North Sea), renewables (including solar, wind and wave power) and nuclear (through an ambitious and expensive programme of new nuclear build projects). Each of these energy options has its own strengths and weaknesses. For example, gas is cheap but risks leaving the UK increasingly reliant on imported supplies. And renewables, whilst falling in price, remain unreliable as a source of stable base-load power.

Given that UK requires additional energy generation capacity before 2023, the government has made the construction of a fleet of new nuclear power plants a central pillar of its energy strategy; its argument being that nuclear power is able to provide large stable base-load electricity generation, whilst supporting the drive for CO2 reductions.

The authors would like to take this opportunity to thank the two anonymous reviewers whose helpful and constructive comments have strengthened this paper.
However, nuclear power comes at a financial cost (in terms of the construction of hugely complex, safe power plants and long-term decommissioning and waste disposal liabilities) and concentration of risk in a small fleet of nuclear reactors (Ansar et al., 2016; Morris, 2016). Research into the management of complex, socio-technological projects such as nuclear power plants (Invernizzi et al., 2017) has grown rapidly since the early 2000s and there is growing traction within academic and practitioner communities for these “megaprojects” to be considered a specialised field within the wider discipline of project management (Flyvbjerg et al., 2003; Flyvbjerg, 2014b; Li et al., 2017; Pollack et al., 2017). Megaprojects are large-scale complex infrastructure projects that typically, although not exclusively, have a budget greater than US$1bn; take many years to plan and construct, involve multiple stakeholders and are carried out under the watchful and often critical gaze of politicians, the public and the media (Zidane et al., 2013; Flyvbjerg, 2014b; Mišić and Radujković, 2015). In recent work (Frick, 2017), which addresses the need for the USA to embark on a similarly extensive programme of infrastructure investment, Karen Trappenberg Frick articulates the essence of megaprojects using 7 C’s: colossal, captivating, costly, controversial and complex, thus requiring effective control measures and constant stakeholder communication. These characteristics of megaprojects manifest themselves as overoptimistic project forecasts coupled with underestimated risks and inadequate levels of project contingency in budgets. This leads to cost overruns, project delays and long-term benefits shortfalls or even a collapse in the long-term project viability.

Ansar et al. (2016) argue that big energy projects, such as new nuclear, are especially fragile and susceptible to technical, operational and political risks. Nuclear power plants comprise myriad interdependent components, sub-systems and systems, both to generate nuclear power in a controlled fashion and to remain safe in the event of an exhaustive set of fault scenarios. They have lengthy planning and construction horizons and are typically delivered by complicated supply chains that span numerous organisational and national cultures (Saunders et al., 2015). The additional complexities of the UK new nuclear build programme were articulated clearly at the Nuclear New Build Forum in London on 20 April, 2016 as follows:

Large infrastructure projects require a range of key features and sufficient risk management to attract financing, but a new nuclear project has to go further still to draw in potential backers […]. New nuclear programs need to align with associated infrastructure, such as grid and transport networks, as well as develop a supply chain, receive planning consents and engage with national and local government, along with the businesses, education establishments and communities in the area the project is based. They also need to have their reactor design scrutinised by national regulators, a process that in the UK can take as long as five years. In addition, the project needs to have a fuel supply, operations, maintenance and decommissioning strategy, looking as much as 80 years ahead. (WNN, 2016)

This conceptual paper, which is based on publicly available information on the UK new nuclear build programme, argues that the challenges facing the UK’s new nuclear build programme are not merely technological but also institutional, political and societal in nature. It addresses three key research questions:

RQ1. What are megaprojects and how do they differ from traditional or non-megaprojects?

RQ2. What are the main challenges facing new nuclear build megaprojects?

RQ3. What lessons can policy makers, promoters and project management professionals learn from past megaprojects, in order to plan, structure and deliver the new nuclear build programme successfully?

The next section of the paper summarises the extant research into megaprojects. Subsequent sections describe the status of, and challenges facing, the UK new nuclear build programme, and discuss recommendations on how to most appropriately structure and deliver the UK new nuclear build programme.
Megaprojects research
The notion of the megaproject – as an extremely complex and costly infrastructure project that attracts much public attention and has the potential to transform society – has been in existence since Selznick’s (1949) study of megaproject management within the Tennessee Valley Authority in the USA. More recent megaprojects include the Channel Tunnel Fixed Rail Link, other large transportation projects such as London’s cross-rail and the Edinburgh Tram Link project, bridges such as the Oresund link between Denmark and Sweden, energy projects and iconic public architecture such as the Burj- Al-arab hotel in Dubai or Bilbao’s Guggenheim museum. Irrespective of their particular form and function, all megaprojects involve large-scale capital investments, a high level of political and public awareness and visibility and often substantial economic and environmental impact on local communities (Galloway, 2013). Flyvbjerg (2014, b) provides the most commonly cited formal definition of a megaproject as a “large scale complex venture that typically costs US$1bn or more, takes many years to develop, involves multiple public and private stakeholders, is transformational and impacts millions of people” (Flyvbjerg, 2014, p. 1).

Mišić and Radujković (2015) describe megaprojects as “important drivers of society change”; a view echoed by (Zidane et al., 2013) who frame megaprojects as important landmarks for societies and nations. The potential for megaprojects to effect considerable societal change is, however, a double-edged sword. Politicians have often been too quick to seize on the potential of an iconic megaproject as a means of delivering a lasting, and high-profile legacy (contemporaneous examples of this in the UK alone are the planned high speed 2 London-Birmingham Rail-link, the Edinburgh Tram project and the London 2012 Olympics). Flyvbjerg (2014, b) characterises this temptation as the four sublimes of megaprojects: The first of these is the technological sublime: the excitement and buzz of pushing the boundaries of current technology to create something innovative and spectacular. Second is the political sublime: the joy politicians get from the positive attention given by the media when starting megaprojects, and the enticing prospect of building a political legacy of iconic buildings or transport infrastructure. The third sublime is economic and is concerned with the economic benefits and job creation potential of the megaproject, coupled with the delight of engineers, architects, contractors, consultants, bankers, investors and lawyers who can enjoy the benefits of the oversized project budget. Finally, megaprojects enjoy an aesthetic sublime: the sheer pleasure of looking at something beautiful or iconic such as the London Shard building. These four sublimes can create a potent and unstoppable wave of enthusiasm for megaprojects amongst politicians, policymakers, project promoters and the public at large; irrespective of the hard truths of the colossal size of the project budget, the numerous, often downplayed risks facing the project and the questionable assumptions on which the project benefits case has been made (see for instance, Flyvbjerg et al., 2003; Miller and Lessard, 2000; van Marrewijk et al., 2008).

To date, much of the literature on megaprojects has been case study based, drawing on single or multiple exemplars of past megaprojects to explore and validate new ideas and theories in megaprojects. The extant literature has focussed on the political nature of funding megaprojects (strategic misrepresentation and the principle of the hidden hand) (Flyvbjerg, 2014b); front end decision making (optimism bias and the need for reference class forecasting) (Flyvbjerg, 2013; Flyvbjerg et al., 2003; Williams, 2009) the poor performance of megaprojects in terms of cost escalation, delayed delivery and benefits shortfalls (Eweje, Turner and Müller, 2012; Winch, 2013; Boateng et al., 2015; Davies et al., 2017) the risks and challenges facing megaprojects (Priemus et al., 2008; Sanderson, 2012; Irinia-Diéguez, et al., 2014; Sanchez-cazorla et al., 2017) and the wider consequences to society of this class of projects (Müller, 2011). More recent research has applied organisational theory to explore and explicate current practice in megaproject management. For example, Biesenthal et al. (2017) draw on institutional theory to recommend that
megaproject promoters and sponsors devote more effort to getting the institutional arrangements within the project in place before addressing the technical challenges facing the project; thereby enabling previously divergent actors, governed by different institutional rules and logics to collaborate and make sense of the emerging megaproject. Similarly, Brookes et al. (2017) explore the temporal nature of the megaprojects, arguing that megaprojects often outlast the special purpose or joint venture organisations that are created to deliver them.

Other recent research has mapped out the development of megaproject management as a distinct domain of project management research. Notable recent contributions to this debate have been attempts to identify the classic texts and papers in the literature on megaprojects (Flyvbjerg, 2017; Pollack et al., 2017) and bibliometric-based analyses of the development of the megaprojects literature (Li et al., 2017). Both of these streams of research speak of megaprojects research reaching a cross-roads in its genesis; a tipping point where the scope and aims of the field require rethinking as a prelude to reaching a theoretical consensus on what megaprojects are and how they might better be structured, governed and delivered. Li et al. (2017) end their paper with a call for the megaprojects research community to pursue more interdisciplinary and multilevel studies, to better combine theory and practice to address the real-life issues confronting megaprojects and to update the classic texts to reflect and lead practitioner practices.

Given that McKinsey Global Institute (McKinsey and Company, 2016) predicts global infrastructure spending of US$3.4tr per year between 2013 and 2030 mainly implemented through large-scale infrastructure projects (Flyvbjerg and Turner, 2017) and that the global megaprojects market is estimated at US$6-9tr per year (Flyvbjerg, 2014a) megaprojects look highly likely to remain central to society: captivating yet costly and controversial in equal measure. The question we now need to address is whether megaprojects are a distinct class of project, requiring different governance and delivery structures from those expected in more conventional projects.

Megaprojects, typically but not exclusively, have a budget greater than US$1bn. However, Pollack et al. (2017) argue that “the real mark of a megaproject is the organisational complexity, ambiguity, ambition, politicality and risk that are entailed” (Pollack et al., 2017, p. 2). Given that many smaller, arguably more conventional projects also exhibit high levels of complexity, uncertainty and are highly political in nature (for example nuclear decommissioning projects), what are the features of megaprojects that distinguish them from more conventional projects? Table I draws on the relevant literature to highlight the key features of megaprojects and how they might be differentiated from conventional projects. It confirms the view expressed by Bent Flyvbjerg that “Megaprojects are a completely different breed of project in terms of their level of aspiration, lead times, complexity, and stakeholder involvement. Consequently, they are also a very different type of project to manage” (Flyvbjerg, 2014b, p. 6).

The UK new nuclear build programme
There are three planned nuclear new generation projects in the UK: Hinkley Point C in Somerset, Moorside in West Cumbria and Wylfa Newydd on the Isle of Anglesey. Each involves a different consortium of promoters, different reactor design technology and, most likely, different approaches to financing the projects.

Hinkley Point C is a joint UK–French venture which will be part-funded by the Chinese nuclear industry. The power plant, comprising two European Pressurised Reactors (EPRs), is estimated to cost £19.6bn (WNN, 2017b) and is expected to be in operation by the end of 2025. The EPR design aims to be safer, more reliable and more fuel efficient than its predecessor. The EPR will work in similar fashion to existing generations of the reactor; EPRs have already been approved for use in the UK, confirming the reactor meets safety requirements.
Hinkley Point C is the most advanced project in terms of planning and construction; the UK government gave its approval to the project on 29 September 2016 following EDF’s final investment decision 28 July 2016. Consent for the placement of the structural concrete for the first nuclear safety-related structure at the site was granted in July 2017 and the groundworks and enabling infrastructure are proceeding at pace (WNN, 2017b).

The Moorside nuclear plant in West Cumbria will be delivered by Nugen, currently a wholly owned subsidiary of Toshiba. Originally, the Moorside site would have comprised 3 AP1000 Pressurised Water Reactors supplied by Westinghouse. Although Nugen completed its Generic Design Assessment early in 2017 (WNN, 2017a), major financial problems within Westinghouse and its parent company Toshiba led to a major strategic review of the project. In December 2017, Nugen announced that KEPCO (Korean Electrical Power Company) was the new preferred bidder for acquiring Nugen from Toshiba. KEPCO will use their own APR1400 reactor design for Moorside, and work is now underway to secure Generic Design Assessment Approval for this technology (WNN, 2017d). No date has yet been set for either final investment decision or negotiation with the UK government over the strike price at which the plant output will be sold.

<table>
<thead>
<tr>
<th>Feature of Megaprojects</th>
<th>Description and Contrast with Conventional Projects</th>
<th>Underpinning Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait-making</td>
<td>Megaprojects seek to change the structure of society, and can impact many thousands and even millions of people. In contrast more conventional projects are trait-taking, i.e. the project fits within existing societal structures and routines.</td>
<td>Hirschman (1995), Galloway (2013) and Mišić and Rudujković (2015)</td>
</tr>
<tr>
<td>Temporality and timescale</td>
<td>Megaproject design and construction timescales can outlast governments and often the organisational or corporate structures that deliver and manage them. Criteria of success for megaprojects need to include long-term benefits.</td>
<td>Eduardo Yamasaki Sato and De Freitas Chagas Jr (2014), Biesenthal et al. (2017) and Brookes et al. (2017)</td>
</tr>
<tr>
<td>High levels of risk, uncertainty and ambiguity</td>
<td>Megaproject success criteria can be vague and even misrepresented. Multiple stakeholders can increase ambiguity and uncertainty. Use of untried and novel technologies within highly complex interconnected infrastructure systems can increase risks.</td>
<td>Priemus et al. (2008), Nielsen et al. (2013), Irinia-Díazuez, et al. (2014), Chapman (2016), Biesenthal et al. (2017), Li et al. (2017) and Sanchez-Cazorla et al. (2017)</td>
</tr>
<tr>
<td>Organisational Complexity</td>
<td>Megaprojects must bring into alignment a wide diversity of actors, organisations and stakeholders with often conflicting interests and conflicting visions of the megaproject.</td>
<td>Priemus et al. (2008), Zidane et al. (2013), Biesenthal et al. (2017) and Invernizzi et al. (2017)</td>
</tr>
<tr>
<td>Cost</td>
<td>Huge budgeted costs (generally &gt; $US1B), require complex financing structures and often guarantees from host governments and/or international finance institutions. Accuracy of cost estimating, cost control and levels of contingency funding is reduced.</td>
<td>Morris and Hough (1987), Zhai et al. (2009), Boateng et al. (2015) and Biesenthal et al. (2017)</td>
</tr>
<tr>
<td>High propensity for value destruction</td>
<td>Due to their size, complexity and timescales megaprojects are highly likely to experience huge cost escalation and delayed delivery which can destroy value at the project, promoter, political and even national level. The megaproject may consume limited resources (people, finance, space, etc.) that might have been better employed elsewhere to generate value.</td>
<td>Merrow (1988), Flyvbjerg et al. (2003), Gellert and Lynch (2003) and Eweje et al. (2012)</td>
</tr>
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</table>
The third planned nuclear power plant is Wylfa Newydd on the Isle of Anglesey in North Wales. This plant will comprise two advanced boiling water reactors (ABWRs). ABWRs are known as “direct cycle reactors” so they pass the steam straight into the turbine from the reactor rather than passing in and out of the steam generator as with the APR1400 and EPR technology (Hitachi, 2014). The Wylfa Newydd plant will be built and operated by Horizon (which is owned by Hitachi with the reactors supplied by Hitachi-GE). The ABWR remains in the regulatory assessment phase, with the earliest construction start date estimated to be 2019 (WNN, 2017f). The cost of the Wylfa Newydd project is currently estimated at £20BN (WNN, 2016; Saunders et al., 2016).

**Challenges facing the three UK new nuclear build projects**

Table II compares the three new nuclear build projects, HPC, Moorside and Wylfa Newydd, in terms of the first 5 C’s of Frick’s classification of megaprojects as colossal, captivating, costly, controversial and complex (Frick, 2017). This analysis shows that the UK’s new nuclear build programme faces a number of sizeable technical challenges. For instance, the sheer technical complexity of the reactor technology and the differing levels of maturity of each of the three proposed reactor designs, each of which must be assessed and approved by the office of nuclear regulation before final designs can be signed off. Each site also requires extensive enabling infrastructure, from new transport and power connections to large earthworks and vast temporary accommodation blocks. Each piece of the enabling infrastructure must not only be delivered as a stand-alone project, but also contains myriad interfaces to the other enabling works and to the main reactor and turbine design and construction, thereby increasing overall programme complexity and with it the potential for increasing costs and delaying the project. These challenges are compounded by two further technical obstacles; that of the fragmented and fragile nature of the nuclear supply chain in the UK (Saunders et al., 2015) and the need to simultaneously mobilise 1000s of highly-skilled workers across three remote locations in the UK. It is questionable whether sufficient of these skilled resources actually exist, and are readily available to mobilise onto a new project (typically, experienced complex project practitioners move from one megaproject to the next, e.g. from Heathrow Terminal 5 to London 2012 to cross-rail and now to the Thames Tideway Tunnel (Davies et al., 2017). In contrast, the construction phases of HPC, Moorside and Wylfa Newydd will not only overlap, but will be competing for specialist resources with other nuclear life-extension and decommissioning projects that are already underway. Anecdotal evidence from nuclear industry project professionals suggests that the solution to the resource constraints on these megaprojects will be an eventual influx of Chinese nuclear workers, rapidly and expensively mobilised to complete the projects, without allowing the UK to develop its own nuclear skills capability and capacity.

In addition to these technical challenges, Table II also demonstrates that many of the issues facing the projects are also institutional, societal and political in nature. The size and complexity of new nuclear build projects demands that they are delivered by multiple parties located in different parts of the globe. This introduces cross-cultural challenges into an already problematic set of complex institutional arrangements between the project promoters, the contractors, investors and the UK government (Biesenthal et al., 2017). This brings into play a huge number of organisational interfaces within the projects, each of which requires governance, contractual and behavioural mechanisms to be established, in parallel with the project definition and design phases.

At the societal and political level, national governments, local authorities and business groups are focused on the economic benefits of the project and the resultant long-term development of nuclear plants’ hinterland. However, the mere mention of the term nuclear tends to be emotive and can lead to differences of opinion within a group of individuals and society as a whole. Opposition to nuclear technology may arise from a particular
Hinkley Point C Moorside Wylfa Newydd

Colossal Plant will generate 7% of the total UK's energy needs (each reactor will generate 1.6 GW of electricity)
Supply chains span Europe and the rest of the world
Installation of 35,000 supporting arrangements and 10,000 items of mechanical plant (Jones, 2017)
Construction of 760 metre long and 13.5 m high sea wall to protect the plant from natural disasters (EDF, 2016)
One of largest and riskiest UK infrastructure projects currently underway (Morris, 2016)

Captivating Politically essential to UK government’s energy strategy (Department of Business, 2017)
25,000 new employment opportunities created during construction
Peak employment around 5,600 people
4m m³ of earth to be excavated – equivalent to 1,300 Olympic swimming pools
3m tonnes of concrete required – 75 times more concrete than in Millennium Stadium in Cardiff
230,000 tonnes of steel reinforcement to be used (EDF, 2016)
The project is seen as the start up for the UK becoming the “global leader” in nuclear energy and is inspiring young engineers and scientists
Aim is to train 400 apprentices (Macalister, 2014)

Costly Hinkley was given an original £6bn estimated cost, now estimated at £19.6bn (Smyth, Lecoeuvre and Vaeslen, 2017; WNN, 2017b)
Hinkley Point C’s strike price is £92.50/MWh (almost double the current wholesale price of electricity)

Moorside is estimated to be a £10bn project, representing the largest private investment project in West Cumbria (NuGen, 2016)
This budget is expected to rise considerably
A guaranteed strike price has not yet been

Wylfa Newydd will provide 5.4 GWe of new capacity to power 10 m homes starting mid-2020s
Early in 2017, it was announced that Anglesey’s old oil depot was the “front runner” to house thousands of Wylfa Newydd construction workers (Wyn-Williams, 2017)
It will be one of largest and riskiest UK infrastructure projects

Politically essential to UK government’s energy strategy (Department of Business, 2017)
4,000+ jobs to be created during construction with 850 permanent jobs required post construction (Power-Technology, 2017)
Opportunity to provide apprenticeship schemes and attract young engineers to the nuclear industry
New partnership between Horizon and Exelon towards becoming a “world class nuclear operator” (HorizonNews, 2017)

Wylfa Newydd is a £14bn project with hopes of delivering a “fair and acceptable” strike price, below that of Hinkley Point C (Hughes, 2016)
There is potential for a governmental 30% equity stake in the project, with ministers admitting that

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<td>electricity</td>
<td>confirmed, but NuGen’s intention is to seek a lower strike price than HPC, with the investment being considered a “long-term vision” (Bounds, 2015)</td>
<td>taxpayer’s money will be required to underpin the project. (Hughes, 2017)</td>
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<td>Financial impact of likely cost and schedule overruns may bankrupt an already debt laden EDF (Morris, 2016)</td>
<td>Fukushima accident</td>
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<td>Controversial</td>
<td>Slow progress on project due to Greenpeace opposition and public concerns regarding the cost and long-term viability of the technology coupled with concerns about nuclear safety post Fukushima accident</td>
<td>There are concerns over the tourism legacy in the Lake District as if the point of critical radioactivity is reached (low risk) over half the Lake District would be inaccessible for at least 20 years Cumbria Tourist Board do not currently support the project due to fears over a Chernobyl style accident However both Cumbria County Council and Guardians of the Lakes National Park hold no objections to the project (Lakestal, 2016)</td>
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<tr>
<td>Tom Burke, ex government advisor and chairman of the environmental pressure group E3G, argues that the UK’s new nuclear builds are “unproven” and believes the UK is following in the footsteps of previous generations nuclear catastrophes. (Jones, 2017)</td>
<td>Cumbria Tourist Board do not currently support the investment being considered a “long-term vision” (Bounds, 2015)</td>
<td>Amlwch town council oppose the temporary accommodation camps to be built in the town, preferring to house workers in the former Shell oil depot (Wyn-Williams, 2017) PAWB (People Against Wylfa B) question the Japanese firm’s commitment and ability to deliver this project</td>
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<td>Critics say that government should be focussing on incentivising wind and other renewables, rather than subsidising new nuclear</td>
<td>Controversy over whether the UK government should trust the French and the Chinese companies to construct this new nuclear power station. (Chu, 2016)</td>
<td>Protestors claim nuclear to be “old fashioned, dangerous and dirty” (Wyn-Williams, 2016)</td>
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<td>Critics say that strike price is bad value in the current market as the wholesale price of energy has collapsed in the last 3 years or so, to around £45 per megawatt hour, as opposed to the £92.50 per megawatt hour strike price for Hinkley units. This potentially equals a controversial cost of up to £30bn on the UK consumers backs (Chu, 2016)</td>
<td>Controversy over whether the UK government should trust the French and the Chinese companies to construct this new nuclear power station. (Chu, 2016)</td>
<td></td>
</tr>
<tr>
<td>Complex</td>
<td>No EPR is yet in operation anywhere in the world! First reactors at Olkiluoto and Flamanville are hugely over-budget and delayed. HPC reactor alongside the reactor and turbine buildings, support buildings including a substation and a circulating water system will be required</td>
<td>The development consent order (DCO) is scheduled for submission in 2017 following on from the generic design assessment (GDA) of the</td>
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The design is untried and unproven (Morris, 2016). The first part of the complex construction process involves civil work and earthworks to prepare the site for construction; a total of 4mm$^2$ of earth needs to be moved before construction can even begin. In addition to this, 70 miles of engineering and fitted pipe systems are needed for each reactor. It has been said that 60% of the project is to be nuclear construction, the remaining 40% is additional work including the jetty and sea wall as well as drilling tunnels for cooling pipes that will go out to sea (Macalister, 2014). Huge governance issues on the project in particular the tension between political expediency and professional project management practices (Morris, 2016).

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<td>design is untried and unproven (Morris, 2016)</td>
<td>Earthworks needed for screening and noise reduction. Replacement habitats will also be required and flood plain compensation if necessary</td>
<td>ABWR reactors which was submitted in 2014</td>
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<td>The first part of the complex construction process involves civil work and earthworks to prepare the site for construction; a total of 4mm$^2$ of earth needs to be moved before construction can even begin. In addition to this, 70 miles of engineering and fitted pipe systems are needed for each reactor. It has been said that 60% of the project is to be nuclear construction, the remaining 40% is additional work including the jetty and sea wall as well as drilling tunnels for cooling pipes that will go out to sea (Macalister, 2014)</td>
<td>Surface water, sewer drainage systems and fresh groundwater extraction facility required (NuGen, 2016)</td>
<td>Horizon has already conducted soil investigations, traffic and transport surveys and ecological studies on-site</td>
</tr>
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<td>Huge governance issues on the project in particular the tension between political expediency and professional project management practices (Morris, 2016)</td>
<td>A transport access strategy is required for access to and from site; this strategy will include rail and sea via a marine off-loading facility, extensions to the existing railway line improvements to the local road network (NuGen, 2016)</td>
<td>Enabling infrastructure projects are required such as the MOLF (marine off-loading facility), cooling structure, power transmission infrastructure and administration buildings (Power-Technology, 2017)</td>
</tr>
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<td>Project also includes 3 radioactive waste storage buildings providing safe and secure storage for the waste on-site. When the waste can be “repackaged” it will be taken to a radioactive waste disposal facility currently in the planning stage (Kelsey, 2016)</td>
<td>Requirement for new £2.8bn, 164 km partially underground power line to connect Moorside to the National Grid (WNN, 2017e)</td>
<td>Project also includes 3 radioactive waste storage buildings providing safe and secure storage for the waste on-site. When the waste can be “repackaged” it will be taken to a radioactive waste disposal facility currently in the planning stage (Kelsey, 2016)</td>
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political persuasion or a deep affiliation to a green agenda. Individuals may have concerns over the safety and security aspects of nuclear and favour renewable forms of energy over nuclear, without necessary fully understanding the finer nuances of energy production economics. It is unfortunate that successive governments (not just in the UK) have had a tendency to downplay the risks associated with megaprojects and overplay the benefits that they deliver (Flyvbjerg, 2014b). This has led to a justifiable public scepticism over the proposed costs and benefits of all megaprojects, not just those in the safety-critical nuclear sector.

The financial issues with nuclear new builds, however, are not just the huge sums of money required up front, but also the many years that need to pass before there is any return of investment. This, as Table II shows, means a strike price is necessary to give investors’ confidence in the long-term financial viability of the project. Indeed the design and construction lifecycle of these nuclear megaprojects spans multiple governmental terms, an issue exacerbated by the UK’s decision to serve notice on its membership of the European Union and the associated Euratom treaty which governs all aspects of nuclear cooperation and nuclear material transfers across European Union nations (Roberts, 2017).

Lessons for policy makers, promoters and project management professionals involved in UK new nuclear build projects

For now, the UK government remains committed to new nuclear as a key part of its energy strategy. Although the future of Moorside is currently uncertain given the change in ownership from Toshiba to KEPCO, the construction of Hinkley Point C is officially underway and a final investment decision on Wylfa Newydd is expected in 2019 (WNN, 2017c). These three plants face myriad technical, institutional, societal and political challenges. The recommendations set out in Table III take the lessons from the megaprojects literature, with the aim of helping policy makers, promoters and project management professionals deliver Hinkley Point C, Moorside and Wylfa Newydd, whilst minimising the risk of overspend and delay on these colossal yet controversial projects. These recommendations are again structured around Frick’s (2017) 5 C’s of megaprojects, acknowledging that these categories are not mutually exclusive and that many of the recommendations will address more than one of 5 C’s. For example, putting the management of risk at the heart of these projects will counter the colossal nature of the project, as well as its complexity and cost. And, making project decision making and project data as transparent as possible should minimise the temptation for policy makers and promoters to become over-captivated by the projects and also mitigate inevitable controversy that the project generates.

Whilst the recommendations, in Table III, are grounded in the megaprojects literature and evidence from a large number of past megaprojects – both good and bad – the real challenge facing the UK’s and other nuclear new build programmes is to take on board this advice sufficiently early in the projects’ scoping and feasibility phases. The reality is that many of the recommendations set out in Table III come too late for projects such as Hinkley Point C – which is already underway and which, according to Morris (2016) is a financial, technical, contractual and governance “mess”. It is highly unlikely that the UK government would be prepared or able to begin the procurement process for HPC again, as Morris (2016) suggests, with sunk costs on the project already into the billions of pounds.

Additionally, there are practical limitations in a number of the recommendations. For example, as Morris (2016) argues, what is the correct reference class to use for the time and cost forecasting of new nuclear build projects. Past UK nuclear projects were completed decades ago using different technologies (Taylor, 2016) and worldwidenuclear power plants currently under construction are invariably running late and over-budget. And, how feasible
Colossal | Captivating | Controversial | Costly | Complex
---|---|---|---|---
Allow sufficient time/effort for front end decisions and project scoping activities (provide alternative solutions to problems) (Mitić and Radučković, 2015; Priemus et al, 2008; Williams, 2009)

Assess what worked on previous nuclear projects (lessons learnt, site visits, consult experts) (Davies et al, 2017)

Make project data as transparent and visible as possible to avoid contested information. Have a single point of truth for the project. (Klakegg et al, 2015; Priemus et al, 2008)

Organise for the unseen (don’t neglect the wait or do nothing option) (Davies et al, 2017)

Pay attention to the weakest links in the technology and the organisation – for instance impurities in reactor steel at Flamanville (Ansar et al, 2016)

Establish effective project governance mechanisms (within and cross organisational) (Biesenthal et al., 2017; Morris and Gerald, 2011)

Deploy rigorous and transparent front end decision making

Devote time/effort to active stakeholder management (Locatelli et al, 2017)

Prepare for conflict between "political goal setters and practical [nuclear project] professionals" (Morris, 2016, p. 18)

Avoid one-size fits all contracts (fixed price more appropriate for low uncertainty areas, target-cost for more uncertain domains) (Davies et al, 2017)

Pay particular attention to the interfaces – technical and organisational. Try to build a project culture that cuts across different institutional or national cultures (Davies and Mackenzie, 2014)

Implement rigorous project gateway review process (Klakegg et al, 2015)

Use reference class forecasting for costs, timescales, risks and benefits. Interrogate the business case closely. (Flyvbjerg, 2013). Consider carefully what appropriate reference class for new nuclear build is (Morris, 2016)

Engage early and often with communities close to the new nuclear build (Invernizzi et al, 2017)

Foster early nuclear contractor involvement and relationship building (Saunders et al, 2016)

Foster increasing professionalism of project organisations (Klakegg et al, 2015)

Setup process for inevitable design changes (whether technical, institutional or political) – police this process closely (Flyvbjerg et al, 2003)

Keep governmental communications channels wide open and two-way (Morris, 2016)

Generate realistic cost estimates, retain sufficient contingency funds and acknowledge the uncertainties in nuclear projects rather than hide/ignore them (Flyvbjerg et al, 2003; Klakegg et al, 2015; Saunders et al, 2016)

Promote increasing professionalism of project organisations (Klakegg et al, 2015)

Establish and maintain good risk management discipline (covering design, construction, operation, labour, legal, political, contractual, financial and economic risks) (Brookes et al, 2017; Sanchez-cazorla et al, 2017)

Consider new nuclear build as a portfolio of projects at governmental level (phase activities where possible to limit strain of resources)

Generate realistic cost estimates, retain sufficient contingency funds and acknowledge the uncertainties in nuclear projects rather than hide/ignore them (Flyvbjerg et al, 2003; Klakegg et al, 2015; Saunders et al, 2016)

Reduce reliance on bespoke nuclear solutions – use scalable/modular solutions and test/pilot new technology off site first (Ansar et al, 2016; Davies et al, 2017)

Table III. Recommendations for policy makers, promoters and project managers for new nuclear build projects
is it for politicians and policy makers to hold fast to a “wait or do nothing option” as argued by Davies et al. (2017), while energy analysts and commentators warm apocalyptically of the “lights going out in the UK by 2025”. Finally, would any of these vast projects ever pass a final investment decision without a sense of optimism (Flyvbjerg, 2014b) that if we can put a man on the moon and contemplate travelling to Mars then we can surely build a fleet of new nuclear power stations here on Earth.

The above caveats aside the recommendations provided in Table III provide a framework for project scoping, delivery and decision making for worldwide new nuclear power plant construction. At the very least the recommendations provide a set of questions that promoters, policy makers and project managers involved in these projects would be advised to take heed of. Whilst the die may be cast for Hinkley Point C, Flamanville and Olkiloto 3, it is not too late for Moorside and Wylfa Newydd and other proposed plants around the globe that are still in the feasibility and scoping stage to learn from the literature and practice of megaprojects as described in this paper.

Conclusions
This conceptual paper makes contributions to theory and practice in the domain of megaprojects, and specifically to nuclear new build projects. Theoretically the paper reviews the literature on megaprojects and synthesises a set of features of megaprojects that distinguish them from more conventional projects. We argue that megaprojects are simultaneously trait-making, rather than trait-taking, possess a temporality and timescale in excess of typical infrastructure projects, suffer from high levels of uncertainty and ambiguity, are organisationally complex, costly and are highly likely to destroy rather than create value. Second, we argue that the challenges facing new nuclear build are not merely technological but also institutional, political and societal in nature. The nature of these challenges is exemplified using the three proposed new nuclear build projects in the UK.

In terms of contributions to practice, we draw on the megaprojects literature and the lessons from previous megaprojects to proffer recommendations for how the new nuclear build programmes, both in the UK and in other regions of the world might be structured, planned and delivered to minimise the risks of failure. The major limitation in this study is that it is based on a theoretical literature review and public domain data only. That said, there is no shortage of case study based megaprojects research which has been used to propose and validate a number of theories of megaprojects. Indeed, Li et al. (2017) argues that the field of megaprojects research now requires more interdisciplinary and multilevel studies and studies that combine theory and practice to address the real-life issues faced by mega projects. This paper contributes to this research agenda by drawing on both extant megaproject theory and the challenges facing a specific set of nuclear new build megaprojects, to propose a set of succinct recommendations for policymakers, promoters and practitioners tasked with delivering these colossal yet controversial projects.

As such, this paper lays the groundwork for future empirical research into the planning and delivery of this new generation of new nuclear build projects. A future research agenda, with proposed research questions might encompass the following areas.

First, interviews with new nuclear build project policy makers, promoters and project managers to identify the specific challenges involved in new nuclear build projects and the differences and similarities between new nuclear build and other megaprojects. This would validate and extend the findings of this current conceptual paper. Second, further empirical work is now required to track the three nuclear new build projects, the extent to which they have adopted this set of recommendations and the subsequent performance of the projects. Such empirical studies are likely to be qualitative in nature, and utilise a number of research
methods including semi-structured interviews and ethnographic observations. Finally, the challenges facing the nuclear sector extend beyond the provision of new nuclear power capability. In the UK and across the globe, major nuclear decommissioning works are underway to dismantle, make safe and return former civil nuclear sites to a clean state. Many of these projects have budgets that are in excess of £1bn will span a number of decades and involve the same complexities and uncertainties of technology, stakeholders and funding as new nuclear build projects. Further empirical studies that specifically address the under-researched domain of nuclear decommissioning projects would also contribute to our conceptualisation of megaprojects, and to addressing the real life issues faced by nuclear megaprojects over the entire nuclear lifecycle.

References


Delivering new nuclear projects


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Determinants of bank loan spread in project finance

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Abstract

Purpose – The purpose of this paper is to develop a better understanding of the pricing decisions of banks for project finance (PF) loans and the main drivers affecting the cost of debt in infrastructure deals. As infrastructure projects are typically highly leveraged, the cost of bank lending is an important driver of the overall funding costs for the project.

Design/methodology/approach – First, the paper provides a general review of the drivers of the cost of funds in PF. Second, the paper develops a regression analysis of the loan’s spread on four categories: project, loan, bank characteristics and the economic environment. By using a new data set of InfraDeals containing data on bank spreads of more than 700 infrastructure projects worldwide from 2006 to 2016.

Findings – The results show that the cost of debt is predominantly affected by the market and the business cycle, rather than the structuring of the project. This implicates that the timing when the deal is closed weighs more heavily than the specificities of the project itself.

Practical implications – The results have important policy implications. As PF deals are often paid for by taxpayers, this paper could help policymakers to use public funds for infrastructure in the most efficient way.

Originality/value – One weakness of existing studies in PF loan pricing is that they undervalue the role of the economic environment in the cost of debt. Few studies in the literature include macroeconomic control variables in their model and the others do not seem to find significant results. This paper reveals new insights on the pricing decisions of banks for PF loans.

Keywords Project finance, Infrastructure, Bank loan, Cost of debt, Spread

Paper type Research paper

Introduction

Across the world, there is an intense need to invest more in infrastructure. Population growth, urbanization and industrialization are spurring demand for infrastructure investments in developing countries. In the developed world, public spending is being curbed by austerity. Most Western economies face an ageing infrastructure as infrastructure spending has declined over recent decades. On top, infrastructure demand is further driven by population ageing, stricter environmental regulation and globalization. The infrastructure gap is estimated at about $3.7tn annually[1]. This is problematic given the key role infrastructure plays in an economy (Abiad et al., 2014; Brons et al., 2014; Kessides, 1993; Roller and Waverman, 2001; Prudhomme, 2005; Aschauer, 1989). To narrow this infrastructure gap, governments increasingly look to the private sector.

Project finance (PF) is one of the most common finance techniques for the financing of single-purpose, capital-intensive projects, such as infrastructure. A legally independent project company or special purpose vehicle (SPV) is set up to carry out the construction and operation of the project. The SPV is typically financed partly by equity investors providing a limited amount of private equity capital and partly by a syndicate of banks or other lending institutions granting loans. One of the primary advantages of this method is that it provides for off-balance-sheet financing of infrastructure projects, which will not affect the credit of the shareholders or the government contracting authority. The debt is non-recourse as 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.

In this group of PF deals, we have public-private partnerships (PPP) which became an increasingly popular method of procurement for public infrastructure projects. PPPs are
transactions where a public-sector entity contracts with the private sector to realize public infrastructure projects. Since 2005, more than 1,400 PPPs were closed in Europe and more than 3,100 worldwide[2]. Although the project pipeline was affected by the financial crisis in 2007, the crisis made PPP even more interesting as governments were forced to improve the infrastructure base of their country to strengthen their respective economies. Due to budgetary constraints, governments increasingly look to the private sector to narrow this infrastructure gap. Both in mature economies like Europe and developing countries, PPP schemes are expected to play a major role in addressing the infrastructure challenges. Due to its attractive characteristics (insensitivity to the economic cycle, stable cash flows, long asset life cycle) the appetite for infrastructure investing among institutional investors, such as pension funds, is growing (Standard and Poors, 2016; Della Croce and Yermo, 2013; Preqin, 2014–2017; Blackrock, 2014, 2015; Caledon Capital Management, 2014).

In this paper, the focus is on the debt component of financing, rather than equity. More specifically we focus on the bank loans as they represent the major part of PF funding. 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 normally not exceed 20–30 percent[3]. In certain sectors such as social infrastructure, it is not uncommon for projects to be 90 percent debt financed[4]. Fewer equity injections are required which lowers the cost of a project. Another advantage of bank lending is that they typically have the expertise to play a monitoring role. The more debt in a project, the more the cost of debt affects the overall cost of financing. As infrastructure projects typically have high debt-to-equity ratios, the margin on PF loans is the main driver of the cost of funds and thus the feasibility of infrastructure projects. Although bond financing is gaining popularity, bank loans represent the major share of debt financing. Since equity financing is costlier than debt financing, PF deals could significantly decrease funding costs by achieving high leverage. However, a high leverage ratio is also its main point of vulnerability. The higher the debt-to-equity ratio, the more likely the project company will run the risk of a loan default during hard times, possibly terminating the project.

Debt to infrastructure projects is typically priced based on a floating and fixed component. The floating component is normally based on interbank lending rates such as Euro Interbank Offered Rate (EURIBOR) in the euro market. The fixed component or margin is typically expressed as a number of basis points over interbank lending rates. Since the interbank lending rate is considered as a risk-free rate, the cost of debt is mainly driven by the margin or spread banks ask. The goal of this paper is to define the main factors that significantly affect this margin and thus the cost of debt in infrastructure deals. Our paper adds new insights to the pricing decisions of banks for PF loans. In particular, we develop a better understanding of the way banks evaluate different risks and project characteristics when granting loans for infrastructure projects. This could lead to a better structuring of projects. Therefore, it offers a useful framework both for infrastructure investors and PF managers on how they should structure their projects to minimize the cost of debt. This is also important from a policy point of view. As PF deals are often paid for by taxpayers, this paper could help policymakers to use public funds for infrastructure in the most efficient way. Further, we want to explore the role of economic conditions on the cost of PF debt. The large fluctuations in spreads after the financial crisis seem to indicate that previous studies underestimated the impact of the macroeconomic environment. Is the structuring of the project important or is it just a matter of timing so we should wait for the right economic conditions to launch infrastructure projects? The latter indicates that the price is given by the market and the project structuring and characteristics play a less important role.

In the remainder of this paper, we develop a better understanding of the bank loan cost and the different variables affecting the spread. In the first part, we provide an overview of the main previous empirical studies analyzing the drivers of the cost of funds in
infrastructure projects. Then, in the second part, we propose our own empirical analysis answering these questions:

RQ1. What are the main drivers of the cost of financing for infrastructure?

RQ2. How do banks price PF loans? Do margins differ across sectors and countries?

RQ3. What is the relative importance of the economic setting and project characteristics?

Our goal is to define the drivers of spreads and to show how the spread varies in relation to these variables.

Literature review

The academic literature includes several studies about the pricing of PF loans, the main ones being developed by Dailami and Leipziger (1998), Pollio (1998), Kleimeier and Megginson (2000), Esty and Megginson (2001), Esty (2004), Altunbaş and Gadance (2004), Sorge and Gadance (2008), Dailami and Hauswald (2007), Blanc-Brude and Strange (2007), Corielli et al. (2010), Bouzguenda (2014). Borrowing conditions for infrastructure are influenced by many different factors. Compared with corporate loans PF deals show very specific features which should be reflected in the pricing of these loans. Blanc-Brude and Strange (2007) argue that the traditional loan pricing models are not completely successful in explaining what determines the cost of debt in PF transactions. As will be discussed below there seems no consensus in the literature on all the factors that drive the cost of debt for infrastructure, let alone their impact on the spread. Each study includes a different set of explanatory variables. Some key indicators of the spread are used in most empirical papers, such as the country risk, maturity and leverage level of the project. However, other variables appear in one or the other study. The remainder of this section identifies all factors that might have an impact on the spread and summarizes the estimated impact of each of these factors on the cost of funds in infrastructure projects, as is found in the existing literature.

We categorized the drivers of the loan spread to PF in four broad categories: loan characteristics, project characteristics, bank characteristics and macroeconomic variables. The first category includes all variables which are linked to the specificities of the loan itself, such as the term structure, loan size, loan type and credit enhancement. All factors related to the project’s characteristics fall in the second category, including the capital structure, industry and different risks related to the project (construction, revenue, country, currency and credit risk). Third, we delve deeper into the impact of the bank’s characteristics on the spread, such as market power, the size of the banking syndicate, prestige of the arranging bank(s) and bank origin. Finally, we summarize the studies analyzing the impact of the macroeconomic environment on the spread. This category includes inflation, the debt-to-GDP ratio, and real GDP growth. The literature review is summarized in Table I.

Loan characteristics

First, we discuss all factors related to the loan itself, including the term structure, loan size, loan type and credit enhancement. First, we summarize the literature analyzing the impact of the term structure on the spread in PF loans. Previous research by Sorge and Gadance (2008) argue that spreads of PF loans have a hump-shaped or non-linear term structure. This pattern can, however, not be revealed in our sample. Also, Blanc-Brude and Strange (2007) argue that the term structure of PPP loans is not non-linear as it failed to reach statistical significance in a test for non-linearity by using the log (spread). Blanc-Brude and Strange (2007) argue this was probably due to a strong country, instrument and year effects driving the spreads of PPP loans rather than any specific term structure. A strong country effect was found for Spain where spreads were increasing with maturities probably due to a marginally decreasing rate of traffic growth during the 1990s/early 2000s. Blanc-Brude and
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(continued)
Table I. Determinants of bank loan spread

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<th>Determinants</th>
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Strange (2007) argue that the mixing of different instrument types is a second factor explaining the non-linear term structure. Several instruments (bridge loans[5], standby facilities[6], term loans[7], etc.) are used and each one has different average maturities with term loans. Finally, Blanc-Brude and Strange (2007) observed strong year effects in their samples. As the PPP debt market became more developed and risks decreased, lenders gradually extended loans with lower spreads and longer maturities over 1994-2005. By analyzing PF credit spreads on a cross-section basis, longer maturities are associated with lower spreads. However, this is simply a time effect and not evidence of a non-linear term structure.

Empirical studies analyzing the link between tenors and spreads in PF deals are limited and did not reach a consensus. Although loan maturity is a major systematic driver of the cost of debt in standard corporate finance, Kleimeier and Megginson (2000) and Dailami and Leipziger (1998) argue that maturity does not have a significant impact on PF loan pricing. Bouzguenda (2014) find that that loan maturity has a negative impact on the spread with the average spread declining with about 2.3 basis points for a one-year increase in the loan term. Since credit risk is spread over time, lenders require a lower spread. Also, Altunbaş and Gadanecz (2004) remarkably find that longer loan tenors result in lower pricing. An explanation for this negative relationship between maturities and credit spreads is given by Kleimeier and Megginson (2000) who argue that residual sources of uncertainty are reduced and projects start to generate revenues only after the construction period. Therefore, credit risk in PF tends to be relatively high at project inception and to diminish over the life of the project. Long maturities are critical for the financial viability of the project as shorter loan maturities imply larger debt repayments due in the early stages of the project. Extending loan maturities for any additional year might drive up ex ante risk premia but only at a decreasing rate. Hence, Sorge (2004), Sorge and Gadanecz (2008) argue that long-term PF loans would be perceived as less risky and cheaper than shorter-term credits.

By analyzing about 300 European PPP deals, Blanc-Brude and Strange (2007) find, on the contrary, a significantly positive impact of the tenor on spreads. However, they find only a marginal linear effect on the spread. Blanc-Brude and Strange (2007) argue that PF loans could effectively eliminate the risk of longer maturities due to credit enhancement and other structuring devices, while standard corporate debt could not. Since the risk associated with longer maturities cannot be completely diversified away, maturities are a positive driver of the average spread in corporate loans while not in PF lending. In contrast, Blanc-Brude and Strange (2007) argue that PF loans may well achieve a complete diversification of longer maturities. Also in the case of PF collateralized debt obligations (CDOs)[8], Buscaino et al. (2012) find a significantly positive effect of maturity, indicating that investors charge a premium for tranches with longer maturities. Buscaino et al. (2012) also prefer the weighted average maturity (in years) of the issue over nominal maturity.

However, we must be cautious when interpreting these results as the relationship between the term structure and the spread might be influenced by other factors, such as country risk (Bouzguenda, 2014) and political risk guarantees (Sorge and Gadanecz, 2008; Sorge, 2004). Bouzguenda (2014) argues that banks grant longer loan maturities for projects with lower country risk levels. However, the results were not significant. Since political risk guarantees both lengthens maturities and lowers spreads of PF loans (Sorge and Gadanecz, 2008; Sorge, 2004), long-term projects might have lower spreads because these loans have a higher availability of guarantees and not because of the longer maturity. This potential endogeneity of maturity might affect the results. Since projects with long maturities are particularly vulnerable to political risk, project lenders increasingly require political risk guarantees from multilateral development banks or export credit agencies, especially in emerging economies. By including an interaction term to control for the positive link between maturity and political risk guarantees, Sorge and Gadanecz (2008) and Sorge (2004)
find that the coefficient turns out negative and highly significant. Guarantees help to obtain long-term PF loans, exacerbating the hump-shaped structure. However, the unchanged coefficient of maturity indicates that the estimated relationship between spread and maturity for PF loans remains hump-shaped even in the absence of agency guarantees. Country risk and political risk guarantees influence the spread also directly (see infra).

Second, we review the literature related to the loan size. Sorge and Gadanecz (2008) and Bouzguenda (2014) observe a significant negative impact of deal size on the spread. Sorge and Gadanecz (2008) explain the negative relationship by suggesting either that more creditworthy borrowers are granted larger loans or that there are significant economies of scale for banks to arrange larger syndicated credit facilities or both. Bouzguenda (2014) explains the result by the fact that higher loan amounts are granted for a longer duration and the credit risk is therefore spread over time, which generates a lower spread. As the spread decreases with increasing maturities (lower default risk), this could also drive the negative relationship between the amount of funding and the spread. Bouzguenda (2014) further notes that the negative impact of deal size on spread could also be driven by a country risk effect as banks tend to grant larger loans in low-risk countries. Krishnamurthy and Muir (2016) and Kwan (2010) provide another possible explanation for the negative relationship by relating loan size to bank dependency. Small loans reflect small borrowers which are more dependent on a relationship with a single bank, while large loans reflect large borrowers who usually have relationships with multiple banks where the competition effect can play stronger. Contrary to the papers above, Kleimeier and Megginson (2000) find that the loan’s amount is irrelevant in the case of loans to PF. This is consistent with Blanc-Brude and Strange (2007) which also find no significant relationship between the size of each tranche and the cost of debt.

Third, we discuss the role of the loan type on the spread. Blanc-Brude and Strange (2007) argue that the lack of control for differences in instrument types between tranches is one weakness of existing studies of PF loan pricing. Banks provide different types of loans to the SPV, such as term loans, multilaterals[9], equity bridge loans and revolving credit[10] or capex facilities[11]. Each of these instruments has its own specific risk profile and falls in a different debt class (senior secured, mezzanine or subordinated). As each instrument is designed to capture specific project risks, Blanc-Brude and Strange (2007) include dummy variables to capture the effect of different types of instruments on the spread. These dummies are found to significantly affect the spread. While the spread rises with mezzanine or subordinated debt, up to 250 basis points, short-term bridge or revolver financing was about 28 basis points below average spreads. The difference reflects the varying degrees of risk related to different types of instruments.

Finally, we review the literature discussing the impact of credit enhancement on the spread. Ehlers (2014) notes that additional guarantees are often required by lenders to reduce the probability of default, to lower the cost of financing for large projects and to broaden the investor base toward institutional investors. By comparing PF loans with a control group of syndicated loans, Kleimeier and Megginson (2000) argue that PF loans have more frequent third-party guarantees. Either provided by the public sector or other external parties, such as the EIB, multilateral agencies or development banks, credit enhancement typically reduces the default risk as these parties are, directly or indirectly, taking project risk. This has also an impact on the spread. The academic literature (Pollio, 1998; Dailami and Leipziger, 1998; Kleimeier and Megginson, 2000; Altunbas and Gadanecz, 2004; Sorge and Gadanecz, 2008; Bouzguenda, 2014; Ehlers, 2014) seems to agree that spreads significantly decrease with the existence of guarantees. The empirical studies typically include a dummy variable taking the value 1 if there is a guarantee and 0 otherwise. By providing a cross-country assessment of the risk mitigating role of explicit or implicit guarantees, Sorge and Gadanecz (2008) find that they significantly reduce the ex ante credit spreads of PF loans by almost one third on average or about 50 basis points. Limiting the sample to only emerging countries, coefficients on third-party guarantees are even larger in magnitude. Also, Altunbas and Gadanecz (2004)
highlight that third-party guarantees – in particular, political risk guarantees – play an important role in PF especially in emerging countries. By analyzing a data set of PF loans whereof 28 percent includes external guarantees, Bouzguenda (2014) shows that the existence of external guarantees reduces the spread with 91.4 basis points, making credit enhancement one of the main factors affecting the spread of PF loans in their analysis. Bouzguenda (2014) further notes that the impact of external guarantees on the spread varies with country risk as it reduces the average spread with 89 basis points in low-risk countries, while only 68 basis points in high-risk countries.

Project characteristics
The second category bundles all factors related to the project’s characteristics, including the capital structure, industry and different risks related to the project. First, we discuss the role of the capital structure. PF deals, which are financed by a mix of equity and debt, are typically highly leveraged with leverage in some cases reaching 1985-2015 or even higher. For sponsors, there exists a trade-off between cheaper credit and lower equity contribution (Corielli et al., 2014). The SPV has an incentive to replace equity with cheaper debt to reduce the capital cost of the project. However, higher leverage raises default risk driving up risk premia and borrowing costs of the project. Leverage is not trivial for lenders as highly leveraged projects transfer part of the default risk from equity to debt holders (Visconti, 2010). Beyond a certain leverage level, lenders will no longer be willing to finance the project. Some papers (Kleimeier and Megginson, 2000; Blanc-Brude and Strange, 2007; Corielli et al., 2014) empirically assessed the impact of the leverage ratio on the spread of the project. Kleimeier and Megginson (2000) and Corielli et al. (2010) show a positive relation between leverage and the loan spread. Corielli et al. (2010) show that an increase of one percentage point in the debt-to-equity ratio of the project leads to an increase in the spread with 41 to 75 basis points. Corielli et al. (2010) also note that the leverage ratio is not exogenously determined in defining the spread as the leverage ratio itself is driven by the spread. In contrast to the studies above, in Blanc-Brude and Strange (2007), the effect of project leverage on the pricing of the tranches is statistically insignificant.

Second, we review the literature on how the spread varies with the industry. The literature shows some evidence of varying spreads across industries. By exploring the credit risk premium on infrastructure projects in developing countries, Dailami and Leipziger (1998) argue that lenders impose a higher spread in road transportation projects, followed by power projects. Kleimeier and Megginson (2000) show that PF loan spreads are higher when the borrower operates in an industry intangible assets. Likewise, Altunbaş and Gadanez (2004) find that the coefficient of sector dummies (high-tech industry, infrastructure, transport, PF) varies as industries might have different risk characteristics and therefore incur different pricing of their loans. By analyzing the pricing of 5,000-plus syndicated credits granted to developing country borrowers over 1993-2001, the authors find that loans for infrastructure projects carry a premium, while there is a small discount on loans to the high-tech and transport sectors. However, when macroeconomic variables are included, several dummies become insignificant, possibly because macroeconomic indicators take away some of the sector information. Bouzguenda (2014) also marks the project industry as a very important element and argues that it would be interesting to see if the bank margin varies significantly depending on the specificities of the industry. This is left for future research in this paper. In contrast to the studies above, Corielli et al. (2010) show that sectors are insignificant in defining the spread. However, they significantly affect debt-to-equity ratios in this study.

Finally, we review the literature discussing the impact of different types of risk on the spread (construction –, revenue –, country –, currency – and credit risk). After discussing the distinction between the two main types of risk, systematic and idiosyncratic
risk, we delve deeper into the different types of risk separately. First, portfolio-level or systematic risks (e.g. revenue risk) is determined by general economic conditions. The systematic risk could not be passed on to third parties and investors require a premium to bear it. Second, project-level or idiosyncratic risks (e.g. construction risk) relates to variables that are specific to the asset. This risk could be effectively shifted or diversified through the contractual structure and attracts no additional premium in an efficient capital market. Blanc-Brude and Strange (2007) show that the cost of PF debt is only driven by systematic risks[12], not by project-level, idiosyncratic risks even if significant[13]. Lenders only price risks that cannot be passed through the contractual structure. Consequently, banks require higher margins to compensate for the additional risk. Recently, the literature (Corielli *et al.*, 2014) start to gain attention for the role of contractual arrangements in PF deals as it is one of the key ways to reduce the spread (Blanc-Brude and Strange, 2007) and by setting up a contractual structure where all risks are allocated to the party that is best able to control it, the “cost of risk” could be reduced.

In the remainder of this section, we discuss construction, revenue, country, currency, and credit risk in more detail. Although projects face significant incremental risk during the construction phase (Moody’s, 2017) and this affects the probability of default (Blanc-Brude and Strange, 2007), the impact of construction risk on the spread is not clear-cut. Buscaino *et al.* (2012) clearly show that the presence of construction risk is reflected in the pricing of PF CDOs. The share of projects still under construction at the time of the CDO launch has a significant and upward effect on the spread of PF CDOs. In a PF CDO, a larger fraction of projects under construction could expose investors to higher risks of default than CDOs. Blanc-Brude and Strange (2007) included sector dummies to capture differences in construction risk between sectors. Flyvbjerg *et al.* (2003), for instance, have reported that bridges and tunnels have larger construction risk as they have historically experienced much greater cost overruns and delay problems than other road projects. However, these sector dummies did not add significantly to the explanatory power of the model. Thus, although projects differ with respect to the construction risk they face, this does not lead to a higher cost of debt.

Second, revenue risk or the risk that either expected volume and/or price will not be achieved going forward is another material risk factor in PF debt. Several papers (Moody’s, 2017; Flyvbjerg *et al.*, 2003; Bain and Plantagie, 2004) argue that demand and traffic risk are the main sources of default and financial distress in infrastructure projects. By including a transport price index (reflecting a country’s willingness to pay for the use of toll roads), a variable measuring the rate of traffic growth and several dummies reflecting different toll types (actual tolls, shadow tolls[14] and availability payments), Blanc-Brude and Strange (2007) find market or revenue risk, positively and significantly affecting the spread. Projects collecting real tolls have a higher cost of debt than shadow toll roads, which, in turn, have a higher spread than those where revenues were collected through availability payments. Generally, these results also indicate that projects are cheaper to finance in countries with historically high rates of traffic as revenue risk in these countries is lower. In another paper, Buscaino *et al.* (2012) show that the spread of PF CDOs is significantly and positively affected by the percentage of projects that are subject to market risk. By adding the share of PF deals in the CDO pool with no long-term selling agreements (or offtake agreements) as a proxy for market risk to the model, Buscaino *et al.* (2012) finds that the primary market spread is significantly higher when the underlying PF loans bear a higher level of market risk.

Another important risk factor is the country risk or political risk. Bouzguenda (2014) defines country risk as the probability that changes in the political, economic, financial or social rules in the host country may cause the inability of the borrower to fulfill its obligations to repay the debt. In the literature, several variables are used to capture country
or political risk, including the corruption index provided by Transparency International (Sorge, 2004), the JPMorgan Emerging Market Sovereign Bond Index as a proxy for general investor sentiment toward emerging country risk (Sorge and Gadanez, 2008), the International Country Risk Guide (ICRG) which attributes a score to countries from 0 (highest risk) to 100 (lowest risk) based on 22 variables (Bouzguenda, 2014) and a reclassification of the rating of the borrower’s country (Corielli et al., 2014; Altunbaş and Gadanez, 2004; Dailami and Leipziger, 1998). Several empirical studies (Pollio, 1998; Dailami and Leipziger, 1998; Kleimeier and Megginson, 2000; Esty and Megginson, 2001; Sorge and Gadanez, 2008; Sorge, 2004; Altunbaş and Gadanez, 2004; Corielli et al., 2014; Bouzguenda, 2014) show that country risk has a materially upward impact on the funding costs. Banks set higher margins for loans to projects in risky countries. Evidence shows that lenders systematically charge higher risk premia on borrowers from emerging markets characterized by higher political risk (Sorge and Gadanez, 2008; Sorge, 2004) or countries with weak creditor rights and poor legal enforcement (Esty, 2004). Sorge and Gadanez (2008) show that the presence of political risk guarantees in PF deals in emerging countries significantly reduces ex ante credit spreads by almost one third on average (i.e. by about 50 basis points from an average spread of about 150 basis points). Corielli et al. (2010) show that the loan spread of a project located in a country qualified as best-rated is 63 basis points lower than a speculative-grade country and 105 basis points when the project is built in countries with poor ratings. Bouzguenda (2014) finds that an increase of 1 point in the ICRG (less risky country) results in reducing the spread of 2.3 basis points, and vice versa. The impact could also work in the other way around with low country risk resulting in a lower spread. In a sample of European projects, Blanc-Brude and Strange (2007) show that a country dummy for the UK, which is one of the world’s most mature and attractive infrastructure markets for private investors has driven down the cost of debt.

Fourth, when the project revenues are generated in a different currency than the loan, currency risk arises. By including a dummy that takes the value of 1 if the currency risk exists, and 0 otherwise, Kleimeier and Megginson (2000) show a significant downward impact of currency risk on the spread with approximately 42 basis points. This surprising result is explained by the lower rates that banks offer to international borrowers who are willing to borrow in US dollars or in another hard currency. Also, Pollio (1998) finds that the spread decreases with currency risk. As banks will usually require the borrower to cover the currency risk, the sponsors will benefit from a lower spread when they eliminate this risk. In Bouzguenda (2014) and Corielli et al. (2010), the impact of the variable currency risk on the spread is insignificant.

Fifth, the spread might also vary with credit risk. In the PF market, evidence on the credit performance of public infrastructure projects is limited. However, some studies (Standard and Poor’s, 2016; Moody’s, 2017) provide some useful insights into the default and recovery characteristics of PF loans. The most recent study by Moody’s (2017), which assessed the credit performance of 6,389 projects representing 62 percent of all PF bank loans from 1983 to 2015, estimated the recovery rate at, on average, 79.5 percent. Several papers (Blanc-Brude and Strange, 2007; Kwan, 2010; Buscaino et al., 2012) argue that higher credit risk is associated with a higher spread. It is, however, important to make a distinction between contractually managed and unmanaged credit risk. Several authors (Kleimeier and Megginson, 2000; Esty and Sesia, 2002; Blanc-Brude and Strange, 2007; Corielli et al., 2014) argue that ex ante risks are allocated in nonfinancial contracts before sponsoring firms resort to financial intermediaries to request external funding. Blanc-Brude and Strange (2007) expect that lenders would use the contractual structure of the project to minimize the credit risk as much as possible ex ante. Only the remaining risk factors, those that are not explicitly managed through contracts, should drive the credit spread of a project’s risky debt (e.g. revenue risk). This is confirmed by a PF case study in Dailami and Hauswald.
(2007) who find that project’s credit spreads are especially driven by unmanaged risks. Further, Corielli et al. (2010) show that the use of contractual arrangements in PF deals, shifting risks from SPVs to their counterparties, lowers the credit risk premium required by lenders. Finally, for CDOs backed by PF loans, Buscaino et al. (2012) argue that credit rating is the most important variable in determining the tranche spread at issue with spreads rising when ratings worsen. The paper shows that credit rating dummies, which are used as proxies for CDO default and recovery risk, are statistically significant at the 1 percent level and explain most of the variability. Buscaino et al. (2012) also find that the spread significantly decreases with the seniority of the tranche. Investors require a lower spread for more senior tranches as the loss percentage that the portfolio must suffer before the tranche is hit is lower and thus recovery values are higher.

**Bank (and sponsor) characteristics**

In this category, we delve deeper into the impact of the bank (and sponsor) characteristics on the spread, including the role of market power, the size of the banking syndicate, prestige of the arranging bank and bank origin. Visconti (2010) even defines the characteristics of the bank as a key factor affecting the spread. First, we discuss the role that market power might play in banks’ interest margin. Although quantifying the impact of market power on the spread appears difficult, some empirical evidence is provided by Corielli et al. (2010) and Altunbaş and Gadancetz (2004). By analyzing more than 1,000 PF loans worth around $195bn closed over 1998-2003, Corielli et al. (2010) study the impact of the market power of the sponsors in PF deals on the loan cost. Lenders will demand higher spreads and/or larger equity contributions when sponsoring firms are also key contractual counterparties of the SPV as compensation for higher sponsor control over project cash flows. Altunbaş and Gadancetz (2004) find evidence of banks themselves exploiting their market power in syndicated lending as they charge borrowers higher prices for additional credit facilities.

Second, also the size of the banking syndicate is often tested in the literature as a driver of the cost of debt. Kleimeier and Megginson (2000) argue that bank loans provided by a syndicate of banks rather than a single bank allow the diversification of the large risks of a single project among a larger group of banks. Contrary, Sorge (2004) notes that a larger syndicate size makes project monitoring more difficult. Most studies include dummy variables to control for the size of the syndicate of lending banks. Altunbaş and Gadancetz (2004) defined two dummies, one for bilateral deals (with only one lending bank), and another for projects with more than two banks in the syndicate. Sorge and Gadancetz (2008) include a dummy for bilateral loans and the number of banks in the syndicate as explanatory variables. Several papers (Esty and Megginson, 2001; Altunbaş and Gadancetz, 2004; Esty and Megginson, 2003) provide empirical evidence that the loan’s cost is positively related to the number of arranging banks in the syndicate. These studies show that a large syndicate size does not exercise a downward pressure on the spread, indicating that competition among banks bidding for the facility does not reduce loan pricing. Esty and Megginson (2001) argues that a larger number of banks in the syndicate increases profits control, discourages expropriation by the government and allows the renewal of contracts at a lower cost. Altunbaş and Gadancetz (2004) argue that the lower spread related with bilateral loans possibly reflect the borrowers’ special relationship with their core banks. Contrary, other studies (Strahan, 1999; Kleimeier and Megginson, 2000; Sorge and Gadancetz, 2008) argue that larger syndicates exercise a downward pressure on credit spreads. Sorge and Gadancetz (2008) explain the positive significant coefficient on the dummy for bilateral deals by the risk-mitigating effect of sharing the uncertainty connected with PF among more lenders. Finally, Blanc-Brude and Strange (2007) find no significant effect of the size of the banking syndicate on debt pricing.
Finally, we review the literature on the prestige of the arranging bank(s) and bank origin. Some studies (Corielli et al., 2010; Gatti et al., 2013) note that spreads on PF loans depend on the prestige of the arranging bank. Prestigious arranging banks influence overall loan spreads downward and allows larger and more highly leveraged PF deals to be funded. The other banks in the syndicate pay for this as prestigious lead arrangers require a larger fraction of the up-front fees. In another study, there is evidence of a link between the spread and the origin of the bank. Esty (2004) argues that spreads are upward linked to the share of funding provided by foreign banks. Although they have an informational disadvantage in these countries, a lack of lending capacity in certain markets creates room for foreign banks to enter the market. But this comes also at a higher cost.

Macroeconomic environment
Finally, we discuss the macroeconomic environment, including inflation, the debt-to-GDP ratio, and real GDP growth. First, we summarize the literature analyzing the impact of inflation on the spread in PF loans. By exploring the determinants of the credit risk premium on infrastructure projects in developing countries, Dailami and Leipziger (1998) show that lenders require a higher risk premium and thus a higher spread on loans in countries with high inflation. The estimated coefficient for inflation is statistically significant. Furthermore, the authors find that the relationship between the credit risk premium and inflation seems to be non-linear as countries with domestic rates of inflation exceeding a benchmark have been further penalized. Analyzing the pricing of syndicated credits, Altunbaş and Gadancetz (2004) also note that the inflation rate is positively associated with the cost of debt. Public dissatisfaction with inflation may, in turn, lead to political instability, explaining the link between inflation and the risk premium. By including a past-four-year average of the inflation rate at the time of financial close to reflect lenders’ perception of inflation risk, Blanc-Brude and Strange (2007) contrarily find that inflation risk did not affect the cost of debt in the model. The insignificant coefficient in this study could be explained by the focus on road construction projects as tolls and road maintenance costs are often inflation-indexed.

In the field of development financing, there is a rich literature (Greenwald et al., 1984; Frieden, 1991; Bernanke and Gertler, 1989), which provides a broader understanding of the economic conditions that affects a country. Greenwald et al. (1984) describe the possible linkages between capital markets, the cost of capital and business cycles and provides informational explanations for several widely observed macro-economic phenomena. Bernanke and Gertler (1989) show that bad economic times are typically associated with a high incidence of financial distress, e.g., insolvency and bankruptcy. Therefore, reductions in collateral in bad times increase the deadweight agency costs of borrowing, which in turn depress the demand to finance real investment projects as the borrowers are less solvent. Although financial markets are highly integrated within the developed world, Frieden (1991) emphasizes that many investments are still quite specific with respect to firm, sector, or location, which is the case for PF transactions.

Although evidence in the field of PF is limited, some papers analyzed the role of some other macroeconomic factors, such as the debt-to-GDP ratio, real GDP growth and sovereign ratings, which are discussed in the remainder of this section. In discussing the cost of debt of 5,000-plus syndicated credits (including PF loans) granted to developing country borrowers over 1993-2001, Altunbaş and Gadancetz (2004) show that the debt-to-GDP ratio, real GDP growth, and sovereign ratings significantly affect the spread. The authors report that high ratios of debt-to-GDP raise the cost of borrowing. The higher the debt-to-GDP ratio, the more likely the country is to default which leads to less confidence on the part of banks and investors. Contrarily, real GDP growth lowers the pricing of syndicated credits as it is an indicator of the evolution of the country’s wealth. Finally, the authors find that sovereign
ratings are negatively associated with the pricing of loan issues. The drawn return of borrowers from countries with the best sovereign ratings (65.7 basis points) is on average four times lower than borrowers from countries with a poor sovereign rating (238.3 basis points). Sorge and Gadanecz (2008) show that the pricing and volumes of PF loans are very sensitive to macroeconomic environment pertaining to the country of the borrower, as well as to global macroeconomic factors, such as the stance of US monetary policy. Other studies did not find significant results. By including the mid-market spreads level for an AAA-rated CLO tranche (in basis points) which should reflect the prevailing economic conditions in financial markets, Buscaino et al. (2012) find no significant impact of this variable on PF CDO’s. In Blanc-Brude and Strange (2007), the introduction of a set of country dummy variables as a proxy for host-country macro effects or year dummies to control for the potential effect of the credit cycle did also not add significantly to the explanatory power of the model.

Although empirical evidence is mainly focused on loan –, project – and bank characteristics, several papers (Blanc-Brude and Strange, 2007; Corielli et al., 2010; Buscaino et al., 2012; Altunbaş and Gadanecz, 2004) seems to indicate that lenders put more value on the economic conditions at the time of granting the loan. Blanc-Brude and Strange (2007) remark that practitioners often emphasize the role of credit cycles in determining the cost of debt in projects. They describe the project debt market as a buyer’s market where the price of the market defines the cost of debt for the project. In this context, project-level risks play a less important role. This is also suggested in Corielli et al. (2010) which do not reveal statistical significance for the relation between project risks and loan spread. Buscaino et al. (2012) also argue that the industry outlook is an important factor to understand the lending mood as infrastructure investing is typically highly cyclical. By analyzing the relative influence of micro- and macroeconomic determinants of the pricing of syndicated loans granted to developing country borrowers, Altunbaş and Gadanecz (2004) argue that lenders seem to focus more on macroeconomic factors. The effect of microeconomic variables on the pricing is weaker when macroeconomic conditions in borrowers’ countries are controlled for.

Hypotheses

To sum up, the literature did not reach a consensus on the determinants of bank loan spreads in PF. The literature did not agree on the list of variables significantly affecting bank spreads. For the loan size and capital structure, some studies found a significant impact of these variables on the spread, while others conclude that these factors do not significantly affect loan margins. Even the sign of the coefficients considerably varies across studies for some variables. As Table I shows, for some variables, such as the term structure and size of the banking syndicate, there are as many studies indicating an upward as a downward impact on the loan margin. To shed some light on these discussions, we define the following set of hypotheses:

\textbf{H1.} A longer loan term exercises an upward pressure on the spread.

\textbf{H2.} The loan size has a downward impact on the spread.

\textbf{H3.} The size of the banking syndicate has an upward impact on the spread.

\textbf{H4.} A higher leverage has an upward impact on the spread.

\textbf{H5.} Greenfield projects face higher spreads.

\textbf{H6.} Lower spreads are charged to availability-based projects compared to projects with demand risk.

\textbf{H7.} PPPs are charged higher loan margins relative to traditional projects.
The first hypothesis indicates that longer loan terms are expected to result in higher debt pricing. Contrary to Bouzguenda (2014), we assume that the longer the loan term, the higher the credit risk for the bank. The shortening of the loan terms of PF deals during the financial crisis shows that the length of the loan term is an instrument for risk adverse banks to reduce the credit risk of the project. The longer the loan term, the higher the probability that the project defaults over this period, ceteris paribus. Second, we hypothesize that the larger the loan volume, the smaller the spread as there are significant economies of scale for banks when granting larger loan volumes. The due diligence and transactions costs do not rise proportionally with the loan volume. Further, the size of the banking syndicate is expected to be a significant driver of the cost of debt in PF transactions. The larger the syndicate size, the larger the costs of due diligence and transactions costs for the whole syndicate. We expect these higher costs to be reflected in the spread.

Fourth, as most papers in the literature, we are convinced that higher debt-to-equity ratios significantly and positively influence loan margins. Although higher leverage lowers the capital cost of the project, it raises default risk. Therefore, we expect banks to require higher loan margins for more leveraged projects, ceteris paribus.

$H_5$ indicates that greenfield projects are expected to face higher spreads. While greenfield projects are associated with assets yet to be constructed, brownfield projects involve established assets in need of improvement. Greenfield projects expose lenders to higher risks of default, which we expect to result in higher loan margins. The sixth hypothesis discusses the role of demand risk. There are two primary forms of payment mechanisms: availability and revenue-based. An availability payment mechanism means that the government entity will make monthly payments to a concessionaire for making the infrastructure asset available for use. The government retains the demand risk for the project. A revenue-based payment mechanism is when the demand risk resides with the concessionaire which is expected to recoup its initial investment from user fees. We expect that lower loan margins are charged for projects with availability-based payment mechanisms. When demand risk is transferred to the private party, the default risk of the project increases, resulting in higher loan margins. Finally, the PPP route is expected to be more expensive in terms of financing, as the cost of private financing includes a risk premium which reflects a market assessment of the risks and rewards of the project in question. Since governments have taxing powers, they can borrow at the risk-free rate of interest. Put simply, the taxpayers ultimately and always bear the costs of cost over-runs. As a result, investors consider the likelihood of default is minimal.

Although previous empirical evidence is mainly focused on loan –, project – and bank characteristics, these are expected to play only a minor role in defining the spread. The sharp increase in lending rates following the Great Recession of 2007-2009 clearly shows that the lending mood in infrastructure investing is typically highly cyclical. During the crisis, project developers were confronted with an upsurge in the cost of debt which strongly affected the financial viability of many projects. Although infrastructure lasts for many decades and the features of projects coming to the market were like these before the crisis, there were remarkable upswings in the cost of debt. These upswings in interest margins indicate that the economic conditions at the time of granting the loan are more detrimental in defining the spread than the characteristics of the project. Although infrastructure lasts for many decades, short-term economic projections seem to mainly define the lending cost. The shortening of loan tenors reinforced this short-term focus as projects need to be refinanced more often. One weakness of existing studies in PF loan pricing is that they undervalue the role of the economic environment in the cost of debt. Apart from the typical loan –, project – and bank characteristics, the focus in this study is on the role of the economic outlook. It is expected that the cost of debt is mainly the price of the market. Project-level risks play a less important role in this. Based on this, we define the following hypothesis:

$H_8$. The economic outlook is more detrimental in defining the spread and loan –, project – and bank characteristics play only a minor role.
Data
The 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 bank characteristics. One difficulty in analyzing debt margins granted by financial institutions is that this information is often treated confidentially. Our sample contains information on spreads for 826 transactions over 2006–2016, representing a substantial fraction of the entire PF population in terms of capital value and number of projects. As in Corielli et al. (2010), we use multiple tranches as separate observations (some loans may include multiple tranches). As this study aims to analyze the relative importance of the economic conditions vs project – loan – and bank characteristics and the impact of several macroeconomic variables on the spread, our sample is complemented with macroeconomic data from the IMF and the World Bank. These variables include GDP growth (World Bank), Central Government Debt (World Bank), Inflation (World Bank) and Central Bank Policy rate (IMF). We linked these macroeconomic variables to the transactions database on the country and the date.

Debt to infrastructure projects is typically priced based on a floating and a fixed component. The floating component is normally based on interbank lending rates such as EURIBOR in the euro market or London Interbank Offered Rate (LIBOR) in the sterling market. These base rates fluctuate with market movements and represent the underlying cost of funds to the lender. The fixed component or margin is typically expressed as a number of basis points over interbank lending rates. This is the difference between the contract rate and the base rate. The margin is a compensation for the risk the lender bears and other costs he makes (e.g. operating costs, due diligence, profit). This margin, which is the number of basis points over the interbank lending rate, is our variable of interest. Most of the transactions either use LIBOR (44.7 percent) or EURIBOR (32.16 percent) as the base rate. In total, 6.07 percent, especially Brazil-based projects, use the TJLP and 17.1 percent use another base rate different from these three (such as CDOR, TIIE, TAB, BBSY, Infraco, IPCA, BBSW, etc.). It is also important to note that for many deals, a fixed interest rate is chosen to avoid project’s exposure to interest rate fluctuations. As we cannot distinguish between the interbank lending rate and the bank margin, the projects using a fixed interest rate (for 55 projects) or when it was not given whether the interest rate reflects a fixed interest rate or a margin above a base rate (for 255 projects) are excluded from our analysis.

As an exploratory analysis, in this section, we present some descriptive statistics to help understand the characteristics of our sample of loan tranches. The average amount of a loan tranche is £212.3mn. The typical project has a syndicate size of 4.6 financers, ranging from 1 to at least 27. The average maturity is 12.3 years, varying from less than a year to up to 38 years. The typical project has a debt-to-equity ratio of 79.8 percent. Our sample has a worldwide coverage with observations across 48 different counties. Table AI shows the geographic breakdown of the PF loans. Although Europe and North America account for most of the observations, respectively, 59.6 percent for Europe and 18.6 percent for the USA, the sample also includes projects from Latin-America (13.9 percent), Australia (4.7 percent) and to a lesser extent Asia, the Middle East and Africa. Most projects in our sample are UK-based projects (25.3 percent), followed by USA (14.4 percent), Spain (8.35 percent), Brazil (8.11 percent), Italy (5.57 percent), Australia (4.48 percent), Canada (4.24 percent) and France (4.24 percent). The fourth column in Table AI shows the average credit spread across countries. Credit spreads show substantial variation across countries indicating that country risk plays an important role for banks in determining the spread. The spreads of South-European countries (Italy, Portugal, Greece, Spain) seem to exceed the risk premium charged to other European countries, such as Germany, France, Belgium or the Netherlands. Table AII shows the industrial breakdown of project loans. Most project loans in our sample were loans granted to transportation (291 projects, 35.3 percent) and renewables
(261 projects, 26.2 percent), especially for building roads and for realizing wind and solar energy projects. The sectoral coverage of our sample is quite diverse as it also includes many social infrastructure (120 projects, 14.5 percent), power-related (114 projects, 13.8 percent) and environmental projects (73 projects, 8.8 percent). Table AIII shows the mean of the credit spreads in our sample which has been following a generally upward trend, peaking in 2013 – the mean was then 316 basis points. This upsurge in credit spreads awarded for PF loans possibly reflects the impact of the financial crisis starting in 2007. Since 2013, credit spreads are relaxing again.

Methodology
We will develop a regression analysis of the loan’s spread on the different variables, using ordinary least-squared (OLS) estimation. The dependent variable is the spread over a base rate (LIBOR, EURIBOR), in basis points. Although credit spreads do only partially reflect the cost of PF loans, they are our main variable of interest. Several studies (Blanc-Brude and Strange, 2007; Altunbaş and Gadancetz, 2004; Sorge and Gadancetz, 2008) argue that spreads on long-term senior loans do not represent the full economic cost of loans, as additional pricing factors, such as fees and costs of interest rate swaps, drive the cost of a loan transaction. Banks typically charge participation fees, which are paid upfront to the syndicate banks and commitment fees, which are paid annually as a percentage of the margin. Further, bank loans with floating interest rates are typically accompanied with an interest rate swap, converting the rate to a fixed one, to hedge interest rate risk also come with a cost. Since data on fees and swaps were not available in our data set, the spread has been our main point of interest. As in Corielli et al. (2010), we use multiple tranches as separate observations.

Below, our empirical model is presented with the credit spread as dependent variable and \( u \) as the residual. Unfortunately, our samples were too small to attempt panel data analysis. Using an OLS regression, we examine how the loan rate charged by financers changes with several control variables expected to have an impact on spreads. The control variables are divided into four different groups: loan –, project –, bank characteristics and macro variables. Although loans to individual projects might exhibit very different characteristics, our OLS model shows the average effect at the portfolio level of these control variables on the spread. By including country and sector dummies, we control for the impact of country and sector characteristics on the spread:

\[
\text{Credit spread} = \alpha + \beta_1 \text{Tenor} + \beta_2 \text{Volume} + \beta_3 \text{D/E ratio} \\
+ \beta_4 \text{PPP} + \beta_5 \text{Greenfield project} + \beta_6 \text{Syndicate size} \\
+ \beta_7 \text{Availability payments} + \beta_8 \text{Economic growth} \\
+ \beta_9 \text{Central Bank Policy rate} + \beta_{10} \text{ROE} + \beta_{11} \text{Inflation} \\
+ \beta_{12} \text{Country dummies} + \beta_{13} \text{Subsector dummies} \\
+ \beta_{14} \text{Year dummies} + u,
\]

where Loan characteristics: Tenor is the term of the loan tranche, in number of years; Volume the amount of the loan tranche, in millions of GBP; Project characteristics: D/E ratio is the debt-to-equity ratio of the project, as a percentage; PPP the dummy equals one if the project is a public-private partnership, zero otherwise; Demand risk the dummy equals one if the project is exposed to demand risk, zero otherwise; Greenfield project the dummy equals one if the project is a greenfield project, zero otherwise; Availability payments the dummy equals one if the project is entirely financed by availability payments, zero otherwise; Bank characteristics: Syndicate size the number of different financers awarding the loan;
Macro variables: economic growth is the real GDP growth in project’s country, for the year concerned; Central Bank Policy rate the three-month interbank rate of the project’s country, for the year concerned; ROE the return on equity of the banking sector in the 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.

Results and discussion
The results of the regression are reported in Table II. The table shows how the loan rate charged by financers changes with several control variables expected to have an impact on spreads. The control variables are divided into four different groups: loan –, –project, bank characteristics and macro variables. Below, we delve deeper into the different drivers and their effect on the spread. As interest rates might significantly vary across countries and sectors, we control for country and sector-specific effects by adding country and sector dummies, respectively. Further, also year dummies are added to the model to control for year-specific effects. The table shows four different specifications of the model presented above. The first one includes all loan tranches in our sample. PPP projects are analyzed separately in the second specification. By splitting the model into PPP and non-PPP projects, we aim to investigate whether the drivers of the spread differ between these two groups. In the third column, we exclude the PPP projects from the sample. In the final specification, we exclude projects executed in developing countries.

Loan characteristics
The first group consists of the loan characteristics that are expected to drive the spread. The loan characteristics that we tested are the loan tenor and loan volume. Above these two hypotheses were defined:

\textbf{H1.} A longer loan term exercises an upward pressure on the spread.

\textbf{H2.} The loan size has a downward impact on the spread.

The first hypothesis indicates that longer loan terms are expected to result in higher debt pricing. The results in Table II show that this is the case. Loan maturity has a significantly

<table>
<thead>
<tr>
<th>Spread</th>
<th>All</th>
<th>Only PPP</th>
<th>No PPP</th>
<th>Developed countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenor</td>
<td>1.741</td>
<td>1.929</td>
<td>1.632</td>
<td>1.515</td>
</tr>
<tr>
<td>Loan volume</td>
<td>0.018</td>
<td>0.065</td>
<td>0.033</td>
<td>0.016</td>
</tr>
<tr>
<td>Debt/equity</td>
<td>-0.631</td>
<td>-0.990</td>
<td>-0.366</td>
<td>-0.737</td>
</tr>
<tr>
<td>PPP</td>
<td>-17.478</td>
<td></td>
<td>-10.087</td>
<td></td>
</tr>
<tr>
<td>Syndicate</td>
<td>-1.736</td>
<td>0.208</td>
<td>-6.021</td>
<td>-1.459</td>
</tr>
<tr>
<td>Economic growth</td>
<td>-13.765</td>
<td>-17.073</td>
<td>-0.488</td>
<td>-16.815</td>
</tr>
<tr>
<td>Inflation</td>
<td>-25.638</td>
<td>-44.641</td>
<td>-41.323</td>
<td>-10.172</td>
</tr>
<tr>
<td>ROE policy rate</td>
<td>12.738</td>
<td>28.456</td>
<td>40.794</td>
<td>40.056</td>
</tr>
<tr>
<td>ROE</td>
<td>4.980</td>
<td>2.863</td>
<td>3.426</td>
<td>6.259</td>
</tr>
<tr>
<td>Debt-to-GDP</td>
<td>6.451</td>
<td>8.901</td>
<td>6.014</td>
<td>7.226</td>
</tr>
<tr>
<td>Country dummy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Sector dummy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Year dummy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-363.822</td>
<td>487.545</td>
<td>-241.147</td>
<td>-139.935</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.72</td>
<td>0.81</td>
<td>0.74</td>
<td>0.72</td>
</tr>
<tr>
<td>$n$</td>
<td>316</td>
<td>180</td>
<td>136</td>
<td>290</td>
</tr>
</tbody>
</table>

Note: *The corresponding p-value is smaller than 0.05

Table II. Regression output
positive impact on the spread. In the first specification, including all loan tranches, an increase in the loan maturity with one year results in an increase in the spread with 1.7 basis points on average. This result is mainly driven by PPP projects. As we exclude the PPP projects from our sample, the impact of the loan maturity on the loan margin is no longer significant. In the sample of PPP projects, every extension of the loan term with one year induces financers to step up the spread with, on average, 1.9 basis points per year, ceteris paribus. Although significant, the impact of the loan tenor on the spread is negligibly small. The longer the loan term, the higher the credit risk for the bank as the probability of project default is higher over this period, ceteris paribus. Financers require a small risk premium for this additional risk. The second hypothesis is rejected. In our sample, loan volume does not appear significantly across all specifications in our analysis. The economies of scale when granting larger loan volumes are not reflected in lower spreads. This could indicate that the number of financers in the syndicate rather than the loan volume of each financer varies across projects. For larger projects, the size of the banking syndicate increases rather than the loan volume at stake of each bank. If this is the case, the economies of scale should be reflected in the coefficient of the variable reflecting the size of the banking syndicate.

Bank characteristics
The second group consists of the bank characteristics that are expected to drive the spread. The variable that is most cited in the literature is the size of the banking syndicate. There is considerable variation in the size of the banking syndicate in our sample with the number of financers varying from one to 27. Above, the following hypothesis was defined:

H3. The size of the banking syndicate has an upward impact on the spread.

The coefficient of syndicate size does not enter significantly in our model, except when PPP projects are excluded from the sample. In the sample of non-PPPs, the size of the banking syndicate is a significant driver of the cost of debt in PF transactions, raising loan margins with six basis points for every increase in the size of the banking syndicate with one additional financing party. The larger the syndicate size, the larger the costs of due diligence and transactions costs for the whole syndicate. These higher costs are reflected in the spread. The reason why the size of the banking syndicate does not enter significantly into the model in the sample of PPP projects requires further investigation.

Project characteristics
The third group consists of project characteristics, including the debt-to-equity ratio (D/E ratio) and dummies for PPPs, greenfield projects and availability payments. Above, the following set of hypotheses were defined:

H4. A higher leverage has an upward impact on the spread.
H5. Greenfield projects face higher spreads.
H6. Lower spreads are charged to availability-based projects compared to projects with demand risk.
H7. PPPs are charged higher loan margins relative to traditional projects.

Although we would expect banks to charge higher loan margins for more leveraged projects, ceteris paribus, the D/E ratio does not enter significantly into our model. This result is in line with Blanc-Brude and Strange (2007). Hypothesis five indicates that greenfield projects are expected to face higher spreads. Although greenfield projects expose lenders to higher risks of default, this is not reflected in our results. Greenfield projects do not have a significant impact on the spread in our sample. The sixth hypothesis discusses the role of
demand risk. The introduction of a dummy, which equals one if the project is entirely financed by availability payments, adds significantly to the explanatory power of the model. The dummy has a strong negative impact on spreads. Ceteris paribus, availability-based projects have a loan margin which is 28 basis points lower on average compared with projects involving demand risk. Lower loan margins are charged for projects with availability-based payment mechanisms where demand risk retains with the government. When demand risk is transferred to the private party, the default risk of the project increases, resulting in higher loan margins. Limiting the sample to non-PPP projects reveals that this effect is mainly driven by non-PPP projects. Although the impact is not significant in the sample of PPP projects, it has a strong and significant impact on the sample of non-PPPs. Specification three shows that loan margins are, on average, 65.3 basis points lower when the projects are availability payment-based. Finally, also hypothesis seven is rejected. PPP structures do not seem to significantly impact the spread. Although the PPP route is expected to be more expensive in terms of financing, as the cost of private financing exceeds the cost of public financing, this is not reflected in our results. The non-PPP projects in our sample are also privately financed projects instead of traditional projects (fully publicly funded projects). The involvement of the public sector in PPPs seems not to significantly influence the loan margin of these projects.

Macroeconomic environment

The final group consists of the macro variables that are expected to drive the spread. One weakness of existing studies in PF loan pricing is that they undervalue the role of the economic environment in the cost of debt. Although previous empirical evidence is mainly focused on loan – project – and bank characteristics, these are expected to play only a minor role in defining the spread. Based on this, the following hypothesis was defined above:

\[ H_8. \] The economic outlook is more detrimental in defining the spread and loan – project – and bank characteristics play only a minor role.

The macro characteristics that we tested are economic growth, inflation, the central bank policy rate, the debt-to-GDP ratio and the return on equity of the banking sector in the project’s country. Economic growth is a significant driver of the spread across all specifications, except for the subsample of non-PPP projects. A one percentage point higher economic growth rate, leads, ceteris paribus, to a reduction in the spread with, on average, 13.8 basis points. During boom periods, loan margins are significantly lower regardless of the characteristics of the project. In the sample of PPP projects, the impact is even bigger with each percentage point increase in growth rates leading to a decline in the spread with 17.1 basis points. Remarkably, the result does not apply to non-PPPs. In the sample excluding the PPP projects, the impact is not significant. When the public sector is involved in the construction of infrastructure, as in PPPs, financers attach great importance to the stance business cycle for defining loan margins. Remarkably, results in Table II show that inflation significantly and negatively affects loan margins. A one percentage point increase in the inflation rate results in a decline of 25.6 basis points of the spread in our whole sample and of 44.6 basis points in our subsample of PPP projects. In the subsample of non-PPPs, the results are again non-significant. The coefficient of the central bank policy rate is not significant across all specifications. The return on equity of the banking sector slightly contributes to the explanatory power of the model. Spreads positively evolve with the profitability of the banking sector. An increase in the ROE with one percentage point lowers the spread with, on average, five basis points, ceteris paribus. In the subsample with only PPPs and non-PPPs, the impact of ROE on the spread is not significant. Finally, the debt-to-GDP ratio seems to be positively and significantly associated with the spread. Infrastructure projects realized in countries with higher debt ratios have a higher financing
cost, both for PPP as non-PPP projects. An increase of a percentage point in the debt-to-GDP ratio in a country drives up interest rates with 6.4 basis points, on average. In the subsample of PPP projects, this effect is even bigger with a one percentage point increase in the public debt level stepping up risk premiums charged by financers with 8.9 basis points. In the subsample of non-PPPs, the impact is 6.0 basis points. To sum up, the key factor that contributes to the cost of funding is the macro-economic setting. Our results show that the cost of debt is largely driven by the price of the market with project-level risks playing a minor role. Although infrastructure lasts for many decades, short-term economic projections at the time of granting the loan seem to be more detrimental in defining the spread than the long-term characteristics of the project. This is further supported by some real-life case studies in the UK (House of Commons, Committee of Public Accounts, 2010). Although the worse economic conditions and resulting higher debt margins during the Financial Crisis were only temporarily, this impact on PF projects will continue to be felt over the next 30 years, as the higher financing costs will persist throughout the operating period. In the UK, the increase in funding costs for PFI projects in 2009 by between 20 and 33 percent, added £1bn to the contract price over 30 years for the 35 projects financed. The impact could be even worse as 110 PFI projects with an investment value exceeding £13bn were held up during this period.

Conclusion

The purpose of this paper is to develop a better understanding of the pricing decisions of banks for PF loans and the main drivers affecting the cost of debt in infrastructure deals, both for PPP as non-PPP projects. The paper develops a regression analysis of the loan’s spread on four categories: project –, loan –, bank characteristics and the economic environment. By using a new data set of InfraDeals containing data on bank spreads of more than 700 infrastructure projects worldwide from 2006 to 2016, this paper reveals new insights on the pricing decisions of banks for PF loans. Our results show that the cost of debt is predominantly affected by the market and the business cycle, rather than the structuring of the project. This implicates that the timing when the deal is closed weighs more heavily than the specificities of the project itself. The results further indicate that when the public sector is involved in infrastructure development, as in PPPs, financers attach great importance to the stance business cycle and economic outlook for defining loan margins compared with the subsample of non-PPPs. Financers especially attach great value to macroeconomic conditions when the public sector is involved. The results have important policy implications. Since infrastructure projects are typically highly leveraged, the cost of bank lending is an important driver of the overall funding costs for the project. As PF deals are often paid for by taxpayers, this paper could help policymakers to use public funds for infrastructure in the most efficient way.

Notes

2. InfraDeals database, own calculations.
3. www.eib.org/epec/g2g/annex/1-project-finance/
4. InfraDeals database, own calculations.
5. A short-term loan (guaranteed by the Sponsors and is typically repaid at project completion) which allows to delay the timing of equity contributions to the project and improve shareholders’ return profiles.
6. A commitment by a lender to advance a specified amount of funds for a period of time (i.e. a line of credit), which may be drawn down only if budgeted income does not materialize. Interest is only paid on the amount drawn down.

7. A long-term secured debt extended by banks or financial institutions for carrying out long-term projects which is usually repaid in monthly or quarterly equal installment.

8. Project Finance collateralized debt obligations.

9. Institutions established to provide financing for governmental and private-sector transactions in countries where political risks often prevent private-sector institutions from lending.

10. A revolving loan facility is typically a variable line of credit useful during the operational period as the borrower has the flexibility to drawdown, repay and redraw loans advanced to it.

11. A capex facility is a line of credit for the financing of capital expenditures.

12. If the bank acts as a lender for a portfolio of infrastructure projects, Blanc-Brude and Strange (2007) argue that systematic risks could be reduced through diversification at the portfolio-level as banks do not lend to projects solely on a project-by-project basis without necessarily taking a portfolio-wide view.

13. In the context of PF CDO’s, Buscaino et al. (2012) find, however, that, contrary to other securitization deals, the idiosyncratic components of risk inherent to underlying projects play an important role in defining the spread of the CDO.

14. A shadow toll is a contractual payment made by a government per driver using a road to a private company that operates a road built or maintained using private finance initiative funding.

References


(The Appendix follows overleaf.)
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<td>25</td>
<td>143.33</td>
<td>84.57</td>
<td>45</td>
<td>400</td>
</tr>
<tr>
<td>2008</td>
<td>34</td>
<td>240.38</td>
<td>97.84</td>
<td>70</td>
<td>500</td>
</tr>
<tr>
<td>2009</td>
<td>33</td>
<td>265.97</td>
<td>79.33</td>
<td>0</td>
<td>387</td>
</tr>
<tr>
<td>2010</td>
<td>71</td>
<td>268.80</td>
<td>84.20</td>
<td>95</td>
<td>600</td>
</tr>
<tr>
<td>2011</td>
<td>141</td>
<td>257.52</td>
<td>89.64</td>
<td>90</td>
<td>700</td>
</tr>
<tr>
<td>2012</td>
<td>103</td>
<td>270.64</td>
<td>93.64</td>
<td>75</td>
<td>500</td>
</tr>
<tr>
<td>2013</td>
<td>114</td>
<td>314.36</td>
<td>123.15</td>
<td>95</td>
<td>900</td>
</tr>
<tr>
<td>2014</td>
<td>106</td>
<td>250.74</td>
<td>118.25</td>
<td>90</td>
<td>800</td>
</tr>
<tr>
<td>2015</td>
<td>83</td>
<td>222.62</td>
<td>98.94</td>
<td>80</td>
<td>600</td>
</tr>
<tr>
<td>2016</td>
<td>82</td>
<td>223.99</td>
<td>108.36</td>
<td>100</td>
<td>600</td>
</tr>
</tbody>
</table>

Table AIII. Descriptive statistics on credit spreads: observations over time

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Project risk management practices: the organizational maturity influence

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Abstract

Purpose – The purpose of this paper is to identify patterns of project risk management (PRM) practices’ adoption, and provides empirical evidence concerning the importance (and key attributes) of organizational PRM maturity to the use of risk-related practices and project performance.

Design/methodology/approach – The research involved two phases: interviews with five project managers, and a worldwide survey of project managers that resulted in the analysis of 865 valid questionnaire responses. Cluster analysis was used to classify PRM practices’ use, factor analysis to detect the structure of the relationship between the variables measuring PRM practices’ use and a multiple regression analysis (with canonical correlation) to further reveal the different degrees to which PRM practices and organizational maturity are associated.

Findings – The identified patterns of risk practices’ adoption indicate that different contexts of organization PRM maturity and project complexity influence practices selection. The PRM practices related with targets (e.g. time-phased budget plan) are the most used, and those related to tools and techniques (e.g. S-curve) are the least used. Additionally, the obtained results confirm that organizational PRM maturity influences risk practices’ usage, moderated by project complexity, and organizational PRM maturity influences project performance.

Originality/value – Empirical methods were used to investigate the relationship between organizational PRM maturity and a large set of PRM practices with project complexity as a moderator. Gaps in the use of PRM practices (i.e. areas where more PRM knowledge and training are needed) were identified. Finally, this work identifies the attributes of organizational maturity with implications in practices’ usage and project performance.

Keywords Project complexity, Organizational project risk management maturity,  
Project risk management practices

1. Introduction

Project risk management (PRM) is the systematic process of identifying, analyzing and responding to risks (i.e. project-related events or managerial behaviors that are not definitely known in advance, but that have the potential for adverse consequences on a project objective) (PMI, 2004).

Papke-Shields et al. (2010) observed that the use of risk-related project management (PM) practices is relatively low. Kutsch and Hall (2009) argue that few studies reveal what is actually done by project managers in terms of risk management. Studies in PM show that risk practices are less frequently used in comparison with practices related to time, human resources and cost (Papke-Shields et al., 2010; Zwikaël and Ahn, 2011). According to Carbone and Tippett (2004), the inability to cope with risk is one of the main causes for exceeding the budget, deadlines and other objectives. Management of risk is one of the most important processes of PM, a crucial determinant of success (Backlund et al., 2014). As the
complexity of projects increases, it becomes more important to assess and control risk throughout all the phases of a project (Cagliano et al., 2015). More evidence to persuade project managers to invest in risk management is needed (Olechowski et al., 2016). This paper identifies patterns in the use of risk practices and studies the dimensions of organization PRM maturity that may influence their adoption, clarifying why certain risk practices are less used and providing insights on how to overcome adoption difficulties.

The choice of the practices depends on the risk management phase (Hillson, 2003) and also on the context of the project (Besner and Hobbs, 2013; Cagliano et al., 2015). In this research, context variables measuring project complexity and the risk management maturity of the company developing the project are used to identify the specificities of practice adoption for each PRM phase. Research addressing the adoption of PM practices has included a limited number of practices: for example, Golini et al. (2015) considered 16 PM practices, and Vicente-Oliva et al. (2015) considered 12. In order to assess whether a broad portfolio of practices is known and used by project managers, we adopted a wider view and considered an extensive list of 53 PRM practices organized according to the phases of the PRM process.

Cluster analysis is used to identify patterns of practices’ usage. This pattern recognition is followed by a context analysis with the aim of finding out in which circumstances given practices are used, i.e., understanding how practice adoption choices may be related to one another and to a given context in terms of project complexity and organizational PRM maturity. Therefore, with this empirical study, we analyze how groups of professionals use risk management practices in different contexts, thus contributing to the scarce literature related to risk management practices. Our first research question is as follows:

RQ1. What are the patterns of PRM practices’ usage in different contexts of project complexity and organizational PRM maturity for each phase of the risk management process?

According to Ibbs et al. (2004), PM maturity is the sophistication level of the current PM practices and processes of an organization. Andersen and Jessen (2003) consider that a PM mature organization is in a perfect condition to achieve its objectives and, therefore, it is perfectly conditioned to deal with its projects. Nevertheless, there are no fully matured organizations in the real world, therefore, it makes sense to try to measure or characterize the degree of maturity of an organization (Andersen and Jessen, 2003). Several PM maturity models have been developed to describe and measure PM competence: for example, the Project Management Maturity Model (Kerzner, 2001), the Project Management Process Maturity Model (Kwak and Ibbs, 2002), the Capability Maturity Model® Integration (CMMI®) (SEI, 2006), the Organizational Project Management Maturity Model (OPM3®) (PMI, 2008) or the Risk Management Capability Maturity Model (RM–CM) (Yeo and Ren, 2009). This last model is risk specific and all the other include a part concerning risk management. Maturity models assume that organizational knowledge and experience can be translated into procedures (Gareis and Huemann, 2000). The idea that tightly defined, repeatable and predictable processes can directly contribute to the efficiency of organizational systems increased the use of formal PM practices (Pasian et al., 2012). According to the authors, this resulted in a view of PM maturity based on process control. However, the management of undefined projects, where the predictability of processes cannot be reasonably expected, creates new challenges to the organizations. In this situation, as emphasized by Pasian et al. (2012), PM maturity should be defined and assessed using a multi-dimensional approach that includes adaptable variables, such as attitudes or leadership.

Several works have followed the standards to demonstrate PM maturity. For example, Golini et al. (2015) measured organizational maturity in a PM context through the level of PM practices’ adoption. Unlike these authors, we consider that organizational PRM maturity is the existence of a PRM orientation (an attitudinal construct) that may be a
precondition to PRM practices’ use. We adopt the broader view of maturity of Andersen and Jessen (2003) that consider that maturity is best explained as the sum of action (ability to act and decide), attitude (willingness to be involved), and knowledge (an understanding of the impact of attitude and action). Given this link between the two constructs (practices and maturity), it is not our purpose to identify the variables of an organization that can affect its maturity, but rather to analyze the relationship between organizational PRM maturity (described by a set of organizational-specific factors taken from the literature) and the use of PRM practices. More specifically, we investigate whether organizational maturity influences the range of practices used or the frequency of their use, and if this relation can be moderated by context variables such as the project complexity. Our second research question is:

RQ2. Which attributes of organizational PRM maturity contribute the most to the use of PRM practices?

In the literature about the relationship between maturity models and project performance, there is no consensus regarding maturity models’ contribution to better project performance (Ibbs and Kwak, 2000; Mullaly, 2006; Yazici, 2009).

Looking at the literature that addresses organizational maturity as a broader concept (i.e. considering each of the items that compose maturity more generally, and not a checklist analysis like classical maturity models do), there is also a debate around the relationship between organizational maturity and performance (Thomas and Mullaly, 2007). Besner and Hobbs (2013) empirically analyze a large sample of data and conclude that apparently (since the percentage of the variance of the performance explained was low) there is a cause–effect relation between organizational maturity and performance. Torres (2014), based on a literature review, concluded that a higher level of maturity leads to better performance. Brookes et al. (2014) point out the lack of empirical evidence regarding the relationship between PM maturity and project performance. Therefore, another contribution of this study is to add empirical evidence concerning this relationship from a PRM perspective. Our third research question is:

RQ3. Which attributes of organizational PRM maturity contribute the most to project performance?

To address the research questions, we performed five exploratory interviews with project managers in order to compare the PRM practices mentioned in the literature with those known and used by PM professionals, and surveyed professionals in the field of PM worldwide, through the PMI network, to collect information about their risk management experience in the context of the project they had been involved in that they consider more relevant (i.e. a significant PRM experience). The survey data was analyzed using multivariate statistics techniques.

2. Literature review

This work involved two different types of literature review, one to acknowledge the state-of-the-art around the research topic addressed and to identify related gaps (presented in the next subsection), and a systematic literature review (described in subsection 2.2) to determine how the constructs used in the empirical study have been measured. This systematic literature review was carried out by searching referential databases (namely, EBESCO, Scopus and Google Scholar) from 1995 onwards, using combinations of appropriate search words: “risk management” or “risk assessment,” “practice” or “technique,” and “project management.” As a result, 96 articles with examples of practices for PRM were identified. Only 29 of these contained practices for all the phases of the risk management process.
The development of the field of PM justifies research that focuses on the specificity of PRM practices’ use taking the steps of the PRM process into account.

Within the PM literature, the vast majority of the research focuses on assessing the impact of practice adoption on performance (e.g. Golini et al., 2015) or the type of practices adopted considering project complexity (e.g. Badewi, 2016) and study small and context specific groups of practices (e.g. Zwikael and Ahn, 2011; Papke-Shields et al., 2010). There have been few studies examining differences in PM practice depending on contexts variables like organization maturity, industry or project type, project complexity, etc. (Besner and Hobbs, 2013). In the PRM research area, literature is even more scarce (e.g. Cagliano et al., 2015). Differences were observed in PM practices’ use depending on context variables like project complexity (Papke-Shields et al., 2010) or organization maturity (Besner and Hobbs, 2013), and formal PM practices are indeed being applied in practice, but they are not being applied equally or consistently across all the knowledge areas (Besner and Hobbs, 2013). Some practices are extensively adopted (those associated with time, scope, cost control and information reports), whereas others are almost neglected (those associated with communication, quality, risk analysis and techniques like earned value management) (Papke-Shields et al., 2010; Zwikael and Ahn, 2011; Golini et al., 2015). Therefore, in this work, we use an international survey to study the diffusion of PRM tools and methodologies among project managers to address these gaps, i.e., this research analyses the use of practices considering: the existence of context variables (e.g. project complexity), and the use of control variables (Is the use of PRM practices different depending on the region or on the gender of the project manager?).

This work also studies the PRM maturity of the organization. Maturity models are designed to provide a framework to organizations so that they develop their PM capabilities with two main purposes: identifying the current maturity level and setting directions for further improvements (Crawford, 2006), and benchmarking their maturity relatively to others (Grant and Pennypacker, 2006). Generally, maturity models are viewed as checkup tools to measure progress and to identify the next steps forward based on explicit PM knowledge areas, without taking into consideration intangible assets (Jugdev and Thomas, 2002) that are not easily measurable, but can contribute to a mature PM capability, as, for example, the project context (client or stakeholder’s involvement) or tacit human factors (Pasian et al., 2012). While focusing on work progress and ignoring human resource or organizational aspects, these complex frameworks are inflexible. Managing change caused by new technology or clients unexpected requirements demands a flexible perspective concerning organizational PM capabilities.

Our position is to look at maturity and measure it, not through verifying if a set of practices is or not followed by the organization, but by checking if there is organization awareness, ability to act and decide, attitude and also knowledge about the management of projects. In this sense, it is important to know if organizations that are considered mature according to this definition apply a wide range of PRM practices or if they apply PRM more frequently than less mature organizations in their day to day activities. Additionally, it is important to perceive the organizational determinants of PM efficacy and if the use of practices is associated with better performance.

In order to narrow the identified gaps, this research aims at determining if organizational maturity influences the set of practices available, if there is a relation between organizational PRM maturity and practices’ use moderated by the project complexity, and if higher maturity contributes to a better project performance.

2.2 Measurement of organizational PRM maturity, project complexity, PRM practices’ usage and project performance

Organizational PRM maturity. Organizations with a low level of maturity are characterized by management improvisation, lack of knowledge about project steps requirements,
unfamiliarity with the standards and inability to establish the required connections between the various knowledge areas. This study focuses on the PRM maturity of organizations. Hillson (1997) proposed a risk maturity model framework inspired in the CMMI (SEI, 2006) and measured PRM maturity in terms of four attributes (culture, process, experience, and application). Yeo and Ren (2009) used organizational culture and learning, stakeholder coalition, leadership, organizational structure and support, technology, risk management and PM. Zou et al. (2010) used management (people and leadership) capability in relation to risk, organizational risk culture, ability to identify risks, ability to analyze risks, and development and application of a standardized risk management process. Jia et al. (2013) considered organization structure, management of stakeholders, a program of risk management, risk management culture support, risk management planning, risk identification, risk evaluation, risk response, risk monitoring and risk report. We measure the existence of a PRM orientation (an attitudinal construct) that may be a precondition to PRM practices’ use considering six variables: assimilation of the risk management concept, awareness of the importance of PRM, risk management capabilities, attitude toward risk, leadership and PM knowledge.

Project complexity. In the literature, context variables are measured according to different perspectives and using different criteria. Vidal and Marle (2008) defined the complexity of a project as a property of the system that makes it difficult to understand. There have been numerous theoretical discussions about the definition of project complexity and the criteria used to measure it (e.g. Geraldi et al., 2011; Ramasesh and Browning, 2014). However, there is still no consensus around the theme (e.g. Qureshi and Kang, 2015). We collected data about the most common different types of complexity: technological complexity (Lu et al., 2015; Kardes et al., 2013), degree of knowledge about the technology needed; organizational complexity, size of the project team (Vidal and Marle, 2008), number and type of contracts that the project involves (Senescu et al., 2012), and degree of cultural changes imposed by the project (Senescu et al., 2012); environmental complexity (Bosch-Rekveldt et al., 2011), degree of stakeholders’ influence on the project, and level of dependence on external organizations; and product complexity (Baccarini, 1996), budget, and duration of the project.

PRM practices’ usage. PM practices provide guidance concerning the development of projects in order to ensure better management of resources, within the most common constraints (i.e. time, cost and quality). The growing adoption of PM (and thus, PRM) practices across a large number of organizations (Winter et al., 2006), generally associated with published models, such as the CMMI® or the Project Management Body of Knowledge (PMBOK®), highly influences the success or failure of projects (Papke-Shields et al., 2010). The Guide to Project Management Body of Knowledge (PMBOK®), by the Project Management Institute (PMI), most recently edited in 2017 (PMI, 2017), is much probably the most well-known PM “best practices” reference. PMBOK standards have been disseminated worldwide, which is an evidence of the increasing acceptance of formal PM methods (Papke-Shields et al., 2010). Although there is some agreement that PM practices may positively influence project success, there is still no consensus on how to choose the most effective and efficient practices (Golini et al., 2015; Vicente-Oliva et al., 2015; Badewi, 2016). According to Hillson (2003), every phase of a risk management process implies a different level of information and detail, thus requiring specific techniques. We composed an initial list of items, derived from the PRM process (risk identification, risks analysis and evaluation, plan and act against risks, and risks control) captured in the PMBOK Guide (PMI, 2013a). This list was extended to incorporate two categories: “management support tasks” and “communication and inclusion practices” that encompass all PRM steps and were identified in the literature (see Table I that presents the final list of PRM practices considered in this study and a collection of literature sources mentioning them).
<table>
<thead>
<tr>
<th>Step of the PRM process</th>
<th>Risk management practice or technique (sources)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Risk identification</td>
<td>Risk register*, Risk documentation form, Risk management ledger (Papke-Shields et al., 2010; Kululanga and Kuotcha, 2010; Yeo and Ren, 2009)</td>
</tr>
<tr>
<td></td>
<td>Risk checklist* (Zwikael and Ahn, 2011; Zhou et al., 2008; Teller and Kock, 2013; PMI, 2009)</td>
</tr>
<tr>
<td></td>
<td>Post project review, Lessons learned, Historical review (PMI, 2009; Hillson, 2003)</td>
</tr>
<tr>
<td></td>
<td>Periodic risk review* (Papke-Shields et al., 2010; Kululanga and Kuotcha, 2010; Yeo and Ren, 2009)</td>
</tr>
<tr>
<td></td>
<td>Risk breakdown structure (RBS) (Yeo and Ren, 2009; Kululanga and Kuotcha, 2010; Dey et al., 2007; PMI, 2009; Hillson, 2003)</td>
</tr>
<tr>
<td></td>
<td>Brainstorming (de Bakker et al., 2010; Geh et al., 2012; Hillson, 2003)</td>
</tr>
<tr>
<td></td>
<td>Critical path method (CPM), Critical path analysis (CPA), Program evaluation and review technique (PERT) (Papke-Shields et al., 2010; White and Fortune, 2002)</td>
</tr>
<tr>
<td></td>
<td>Time-phased budget plan monitoring* (Papke-Shields et al., 2010)</td>
</tr>
<tr>
<td></td>
<td>Project time schedule* (Papke-Shields et al., 2010)</td>
</tr>
<tr>
<td></td>
<td>Interview with experts* (PMI, 2009; de Bakker et al., 2010; Dikmen et al., 2010; Papke-Shields et al., 2010; Kululanga and Kuotcha, 2010; Hillson, 2003)</td>
</tr>
<tr>
<td></td>
<td>Questionnaires and interviews (PMI, 2009; de Bakker et al., 2010)</td>
</tr>
<tr>
<td></td>
<td>Decision analysis (White and Fortune, 2002; PMI, 2009)</td>
</tr>
<tr>
<td></td>
<td>Delphi method* (PMI, 2009; Papke-Shields et al., 2010; de Bakker et al., 2010)</td>
</tr>
<tr>
<td></td>
<td>Probability analysis*, Reliability Analysis (White and Fortune, 2002)</td>
</tr>
<tr>
<td></td>
<td>Monte Carlo simulation (White and Fortune, 2002; PMI, 2009)</td>
</tr>
<tr>
<td></td>
<td>Multi-criteria analysis (PMI, 2009; White and Fortune, 2002)</td>
</tr>
<tr>
<td></td>
<td>CPM, CPA, PERT (Papke-Shields et al., 2010; White and Fortune, 2002)</td>
</tr>
<tr>
<td></td>
<td>Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis* (Hillson, 2003; White and Fortune, 2002; PMI, 2009)</td>
</tr>
<tr>
<td></td>
<td>Analytic Hierarchy Process (AHP) (PMI, 2009; Ho et al., 2010; Dikmen et al., 2010)</td>
</tr>
<tr>
<td></td>
<td>Cluster analysis (PMI, 2009)</td>
</tr>
<tr>
<td>II. Risk evaluation</td>
<td>Risk register, Risk documentation form, Risk management ledger (Papke-Shields et al., 2010; Kululanga and Kuotcha, 2010; Yeo and Ren, 2009)</td>
</tr>
<tr>
<td></td>
<td>Probability and impact grids, Risk matrix, Risk map (White and Fortune, 2002; PMI, 2009; Zhou et al., 2008)</td>
</tr>
<tr>
<td></td>
<td>Risk breakdown structure (RBS) (Yeo and Ren, 2009; Kululanga and Kuotcha, 2010; Dey et al., 2007; PMI, 2009; Hillson, 2003)</td>
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<td></td>
<td>Decision analysis (White and Fortune, 2002; PMI, 2009)</td>
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<td>Delphi method* (PMI, 2009; Papke-Shields et al., 2010; de Bakker et al., 2010)</td>
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<td>Probability analysis*, Reliability Analysis (White and Fortune, 2002)</td>
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<td></td>
<td>Monte Carlo simulation (White and Fortune, 2002; PMI, 2009)</td>
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<td></td>
<td>Multi-criteria analysis (PMI, 2009; White and Fortune, 2002)</td>
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<tr>
<td></td>
<td>CPM; CPA; PERT (Papke-Shields et al., 2010; White and Fortune, 2002)</td>
</tr>
<tr>
<td></td>
<td>Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis* (Hillson, 2003; White and Fortune, 2002; PMI, 2009)</td>
</tr>
<tr>
<td></td>
<td>Analytic Hierarchy Process (AHP) (PMI, 2009; Ho et al., 2010; Dikmen et al., 2010)</td>
</tr>
<tr>
<td></td>
<td>Cluster analysis (PMI, 2009)</td>
</tr>
<tr>
<td>III. Planning actions</td>
<td>Action plan, Mitigation plan* (Papke-Shields et al., 2010; Gil and Tether, 2011; Kwak and Smith, 2009)</td>
</tr>
<tr>
<td>against risk</td>
<td>Contingency plan (Papke-Shields et al., 2010; PMI, 2009; Kululanga and Kuotcha, 2010)</td>
</tr>
<tr>
<td></td>
<td>Risk owner definition (Yeo and Ren, 2009)</td>
</tr>
<tr>
<td></td>
<td>SWOT analysis* (Hillson, 2003; White and Fortune, 2002; PMI, 2009)</td>
</tr>
<tr>
<td></td>
<td>Design Flexibility (Gil and Tether, 2011; White and Fortune, 2002)</td>
</tr>
<tr>
<td></td>
<td>5W2H (What, When, Where, Why, How, How Much) analysis*</td>
</tr>
<tr>
<td>IV. Risk monitoring</td>
<td>Periodic risk review* (Papke-Shields et al., 2010; Kululanga and Kuotcha, 2010; Yeo and Ren, 2009)</td>
</tr>
<tr>
<td></td>
<td>Reported monitoring of project risks, including Risks status reports and Status</td>
</tr>
</tbody>
</table>

Table I. PRM practices considered in the questionnaire (continued)
Additionally, there were some practices added as a result of the information obtained from the interviews with project managers (signaled in Table I).

*Project performance.* Project performance evolved from the cost–time–quality triangle to include dimensions such as stakeholders (Lester, 1998), financial criteria (Archer and Ghasemzadeh, 1999), customer satisfaction (Shenhar et al., 2001), project environment (Raz et al., 2002), human resources management (Popaitoon and Siengthai, 2014), behavioral aspects (e.g. communication with clients) (Jugdev and Müller, 2005), cross-cultural perceptions (Pinto, 2014) or sustainability (Carvalho and Rabechini, 2015). The performance of a project can be assessed by the number of project objectives that have been satisfied (Papke-Shields et al., 2010) or by a set of criteria that measure project success. It is impossible to find a universal set of criteria to measure project performance since projects differ in size, uniqueness and complexity (Westerveld, 2003). Success, as a subjective term, depends on the perspective of those measuring it (Jha and Iyer, 2006). The base criteria to evaluate the performance of a project are meeting the budget, the time, and the quality requirements (Fortune et al., 2011), but other can be added. Following the literature, we measured project performance considering the traditional cost targets, time targets and quality standards triangle plus two common criteria: technical specifications achievement and customer satisfaction.
3. Research methods

Our empirical work was structured around a systematic literature review, discussed in the previous section, five exploratory interviews with PM practitioners, and an online self-administered survey. The main objectives of the interviews were to understand if PM practitioners are aware of PRM and identify the PRM practices that they adopt. The interviewees were selected theoretically: they are Brazilian experienced PM practitioners, three of them are currently involved in public–private partnership projects and the other two are risk analysis specialists. The interviews were carried out during September 2014 and were audio recorded and transcribed. Then, a conventional content analysis of the interview transcripts was performed (see Hsieh and Shannon, 2005). The interviewees were questioned about the PRM practices they knew or applied during the project life cycle (the practices the interviewees referred are signaled in the list presented in Table I). Two of them (5W2H, and Balanced Scorecard) were added to the list used in the questionnaires. Observing that list, we can also see that numerous practices were unknown to the project managers interviewed (or, at least, were not used by them regularly).

The questionnaire of the online survey was developed after the literature review and the exploratory interviews and is based on the matrix proposed by Del Caño and De La Cruz (2002) that relates project complexity and team maturity to identify best practices in the construction economic sector. At the beginning of the questionnaire, the respondents are asked to answer the questions in relation to the most relevant project they have been involved in. Later, we realized that this became a limitation of the study, since the respondents used as a reference the most complex project and/or that with a better performance.

The questionnaire is organized in five sections: the first section has the aim of collecting background information about the respondent (e.g. function, experience in PM or academic qualifications); the second section is focused on the complexity of the underlying project (questions were answered using a five-point Likert scale); the third section addresses the performance of the project (questions answered using a five-point Likert scale); the fourth section is dedicated to organizational PRM maturity (questions answered using a five-point Likert scale); and the fifth section asks the respondents about the level of use of each PRM practice in each PRM process phase during the project execution (using a four-point Likert scale, because we wanted to avoid neutral answers when questions about actions were involved) and if they know the practice. A pretest of the questionnaire with five PM experts was conducted. Based on their feedback through individual online interviews, slight language corrections were made.

The online survey was administered to PM practitioners from different countries and industries using the PMI network and, subsequently, the snowball method. According to Maxwell (2009), purposive sampling is a type of sampling in which particular settings, persons or events are deliberately selected on behalf of the important information they can provide that cannot be obtained from other sources. Despite the little control over the sampling process, the snowball method is suitable for reaching populations that are difficult to assess, in our case, worldwide dispersed (Bryman and Bell, 2015). Around 6,000 e-mail contacts were made, and a total of 1,112 questionnaires were returned. After screening, some were excluded because the respondents did not belong to a PM team, resulting in a sample of 865 responses (a response rate of 14.4 percent). This is good for a survey of this type. For example, Ling et al. (2009) obtained a response rate of 17 percent.

The sample includes respondents from 79 countries from the five continents: 62.2 percent of the respondents from 18 American countries; 17 percent of the respondents from 24 European countries; 16 percent of the respondents from 26 Asian countries; 3 percent of the respondents from nine African countries and 2 percent of the respondents from two Oceanian countries. The countries with more respondents were the USA (34.7 percent of the respondents), Brazil (10.5 percent), Canada (8.3 percent), India (4.0 percent), and Italy and
Spain (2.4 percent, each). In Table II, we present the profile of the interviewees and survey respondents.

Most respondents obtained their PRM experience in the following industries: IT (17.9 percent of the respondents), telecommunications (7.3 percent), industrial (7.2 percent), management (6.9 percent), civil construction (6.8 percent), finance (6.2 percent), defense (5.5 percent), public administration (4.7 percent) and oil (4.6 percent). In all, 29 different industries were referred. The reasons for the choice of the PRM experience the respondents chose to answer the questionnaire about (the most relevant project they had been involved in) were the team and project dimension (15.1 percent of the responses), the project budget (14.9 percent), the integration efforts (13.9 percent), the duration of the project (13.6 percent), the influence of the stakeholders (13.2 percent), the technology involved (12.0 percent), the project performance (8.9 percent) and the knowledge obtained in terms of new standards (8.4 percent).

To assess the internal consistency amongst the responses, we used the Cronbach’s $\alpha$ (Table III). The threshold of the Cronbach’s $\alpha$ should be at least 0.70 (Hair et al., 2014).

Since we define and measure constructs (PRM practices’ use, organizational PRM maturity, project complexity and project performance), there is the need to assess their discriminant/convergent validity. Given the considerable number of items (a total of 69), an exploratory factor analysis was used to reduce data, determining the minimum number of factors needed to account for the maximum portion of total variance present in the original data set of variables (Hair et al., 2014). The principal components extraction method with Varimax (variance maximizing) rotation was applied. Both Kaiser-Meyer-Olkin test and

<table>
<thead>
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<th>Characteristics</th>
<th>Interviewees (%)</th>
<th>Survey respondents (%)</th>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>50–60 years</td>
<td>20</td>
<td>21.2</td>
</tr>
<tr>
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<tr>
<td>30–40 years</td>
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<td>30.3</td>
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<td>&lt; 30 years</td>
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<tr>
<td>&gt; 2 years and ≤5 years</td>
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<td>12.8</td>
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<tr>
<td>≤2 years</td>
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<td>1.7</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td>0.9</td>
</tr>
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</table>

Table II. Profile of the respondents
Bartlett’s test of sphericity indicate that the data are suitable for a structural detection. All the items have significant loadings for some factor, therefore, none has been excluded. The factor loads of the variables that constitute each factor are show in Table VI and Table VII. The factors extracted from the use of PRM practices were labeled to reflect the items that define them. In respect to the other constructs, only one factor per construct (comprising all related variables) was extracted, explaining 61 percent of total variance for project complexity, 57 percent for project performance, and 62 percent for organizational PRM maturity.

Discriminant validity ensures that factors theoretically non-overlapping do in fact not overlap, while convergent validity tests whether factors that should be related are in fact related. To assess the discriminant/convergent validity of the constructs, corrected inter-factor correlations were analyzed (Table IV). Discriminant validity is acceptable if all inter-factor correlations are above 0.30 (Field, 2009), to assure convergent validity correlations below 0.50 should be avoided (Carlson and Herdman, 2012).

We observed convergent validity between factors of PRM practices’ use along the phases of the risk management process, and between the organizational PRM maturity factor and factors of PRM practices’ use (mainly, use of planning, communication, support, and control practices (coefficients around 0.6)). There is discriminant validity between the project complexity factor and the organizational PRM maturity, all factors of PRM practices’ use and the factor of project performance. There is also discriminant validity between the project performance factor and all the factors of PRM practices’ use. The moderated relationships identified do not detract the necessary difference that must exist between the factors.

Post hoc multiple mean comparison tests using Tamhane’s T2 tests were performed to test if there are differences in the average level of practices’ usage of major regions (Europe, North America, South America, Africa, Asia, Oceania and the Middle East). Relatively to some practices (mainly in the identification, control, and communication steps of the PRM process, and in some specific techniques like the “S-curve” or “CPM, CPA, PERT”), the results obtained led to the rejection of the null hypotheses that the averages of those practices’ use are the same in all the regions. Consequently, we use the region as a control variable in subsequent analyses. We used Mann-Whitney’s U test to compare the use of PRM practices between genders and could not reject the null hypotheses that the two samples were selected from populations with similar distributions (except for three techniques: “5W2H,” “S-curve,” and “CPM, CPA, PERT”), therefore, we do not use gender as a control variable.

After, the following statistical methods were used to answer the research questions:

1. Cluster analysis (on original variables) was used to identify patterns of PRM practices’ usage, answering RQ1. To facilitate the interpretation, the previously determined factor labels are used to explain the clusters identified in the data;
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<th>FP_ID_IGT</th>
<th>FP_ID_T</th>
<th>FP_EV_AR</th>
<th>FP_EV_TT</th>
<th>FP_PL</th>
<th>FP_CT_CG</th>
<th>FP_CT_TT</th>
<th>FP_CM</th>
<th>FP_SP</th>
<th>FOM</th>
<th>FPC</th>
<th>FPP</th>
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<td>0.322**</td>
<td>0.368**</td>
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<td>0.243**</td>
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<td>0.232**</td>
<td>0.232**</td>
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<td>0.591**</td>
<td>0.662**</td>
<td>0.572**</td>
<td>0.333**</td>
<td>0.611**</td>
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<tr>
<td>FPC</td>
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<td>0.161**</td>
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<td>0.137**</td>
<td>0.079*</td>
<td>0.263**</td>
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<td>0.156**</td>
<td>0.241**</td>
<td>0.352**</td>
<td>0.317**</td>
<td>0.159**</td>
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<td>0.307**</td>
<td>0.433**</td>
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Notes: FP_ID_TT, FP_ID_IR, FP_ID_IGT, FP_ID_T, FP_EV_AR, FP_EV_TT, FP_PL, FP_CT_CG, FP_CT_TT, FP_CM, FP_SP, FOM, FPC, FPP.

Table IV. Pearson inter-factor correlation coefficients.

Project risk management practices.
To further reveal the different degrees of association between PRM practices’ use and organizational maturity, a multiple regression analysis (with canonical correlation) based on the factors extracted for the PRM practices’ use construct was applied.

Cluster Analysis (see e.g. Hair et al., 2014) has been used in PM (e.g. Golini et al., 2015; Besner and Hobbs, 2013). A two-stage analysis was performed to determine the number of clusters: a hierarchical method was used to determine the number of clusters, and then a non-hierarchical method was used to allocate the sample cases to a particular cluster, as recommended by experts (e.g. Milligan, 1980; Ketchen and Shook, 1996; Hair et al., 2014). The hierarchical clustering method used was Ward’s (1963) minimum variance agglomerative method. Accordingly, the dissimilarity measure used was the squared Euclidean distance (see e.g. Hair et al., 2014). To decide the number of clusters to form, we analyzed the SPSS agglomeration schedule and observed the hierarchical tree diagram (dendrogram). As a result, we decided to partition the PRM experiences into three clusters. To define them, we used a non-hierarchical method, K-means that has the advantage of optimizing the within-cluster homogeneity and between-cluster heterogeneity (Ketchen and Shook, 1996).

Two assumptions should be taken into account when cluster analysis is used: sample representativeness and multicollinearity (Hair et al., 2014). Sample representativeness was assured by the sample size and the range of geographic distributions, ages, educational backgrounds, years and field of experience and project areas of the respondents. To protect against multicollinearity, we assured that the Tolerance value of all clustering variables is higher or equal to 0.8. Data representation is good if the clusters are compact and isolated (Jain, 2010).

To test if there are significant differences between the averages of the identified groups (clusters), we performed post hoc multiple mean comparison tests using Tamhane’s T2. The averages of all groups are statistically different for all the practices. The classification accuracy of the clustering process was evaluated using a simultaneous estimation discriminant analysis (see e.g. Hair et al., 2014), resulting in 91 percent of the cases (i.e. PRM experiences) being correctly classified using the discriminant functions that were determined from the classification of the cases according to the a priori assignment to a cluster (as a consequence of the clustering process described). The function that discriminates more is strongly positively correlated with control and planning practices.

All constructs under analysis are composed by several variables. This is a limitation for the use of most multivariate techniques. The canonical correlation analysis (CCA) overcomes this limitation. A CCA quantifies the correlation between two canonical (latent) variables: one representing a set of independent variables, and another a set of dependent variables. The canonical correlation is optimized such that the linear correlation between the two latent variables is maximized (Hair et al., 2014). We used the canonical square correlation (RC²) and the Hotellings test (p-value < 0.05) to assess the goodness-of-fit of the model. The CCA derives as many functions as the minimum number of variables contained in the independent/dependent set.

4. Results and discussion

4.1 Patterns in the usage of PRM practices (RQ1)
To answer RQ1, we partitioned the cases, in terms of practices’ usage, into a small number of homogeneous groups (clusters) different from one another. The cluster analysis performed resulted in the identification of three groups (clusters) of PRM practitioners’ experiences. We can observe (Table V) that PRM practices’ use is clearly higher in cluster A (33 percent of the cases), average level in cluster B (48 percent of the cases) and lower in cluster C (19 percent of the cases). The set of PRM practices less used is related with tools
<table>
<thead>
<tr>
<th></th>
<th>Clusters</th>
<th>Factors</th>
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<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Risk register documentation firms or management ledger</td>
<td>3.49 (0.4%)</td>
<td>2.82 (1.7%)</td>
</tr>
<tr>
<td>Periodic risk review</td>
<td>3.43 (0.9%)</td>
<td>2.74 (0.8%)</td>
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<tr>
<td>Project risk ranking</td>
<td>3.39 (0.6%)</td>
<td>2.85 (6.8%)</td>
</tr>
<tr>
<td>Risk checklist</td>
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<td>2.68 (1.1%)</td>
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<tr>
<td>Timephased budget plan monitoring</td>
<td>3.48 (0.8%)</td>
<td>2.96 (2.7%)</td>
</tr>
<tr>
<td>Group 2: Simulation of risk factors</td>
<td>3.50 (0.2)</td>
<td>3.02 (2.0%)</td>
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<tr>
<td>Interviews with experts</td>
<td>3.22 (1.2%)</td>
<td>2.51 (1.4%)</td>
</tr>
<tr>
<td>Brainstorming</td>
<td>3.31 (0.4%)</td>
<td>2.85 (8.3%)</td>
</tr>
<tr>
<td>Questionnaires and interviews</td>
<td>2.93 (0.4%)</td>
<td>2.20 (7.5%)</td>
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<td>Post-project review</td>
<td>2.99 (4.9%)</td>
<td>2.02 (12.6%)</td>
</tr>
<tr>
<td>Historical review</td>
<td>3.04 (0.4%)</td>
<td>2.25 (2.8%)</td>
</tr>
<tr>
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<td>FMEA</td>
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<td>HAZAN HAZOP</td>
<td>2.49 (4.5%)</td>
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<td>Ishikawa diagram</td>
<td>2.53 (3.1%)</td>
<td>1.73 (12.8%)</td>
</tr>
<tr>
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<td>12.32 (4.9%)</td>
<td>1.56 (13.7%)</td>
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<tr>
<td>Life Cycle Cost Analysis</td>
<td>2.13 (0.8%)</td>
<td>2.01 (7.8%)</td>
</tr>
<tr>
<td>CPM, CPA, PERT</td>
<td>3.80 (0.8%)</td>
<td>2.08 (1.9%)</td>
</tr>
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<td>Risk register documentation firms or management ledger</td>
<td>3.87 (0.8%)</td>
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<td>Probability and Impact Grid, Risk matrix, Risk trap</td>
<td>3.40 (0.8%)</td>
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<td>RBS</td>
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<td>SWOT</td>
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<td>Design Flexibility</td>
<td>2.92 (4.9%)</td>
<td>2.03 (11.7%)</td>
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</table>

Table V: Comparison of clusters in terms of PRM practices use (continued)
and techniques, an area for improvements. On the contrary, communication and control
practices (mostly related to time and cost control) are the most used. The PRM practices
used more frequently are: in the identification phase, “risk register, documentation form or
management ledger,” “project time schedule,” “time-phased budget plan monitoring,” and
“periodic risk review” (of the information record and targets factor); in the evaluation
phase, “risk register, documentation form or management ledger,” “RBS” and “probability
and impact grids, risk matrix, risk map” (of the analysis of records factor); in the planning
phase, “action plan, mitigation plan,” “contingency plan”; in the monitoring phase, all
the practices of the control by goals factor; in the communication phase, “communication
practices”; and in the support phase, “periodic project meeting” and “document review.”

Table V.
The less used PRM practices are: in the identification phase, all the practices of the tools and techniques factor; in the evaluation phase, the practices of the tools and techniques factor with the exception of “CPM analysis”; in the planning phase, “design flexibility”; in the monitoring phase, the practices of the tools and techniques factor with the exception of “customer satisfaction survey” and “KPIs library”; in the communication phase, “integration practices” for clusters A and C; and in the support phase, “TQM, ISO standards, EFQM,” “project risk management maturity analysis,” and “prototype or mock-up.”

It seems that relatively simple PRM practices (e.g. control by goals or cost/time targets) are more adopted by project managers, while more complex tools, that require the acquisition of new expertise, are less used. This is in line with the results of Fortune et al. (2011) and Fortune and White (2006).

Another important information is the percentage of respondents that do not know a certain practice (see Table V), clearly higher in cluster C (e.g. HAZAN, HAZOP with 42.1 percent or FMEA 35.9 percent). Even in cluster A, these techniques are unknown for a considerable percentage of cases (8.6 percent and 4.1 percent, respectively). This situation is not specially related with a specific phase or area of knowledge (like statistics or decision analysis), but instead with the use of tools and techniques in general. For example, even the “CPM, CPA, PERT” set of techniques of the PM field has considerable percentages of unawareness (around 10 percent, in cluster C, and 5 percent, in cluster B) in all the phases in which it can possibly be used (identification, evaluation and monitoring).

In conclusion, there are no significant differences in the level of PRM practices’ use in the different steps of the PRM process; the proportion of cases in clusters B and C is high (67 percent of total cases), therefore the knowledge about and the implementation of a considerable number/type of PRM practices are still limited; patterns across the set of PRM practices indicate that risk practices related with targets (either in the identification or the monitoring phases) are the most used and known, independently of the cluster, followed by the PRM practices related with planning, communication and information record. The least used are those related with tools and techniques, with the exception of “CPM, CPA, PERT” and “KPIs library.” More investment in training related with tools and techniques is needed in order to enlarge the set of practices known and used by practitioners.

Regarding the control variable region, the clusters formed for each region are also three, with similar characteristics, but there are differences in terms of the proportion of cases in each cluster (Table VI). The regions with the higher levels of practices’ usage are Europe, North America, and the Middle East; those with lower levels are the Middle East, and Africa. It seems that, in the Middle East, there have been simultaneously projects with a very high use of PRM practices and other projects in the lower end of PRM practices’ use.

In terms of the context variables, the respondents based their answers on complex projects, essentially measured by “project duration” and “team size,” or successful projects.

<table>
<thead>
<tr>
<th>Regions</th>
<th>Cluster A Higher level of PRM practices’ use (%)</th>
<th>Cluster B Average level of PRM practices’ use (%)</th>
<th>Cluster C Low level of PRM practices’ use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>33</td>
<td>48</td>
<td>19</td>
</tr>
<tr>
<td>Africa</td>
<td>19</td>
<td>50</td>
<td>31</td>
</tr>
<tr>
<td>Asia</td>
<td>36</td>
<td>44</td>
<td>20</td>
</tr>
<tr>
<td>Europe</td>
<td>44</td>
<td>44</td>
<td>12</td>
</tr>
<tr>
<td>North America</td>
<td>42</td>
<td>41</td>
<td>17</td>
</tr>
<tr>
<td>South America</td>
<td>26</td>
<td>51</td>
<td>23</td>
</tr>
<tr>
<td>Middle East</td>
<td>43</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Oceania</td>
<td>36</td>
<td>45</td>
<td>18</td>
</tr>
</tbody>
</table>

Table VI. Comparison of clusters proportions for the regions
In terms of project complexity, it is difficult to differentiate the clusters (see Table VII), since only cluster A is associated with slightly more complex projects. As expected, higher organizational PRM maturity is associated with higher levels of PRM practices’ use.

<table>
<thead>
<tr>
<th>Project complexity</th>
<th>Clusters average and distribution</th>
<th>Factor loads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Project duration</td>
<td>4.03^ABC</td>
<td>4.05^ABC</td>
</tr>
<tr>
<td>Team size</td>
<td>3.81^ABC</td>
<td>3.66^ABC</td>
</tr>
<tr>
<td>Project budget</td>
<td>3.01^ABC</td>
<td>2.91^ABC</td>
</tr>
<tr>
<td>Stakeholders’ influence</td>
<td>3.13^ABC</td>
<td>3.05^ABC</td>
</tr>
<tr>
<td>Dependence on external organizations</td>
<td>2.73^ABC</td>
<td>2.63^ABC</td>
</tr>
<tr>
<td>Cost targets</td>
<td>3.66^B</td>
<td>3.36^ABC</td>
</tr>
<tr>
<td>Time targets</td>
<td>3.69^B</td>
<td>3.25^ABC</td>
</tr>
<tr>
<td>Technical specifications</td>
<td>4.11^B</td>
<td>3.86^ABC</td>
</tr>
<tr>
<td>Quality standards required</td>
<td>4.18^B</td>
<td>3.89^ABC</td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td>4.07^B</td>
<td>3.82^ABC</td>
</tr>
<tr>
<td>Stakeholders interests</td>
<td>4.07^B</td>
<td>3.77^ABC</td>
</tr>
<tr>
<td>Assimilation of risk management concept</td>
<td>3.66^B</td>
<td>2.89^ABC</td>
</tr>
<tr>
<td>Awareness of risk management importance</td>
<td>4.05^B</td>
<td>3.18^ABC</td>
</tr>
<tr>
<td>Risk management capabilities</td>
<td>3.38^B</td>
<td>2.41^ABC</td>
</tr>
<tr>
<td>Attitude towards risk (reactive vs. proactive)</td>
<td>3.75^B</td>
<td>2.73^ABC</td>
</tr>
<tr>
<td>Leadership</td>
<td>4.03^B</td>
<td>3.44^ABC</td>
</tr>
<tr>
<td>Management of project knowledge</td>
<td>4.19^B</td>
<td>3.56^ABC</td>
</tr>
</tbody>
</table>

Table VII.
Clusters description

Notes: A According to Tamhane’s T2 test, the average of the cluster cannot be considered different from that of cluster A (p-value>0.05); B the average of the cluster cannot be considered different from that of cluster B; etc.
4.2 Organizational PRM maturity and practices (RQ2)

CCA was used to quantify the correlation between the set of items that measure the construct organizational PRM maturity and the set of factors that represent the PRM practices’ use. The coefficients of the variables for the first canonical function are presented in Table VIII. The higher weights (the magnitude of the weights represents their relative contribution to the variate) are highlighted in bold for both the dependent and the independent canonical variates.

In the function with the highest canonical correlation $R^2 C2$ (0.55), the most relevant variables of the dependent canonical variate are “information record,” “tools and techniques,” and “cost/time targets,” and for the independent canonical variate are “awareness of risk management importance,” and “leadership.” Since the coefficients of both variates have the same sign, the variables are all positively correlated. Therefore, as expected, it is possible to confirm that organizational PRM maturity influences the set of practices available, which is in line with the results of Golini et al. (2015) and Cagliano et al. (2015).

To answer RQ2 that concerns the organizational attributes that influences the practices, Table IX presents the results of a Regression Analysis relating the influence of organizational PRM maturity on the use of PRM practices using the previous canonical correlation. With the exception of “leadership” (that is not correlated with the identification phase), all organizational PRM maturity items are correlated with all the PRM process steps.

A better “assimilation of risk management concept” (+1) induces an average increase in the use of the “information record” (0.128), “tools and techniques” (evaluation phase) (0.152), “planning actions” (0.100), “tools and techniques” (monitoring phase) (0.113), and “communication” (0.085). Two factors of the PRM practices’ use construct are influenced by all the maturity variables: “planning actions” and “communication.” The use of “information record” to identify risks is only influenced by the “assimilation of risk management concept.” Therefore, it seems that, if the organizations expand the risk management idea, the information record will be more used. In the previous section, it was noted that the “tools and techniques” practices were the least used. Based on the results

<table>
<thead>
<tr>
<th>Variate/variables</th>
<th>Canonical coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC2</td>
<td>0.55</td>
</tr>
<tr>
<td><strong>Dependent variables</strong></td>
<td>PRM practices</td>
</tr>
<tr>
<td>Tools and techniques</td>
<td>−0.249</td>
</tr>
<tr>
<td>Information record</td>
<td>−0.486</td>
</tr>
<tr>
<td>Information gathering tools</td>
<td>−0.166</td>
</tr>
<tr>
<td>Cost/time targets</td>
<td>−0.223</td>
</tr>
<tr>
<td>Analysis of records of information</td>
<td>−0.147</td>
</tr>
<tr>
<td>Tools and techniques</td>
<td>−0.114</td>
</tr>
<tr>
<td>Planning actions</td>
<td>−0.173</td>
</tr>
<tr>
<td>Control by goals</td>
<td>−0.011</td>
</tr>
<tr>
<td>Tools and techniques</td>
<td>−0.088</td>
</tr>
<tr>
<td>Support tasks</td>
<td>−0.282</td>
</tr>
<tr>
<td>Communication</td>
<td>0.094</td>
</tr>
<tr>
<td><strong>Independent variables</strong></td>
<td>Organizational PRM maturity</td>
</tr>
<tr>
<td>Assimilation of risk management concept</td>
<td>−0.181</td>
</tr>
<tr>
<td>Awareness of risk management importance</td>
<td>−0.237</td>
</tr>
<tr>
<td>Risk management capabilities</td>
<td>−0.147</td>
</tr>
<tr>
<td>Attitude towards risk (reactive vs proactive)</td>
<td>−0.185</td>
</tr>
<tr>
<td>Leadership</td>
<td>−0.208</td>
</tr>
<tr>
<td>Management of project knowledge</td>
<td>−0.137</td>
</tr>
<tr>
<td>First canonical function explained variance of the correlation</td>
<td>86%</td>
</tr>
</tbody>
</table>

**Note:** In italic, the correlations above the absolute value of 0.2
now obtained, we expect that the use of this type of practices will increase if “risk management capabilities” (0.179), and “assimilation of risk management concept” (0.152) are improved. Looking at another key set of practices identified in the previous subsection, “control by goals,” it can be observed that it is not correlated with risk specific capabilities; instead, it is mainly influenced by “leadership” (0.156).

Cagliano et al. (2015) had already identified that the higher the maturity toward risk management, the more common the use of quantitative techniques.

Table X shows the effect of organizational PRM maturity moderated by project complexity on practices’ usage. To run this moderator analysis using multiple regression, we previously verified the assumptions of linearity, homoscedasticity error independence and normality. The moderating effect exists, although it only induces a slight variation in the Adjusted $R^2$. All the models explain around 28–45 percent of the variance in the practices’ use. We conclude that the relation between organizational PRM maturity and

<table>
<thead>
<tr>
<th>Steps of the PRM process</th>
<th>PRM practices</th>
<th>Assimilation of risk management concept</th>
<th>Risk management capabilities</th>
<th>Attitude towards risk (reactive vs proactive)</th>
<th>Management of project knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>Tools and techniques</td>
<td>0.179</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Tools and techniques</td>
<td>0.152</td>
<td>0.19</td>
<td>0.159</td>
<td>0.1</td>
</tr>
<tr>
<td>Planning/Monitoring</td>
<td>Planning actions</td>
<td>0.1</td>
<td>0.096</td>
<td>0.112</td>
<td>0.169</td>
</tr>
<tr>
<td></td>
<td>Control by goals</td>
<td>0.113</td>
<td>0.138</td>
<td>0.139</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Support</td>
<td>0.085</td>
<td>0.153</td>
<td>0.15</td>
<td>0.132</td>
</tr>
</tbody>
</table>

Note: Only the statistically significant coefficients are presented ($p$-value < 0.05)

Table IX. Regression analysis of the influence of organizational PRM maturity on practices’ use

<table>
<thead>
<tr>
<th>Steps of PRM process</th>
<th>PRM practices</th>
<th>Without moderator Adjusted $R^2$</th>
<th>Coefficients</th>
<th>With project complexity as moderator Adjusted $R^2$</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>Information record</td>
<td>0.273</td>
<td>0.522 m</td>
<td>0.273 -0.002 + 0.520 m + 0.005 m x c</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Tools and techniques</td>
<td>0.349</td>
<td>0.591 m</td>
<td>0.36 -0.002 + 0.588 m + 0.039 m x c</td>
<td></td>
</tr>
<tr>
<td>Planning/Monitoring</td>
<td>Planning actions</td>
<td>0.439</td>
<td>0.662 m</td>
<td>0.443 -0.004 + 0.658 m + 0.057 m x c</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control by goals</td>
<td>0.227</td>
<td>0.572 m</td>
<td>0.338 0.016 + 0.56 m + 0.81c + 0.72 m x c</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Support</td>
<td>0.374</td>
<td>0.611 m</td>
<td>0.386 -0.003 + 0.613m -0.097c + 0.55 m x c</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support</td>
<td>0.361</td>
<td>0.601 m</td>
<td>0.367 -0.005 + 0.589 m + 0.022 m x c</td>
<td></td>
</tr>
</tbody>
</table>

Notes: m, organizational PRM maturity; c, project complexity; m x c, interaction term
practices’ use is moderated by the complexity of the project. In presence of more complex projects, the use of practices increases slightly, which is in line with the results obtained by Papke-Shields et al. (2010).

4.3 Organizational PRM maturity and project performance (RQ3)

Like Torres (2014) in his literature survey, our analysis concludes that higher organizational maturity leads to better performance. The attributes of organizational maturity that contribute the most to enhancing project performance according to our regression model (that explains around 32 percent of the variance in project performance; \( R^2 \) of 0.317) are: attitude toward risk, leadership and management of project knowledge:

\[
\text{Project performance} = -1.475 + 0.19\text{Attitude} + 0.161\text{Leadership} + 0.123\text{Knowledge}
\]

In Table XI, the regression models considering the items used to measure performance as dependent variables and the items used to measure organizational PRM maturity as independent variables are presented. It seems that, for each attribute of performance, increasing specific organizational PRM maturity items improves performance. Leadership, management of project knowledge, and attitude toward risk appear as indispensable attributes of a PRM mature organization.

5. Conclusions

This study contributes to a better understanding of PRM practices’ use in the six phases of the PRM process, having identified areas for improvement. In general, practices related to information register and information analysis are more used than “tools and techniques.” Therefore, according to our data, organizations and professionals should improve their PRM knowledge in this set of practices. For a significant proportion of the project managers surveyed, many of the practices in this category are almost unknown. Probably, because they demand technical training. There are differences in the use of PRM practices related with the world region, with Africa and South America being the regions where this use is lower.

Additionally, this research provides some valuable understanding about the relation between organizational PRM maturity and the use of PRM practices moderated by project complexity and adds important empirical information concerning the most important attributes of this relation for each step of the PRM process. More mature organizations use practices more frequently. In the presence of complex projects, more practices are used. The obtained empirical data help to confirm some hypotheses: organizational PRM maturity influences the practices’ usage (Golini et al., 2015), moderated by project complexity (Papke-Shields et al., 2010), and organizational PRM maturity influences the project performance (Yazici, 2009; Torres, 2014).

In terms of practical implications, project managers can compare their organizations with the determined clusters and identify possible improvement actions to increase the PRM
maturity of those organizations. Also, some guidelines about PRM areas lacking training are provided.

In the future, it would be interesting to study different projects (with different complexity levels) developed by the same organization (i.e. considering a given PRM maturity) to verify if there are significant differences in the PRM practices used and in the projects performance.

References


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PMI (2013b), Managing Change in Organizations: A Practice Guide, Project Management Institute, Newtown Square, PA.


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Abstract
Purpose – The purpose of this paper is to identify the marketing practices adopted by contractors in project-based industries to win new business and maintain relationships with existing clients.

Design/methodology/approach – The authors interviewed eight such contractors, and used activity theory as a lens to analyze the results. The authors investigated project marketing activities at four stages of the project contract life cycle, and against four enablers of collaboration.

Findings – The authors have identified that the service-dominant logic pervades project marketing. Through the project contract life cycle the marketing activity starts with a strategic focus, becomes tactical, then operational and returns to strategic. Project marketing involves executive managers, marketing, client or account managers and project managers. Project managers have a key responsibility for project marketing. The four enablers of collaboration, relationships, communication, going-with and trust, support each other and the entire project marketing activity.

Research limitations/implications – As a contribution to theory, the authors have identified the practices adopted by contractors in project-based industries to market their competencies to clients to win new work and maintain relationships with existing clients. The authors have identified practices throughout the contract life cycle, and practices to develop collaboration. The next step will be to explain these practices in terms of traditional marketing theory.

Practical implications – The results provide guidelines to contractors in project-based industries who wish to improve their marketing activity to achieve sustainable performance. Industry may also find it useful to train or coach their project managers to be conscious of their marketing role.

Originality/value – Previous work has been conceptual in nature and has speculated on the nature of the project marketing performed by contractors to win new projects, and set it against marketing done by the project. This research has empirically investigated the actual marketing practices adopted by project contracting organizations, shown how it varies through the project life cycle and shown how responsibility passes from senior management to the account team and then to project managers. It has also investigated the application of the four enablers of collaboration: relationships, communication, going-with and trust.

Keywords Project marketing, Contractors, Project-based industries, Project contract life-cycle, Relationship, Communication, Collaboration, Trust

Paper type Research paper

Introduction
There has been an ongoing discussion in the project marketing literature about whether project management is part of project marketing or project marketing is part of project management (Cova and Salle, 2005). The view that project management is part of project marketing is the marketing perspective. It sets projects in the wider context of the project business and project portfolio (Cova et al., 2002; Tikkanen et al., 2007; Blomquist and Wilson, 2007). On the other hand, project managers identify project marketing as a project management task, primarily stakeholder engagement (Turner et al., 2010). Turner and Lecoeuvre (2017) have moved beyond this discussion, by taking an organizational project management perspective of project marketing (Aubry et al., 2012). Project marketing is an activity undertaken by organizations involved in managing projects, whereby they
establish networks, processes and dialogues with their clients to provide offerings of value to their clients (Vargo and Lusch, 2004). Turner and Lecoeuvre (2017) suggested that there are three types of organization involved in the marketing of projects:

1. The project itself: the project needs to market itself to its stakeholders, to engage with them and win their support. The project must convince the stakeholders the benefit they will receive from the project is greater than the value they place on the contribution they make. This is project marketing, as stakeholder management, being part of project management.

2. The investor: the investor needs to market the investment made by the project to a wide range of stakeholders throughout the project and investment life cycle. It needs to win the support of the owner, financiers, suppliers, politicians and local community in the early stages, and to engage with potential contractors and suppliers during the design stages. During commissioning, it must sell the project’s deliverables and the products or service they produce to the operators of the deliverables and the consumers of the products or services. Finally, it should continue to market the investment during initial operation, to win support for future projects.

3. The contractor: finally, the contractor needs to undertake project marketing to win new business. It has competencies the client (investor) does not have, and provides those to the client to enable it to undertake its projects. The contractor should aim to create networks, processes and dialogues with the client, to convince the client they can provide it with services that add value. The contractor also must address the adverse selection problem, and demonstrate to the client that it can be trusted to provide the competence and trustworthiness that makes it an organization the client wants to work with. This, from the perspective of the earlier discussion, is project management being part of project marketing. However, Turner and Lecoeuvre (2017) suggested that both are part of project portfolio management, though project marketing precedes the contractor’s involvement in the project and continues after it has finished.

As part of a larger research project, we are conducting empirical research into project marketing by these three types of organization exploring the three perspectives of project marketing. However, in this paper we focus on the results of our research into marketing by the contractor to win new business. The research makes use of activity theory as a lens to interpret the practices adopted by contractors in project-based industries to do project marketing, and identify how the marketing activity is shared between different managers. Our research questions for this paper are:

**RQ1.** What project marketing practices are adopted by contracting companies in project-based industries to find and win new business and to persuade their clients that they have the competence and trustworthiness to undertake their projects on their behalf?

**RQ2.** What practices are adopted by contracting companies in project-based industries to create conversations and dialogues with their clients to persuade the clients that they can make product offerings that will provide the client with value?

**RQ3.** Who is responsible for the project marketing activity, at what stage are they engaged, and who is their target audience?

By practices, we mean the activities people undertake within project contract organizations to do project marketing. Johnson *et al.* (2003) said, “Activities […] are the day to day stuff of management. It is what managers do and what they manage” (p. 15), and, “The activity based view addresses the detailed processes and practices which constitute the detailed activities of organizational life, and which relate to strategic outcomes” (p. 3). Jarzabkowski (2005)
differentiated between practice, practices and practitioners. In this paper, we are primarily focusing on the practices and practitioners, that is we wish to identify the activities that practitioners undertake to do project marketing, and who the practitioners are.

In the next section, we review the literature on project marketing by the contractor, and develop models which form the basis of our research. We then describe the methodology adopted. We have conducted interviews in eight contracting companies in project-based industries, and used activity theory as a lens to analyze our results. We have used a constructivist paradigm, doing inductive research. The new theory that emerges from our data is the practices adopted by contracting organizations to do project marketing. We describe our results in two parts. From our literature review, we have identified four phases of project contract management, pre-receipt of tender, tender preparation, delivery and post-completion, and use activity theory to identify project marketing practices adopted at each stage. We have also identified the importance of collaboration and have identified four components: relationships, communication, going-with and trust. It is through these four components, contractors create conversations and dialogues with the clients. We use activity theory to identify how those four components are built as part of project marketing.

Literature review

Cova et al. (2002) suggested project management is part of project marketing. By that they meant that project marketing results in projects. Turner and Lecoeuvre (2017) suggested project management is not part of project marketing, but both are part of project portfolio management. Through project marketing, the contractor aims to secure a stream of projects into the portfolio. Project marketing is not about the marketing of projects, as the project marketing literature suggests, but the ability of agents to promote competencies that the contractor has that can provide value to the customer. The initiator of the project usually does not have the competencies to do the work themselves, and so they engage contractors to do it for them. The contractor aims to collaborate with the client to provide their competencies as a service to the client to create value for both. Those competencies will be provided through a project, but the focus of the marketing should be the competencies, the value that they provide the customer and the confidence the client can have in working with the contractor.

Project marketing researchers (Cova and Hoskins, 1997; Cova et al., 2002; Tikkanen et al., 2007; Skaates and Tikkanen, 2003; Lecoeuvre and Deshayes, 2006; Blomquist and Wilson, 2007) have viewed a project from the marketing perspective, suggesting it is a complex transaction covering a package of products, services and works, designed to create capital assets that produce benefits for a buyer (Cova and Sallé, 2005). They go beyond project management, and broaden their perspective to the management of projects (Morris, 1997); project marketing starts in the very early pre-project phase and continues into the post-project phase. Indeed, project management is often defined as the management of a single project from initiation to closure, whereas the management of projects is the totality of an organization’s project-based activity and includes pre- and post-project work. Cova et al. (2002) focused primarily on the early stages and proposed a three-stage model for project marketing:

1. independent of any project;
2. pre-tender; and
3. tender preparation.

During the “independent of any project” phase, the contractor tries to detect emerging projects among the customers, and works with the client to try to push the definition of the project in the direction of its competencies rather than its competitors (Bernink, 1995). The marketing focus here is anticipation. This is followed by the pre-tender stage where project
screening should take into consideration project characteristics and strategic intent (Bernink, 1995). Once the project has been screened and requirements reviewed, the contractor can move into the tender development phase. According to this school of thought, the first goal of the project marketing is to win the contract.

However, project marketing is a continuous process that occurs throughout the entire management of projects process; it continues into the project delivery and follow-up phases. Follow-up, which occurs after the project has been delivered, is crucial. Lusch et al. (2007, p. 7) suggested, “There is no benefit until the offering is used.” and so follow-up can determine customer satisfaction, leading to key account development. Project marketing researchers (Hadjikhani, 1996; Cova and Hoskins, 1997; Cova et al., 2002; Tikkanen et al., 2007; Skaates and Tikkanen, 2003; Lecoeuvre and Deshayes, 2006; Blomquist and Wilson, 2007) consider overcoming demand-related discontinuity to be a major issue. This phase is important for identifying project opportunities and building and sustaining relationships between the buyer and the seller. This phase is very important as relationships here are maintained by social and informational exchange and affect future business (Skaates and Tikkanen, 2003). To address the entire management of projects process, Lecoeuvre and Deshayes (2006) proposed a four-phase project marketing process; they merged Phases 2 and 3 of Cova et al. (2002), and added project delivery and follow-up. Their four phases are:

1. Pre-project marketing: the project does not exist yet, but the contractor anticipates the customer’s requirements, identifies themes for the potential bid (Bernink, 1995) and develops the relationship with the client.
2. Marketing at the start of the project: the contractor starts with co-construction of terms of engagement within the network of influential relationships related to the project.
3. Ongoing project marketing: the contractor, client and sub-contractors proceed with re-negotiation, modifications, follow-up and meetings following one another with constant relationship exchanges until the end of the project.
4. Creating the conditions for future projects: the contractor maintains the relationship with the client, through logistics support and “sleeping relationships”, which enables it to manage discontinuity in project business and prepare for future projects.

Based on these two models, we suggest there are four stages of project marketing:

1. pre-receipt of invitation to tender;
2. tender preparation and contract negotiation;
3. project delivery; and
4. post-project.

The previous researchers have identified these four stages of project marketing. But they have not identified what it is that managers do at each stage, nor which managers are involved. That leads to our first research questions, to identify the practices or activities adopted to undertake project marketing in project contract organizations.

Lecoeuvre and Deshayes (2006) also focused on the development of collaborative relationships with clients, and suggested that there are four enablers of collaboration:

1. relationship management;
2. communication;
3. going-with (providing mentoring, coaching and support); and
4. trust.
Lecoeuvre and Deshayes (2006) identified the need to develop collaborative arrangements with clients using these four elements, but again did not identify the activities or practices adopted to develop them. That is the basis of our second research question.

Bernink (1995) identified three key stakeholders as the target of project marketing:

1. The strategic decision makers: these are the people who will ultimately decide to do the project, and determine which contractor will be awarded the contract. They are interested in the project’s goal. It is the contractor’s executive managers who target these people.

2. The operations managers: these are the operators of the project’s output, the project’s deliverable and the operators and consumers of its outcome, the new competencies the project’s output gives the client, the operation of which enables the client to achieve value (Turner, 2014). They are less interested in the technology, and more concerned that the project’s output works as required to provide the desired outcome (Turner, 2014). They are interested in achieving the outcome, not the technology behind it. It is usually the role of account or client management personnel to communicate with these people. It is essential to make them comfortable that the project’s output and outcome will satisfy their requirements and provide them with the benefit they want.

3. The project and technical managers: these are the people who will judge the contractor’s technical solution and will be able to determine whether the project’s output will work to provide the outcome. The contractor’s project and technical managers will communicate with these people to persuade them of the contractor’s technical competence.

Thus, there are three levels of managers in the contractor involved in project marketing:

1. executive managers;
2. account or client managers; and
3. project and technical managers.

This leads to our third research question, to identify how these three types of managers are involved in the project marketing process, to determine at what stage they are involved and what activities they perform.

The three research questions are raised to present the complications of the research situation which resulted in the research questions that elicit the concerns being addressed in this paper about how the contractors market their competencies and trustworthiness to win business.

Methodology

Our aim is to identify the practices used in project marketing by contractors in project-based industries, and identify who is responsible for implementing the practices. We used a constructivist paradigm, using an inductive research approach as the phenomenon we were investigating is underresearched (Alvesson and Kärreman, 2011). The investigation made use of an interpretive methodology which, according to Walsham (2002, p. 104), uses an existing theory as an “initial guide to design and data collection, use of theory as part of an iterative process of data collection and analysis, and as a final product of the research.” Activity theory (Er et al., 2013) provided that theoretical perspective through which the interviews were examined and was considered to be most appropriate as it provides a holistic framework to examine decision making as a part of the work process (Er and Lawrence, 2011). We use Engeström’s (2000) model of activity
Activity theory is a framework for the analysis of human interaction through their use of tools and artifacts (Hashim and Jones, 2007). It was originally developed to provide a framework to describe human behavior with the unit of analysis being what people do. Activity theory is appropriate as a framework of analysis, as we are trying to identify practices (activities) used as part of the project marketing process, and the practitioners who enact those activities. Under activity theory, a subject or actor undertakes an activity to achieve an object. The subject may be an individual or a group, depending on the granularity of examination. On the higher level (when considering the overall group as the subject), we are able to identify the overall object that motivates the focus group of people. Activity theory allows the researcher to maintain this holistic view of the group and allow consideration of individual sub-activities. We will consider both the activities undertaken by the organization, and the managers responsible.

How well the object is achieved will determine the outcomes. Kuutti (1996) noted that the motivation (the object) of the activity is not always obvious. The actor uses tools to undertake the activity, and is subject to constraints imposed by rules, the community of practice and the division of labor. Some of the rules are explicit. They are either required, or they are guidelines from theory, or professional standards. Other rules are implicit, guided by the culture of the organization or that of the community of practice (profession).

Different people or organizations may also participate at different stages of the activity, with work divided between them. As noted above, the subject may be an individual or a group depending on the focus of the researcher, and the activity can be analyzed from the perspective of the individual or group. We looked at what the companies we interviewed are doing, and also people holding certain job roles within the companies. Work practices of contractors is the focus of our research. Work practices, particularly implicit rules, have also been described by researchers such as Suchman (1995) as black boxes, as the way people work based on tradition and sometimes cannot be readily explained by individual workers, rather “it is just the way we do it.” Activity theory suggests that work practices are something developed over time and through the different perspectives of individuals that make up the subject of our focus allows for unwrapping the layers of an activity, providing a platform that reveals the underlying logic behind the forces that mediate the activity.

We conducted unstructured interviews in eight organizations from the private sector (Table I). In keeping with qualitative research traditions, we approached the research using a thematic analysis to allow the theory to emerge from the data. Nevertheless we used specific questions to initiate conversations and these included:

1. We asked the interviewees whether they recognized the concept of project marketing.
We asked the interviewees to consider each of the four stages of the project contract life cycle.

We asked the interviewees to consider each of the four enablers of collaboration.

Interviews were conducted by two teams, one in Europe and one in Australia. Data were collected using the same questionnaire in the eight organizations. One of the authors from Australia additionally participated in the first (pilot) interview conducted in Europe to discuss adjustments to the questionnaire that was used subsequently. Data collected from the interviews were transcribed and shared between team members.

Three of the authors met to conduct an analysis of the interviews using an activity theory lens. At the workshop, a laboratory with a large screen was used to display the transcribed interview so the analysis could be done collaboratively. Each interview was displayed on the screen and activity theory (Figure 1) was used to discuss what emerged from the interview that illustrated the use of the elements of Figure 1 at the four stages of the contract life cycle: pre-receipt of invitation to tender (Table II), tender preparation and contract negotiation (Table III), project delivery (see Table IV) and post-project stage (see Table V). This process was repeated for the four elements of collaboration: relationship, communication, going-with and trust (the results for all four being shown in Table VI). Individual interviews were analyzed (within case analysis) and the common themes that arose from all the interviews (cross-case analysis) were identified. The workshop lasted eight hours.

<table>
<thead>
<tr>
<th>Firm</th>
<th>Division</th>
<th>Role of person interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defense contractor</td>
<td>British subsidiary</td>
<td>Program management office lead</td>
</tr>
<tr>
<td>Design and construction contractor from the oil and gas industry</td>
<td>Head office – onshore</td>
<td>Senior vice-president, business and technology development</td>
</tr>
<tr>
<td></td>
<td>Brazil office – offshore</td>
<td>General manager, Brazil</td>
</tr>
<tr>
<td></td>
<td>Dubai office – offshore</td>
<td>Regional manager, South America</td>
</tr>
<tr>
<td></td>
<td>London office – offshore</td>
<td>Regional manager, Middle East</td>
</tr>
<tr>
<td></td>
<td>Milan office</td>
<td>Regional manager, EMEA</td>
</tr>
<tr>
<td>Supplier of transmission systems, maintenance and logistics support</td>
<td></td>
<td>Platform manager</td>
</tr>
<tr>
<td>Design and construction contractor in the building industry</td>
<td>Sydney office</td>
<td>Senior design manager and marketing manager</td>
</tr>
<tr>
<td>Facilities management contractor</td>
<td>Sydney office</td>
<td>General manager, business development and regional manager, facilities management</td>
</tr>
</tbody>
</table>

Table I. Organizations interviewed

<table>
<thead>
<tr>
<th>Actor</th>
<th>Activity</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>Identify potential opportunities</td>
<td>Awareness of potential work</td>
</tr>
<tr>
<td>Executive managers</td>
<td>Understand client’s true requirement</td>
<td>Sell benefit not product</td>
</tr>
<tr>
<td>Account/client managers</td>
<td>Matching strengths to client’s requirements</td>
<td>Decide whether to bid</td>
</tr>
<tr>
<td></td>
<td>Scanning economy and industry</td>
<td>Win competitive advantage</td>
</tr>
<tr>
<td></td>
<td>Talking to client</td>
<td>Awareness of potential work</td>
</tr>
<tr>
<td>Trust</td>
<td>Rules</td>
<td>Build relationship</td>
</tr>
<tr>
<td>Relationships</td>
<td>Probity</td>
<td>Understand true requirement</td>
</tr>
</tbody>
</table>

Table II. Marketing during the pre-receipt of invitation to tender stage
Marketing throughout the project life cycle

The four stages of the project contract life cycle were recognized by our interviewees.

**Pre-receipt of invitation to tender**

Key results for the pre-tender stage are shown in Table II.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Activity</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>Understand client's true requirement</td>
<td>Solve the true problem</td>
</tr>
<tr>
<td>Account/client managers</td>
<td>Matching strengths to client’s requirements</td>
<td>Win competitive advantage</td>
</tr>
<tr>
<td>Project/technical managers</td>
<td>Sell project management competence</td>
<td>Win trust</td>
</tr>
<tr>
<td></td>
<td>Match price to benefit</td>
<td>Demonstrate ability to perform</td>
</tr>
<tr>
<td></td>
<td>Manage bid process</td>
<td>Demonstrate cost advantage of bid</td>
</tr>
<tr>
<td></td>
<td>Massage bid</td>
<td>Win bid</td>
</tr>
<tr>
<td></td>
<td>Prepare bid</td>
<td>Make a profit</td>
</tr>
<tr>
<td></td>
<td>Solve the true problem</td>
<td>Submit winning tender</td>
</tr>
</tbody>
</table>

**Table III.**
Marketing during the tender preparation and contract negotiation stage

<table>
<thead>
<tr>
<th>Tools</th>
<th>Subject</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Company</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>Probity</td>
</tr>
<tr>
<td></td>
<td>Account/client managers</td>
<td>Lessons learnt</td>
</tr>
<tr>
<td></td>
<td>Executive managers</td>
<td>Standards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools</th>
<th>Subject</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Going-with</td>
<td>Company</td>
<td>Happy customer</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>Repeat business</td>
</tr>
<tr>
<td></td>
<td>Account/client managers</td>
<td>Lasting relationship</td>
</tr>
<tr>
<td></td>
<td>Executive managers</td>
<td>Good reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Client can achieve the project’s outcome</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promote company</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Future business</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local content</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools</th>
<th>Subject</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
<td>Happy client</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>Repeat business</td>
</tr>
<tr>
<td></td>
<td>Account/client managers</td>
<td>Lasting relationship</td>
</tr>
<tr>
<td></td>
<td>Executive managers</td>
<td>Good reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Client can achieve the project’s outcome</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promote company</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local content</td>
</tr>
</tbody>
</table>

**Table IV.**
Marketing during the project delivery stage

<table>
<thead>
<tr>
<th>Tools</th>
<th>Subject</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
<td>Happy customer</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>Repeat business</td>
</tr>
<tr>
<td></td>
<td>Account/client managers</td>
<td>Lasting relationship</td>
</tr>
<tr>
<td></td>
<td>Executive managers</td>
<td>Good reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Client can achieve the project’s outcome</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local content</td>
</tr>
</tbody>
</table>

**Table V.**
Marketing during the post-project stage

<table>
<thead>
<tr>
<th>Tools</th>
<th>Subject</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
<td>Happy customer</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>Repeat business</td>
</tr>
<tr>
<td></td>
<td>Account/client managers</td>
<td>Lasting relationship</td>
</tr>
<tr>
<td></td>
<td>Executive managers</td>
<td>Good reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Client can achieve the project’s outcome</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local community</td>
</tr>
</tbody>
</table>
At this stage, the focus of marketing is strategic. The work is shared by executive management and marketing, including client and account management. One of our interviewees said:

At this stage we are driven by strategic intent. [...] We are looking to develop key markets.

The main focus is to identify potential opportunities, to understand the client’s true requirement and match the firm’s competencies to the requirements. Understanding the client’s true requirement is significant here and at the next stage. It is about understanding the benefit they want, and not just the technology they are looking for. Understanding the client’s benefit “to assist them in their own value-creation process” (Vargo and Lusch, 2008, p. 5) is part of the service-dominant logic of marketing (Lusch et al., 2007; Skålén et al., 2015). Matching the firm’s competencies to the client’s requirements is not only the key in deciding whether to pursue this opportunity, but also in trying to persuade the client that the firm’s competencies are superior to the competitions.

Marketing at this stage of the life cycle is led by executive managers who will be targeting the client’s executive managers. In marketing, client or account managers will be in support, targeting the client’s general managers who are buying the solution. Project and technical managers are not involved in the marketing activity at this stage.

We have shown the two enablers of collaboration as tools guiding this stage, building relationships and developing trust. This is the same as identified by Lecoeuvre and Deshayes (2006). Relationship building is very important. One of our interviewees said:

It is important to build relationship before receiving the tender. When the tender comes it is too late.

A significant constraint is the need for probity. This had a range of impacts. All firms have to be concerned about adhering to rules for bribery and corruption. But in the onshore oil and gas industry, probity eliminated almost all direct contact with the client. The contractor could respond to requests for information for pre-qualification purposes but not have direct, one-to-one meetings, such as strategy meetings, that other contractors were able to have. Effectively the client’s concern for probity, and not giving one contractor an unfair advantage, was limiting the contractor’s ability to do project marketing and build relationships. Our interviewees in the building and defense industries had no such constraint, and engaged in strategy meetings with the client. The offshore oil and gas industry was somewhere in between, but our interviewees said that they often suggested potential opportunities to the client.
The main elements of the community are the contractor and client. However, the contractor needs to be concerned about potential competitors and to make contact with sub-contractors and suppliers. Industry bodies may be able to provide information. At this stage as well, it is good to start to develop relationships with the local community and politicians.

Tender preparation and contract negotiation
Key results for tender preparation stage are shown in Table III.

At this stage the focus of marketing is tactical. The executive management team become less involved, but the project management team are now involved. Some of the work may be given to sub-contractors or suppliers. Client or account management showed a particular concern about the submission of the tender, and suggested that they would have the final act before submission to “massage” the tender to increase the attractiveness to the client.

Understanding the client’s budget and whether that lets the contractor make a profit are key. The significant focus continues to be understanding the client’s true needs and matching the client’s needs to the firm’s strengths. One of our interviewees said:

A key initial step is to understand the customer’s requirement. What benefit do they want? Don’t just deliver the technology they are asking for.

Again, this fits within the framework of the service-dominant logic (Hsieh and Hsieh, 2015). Setting a winning price is clearly important. Several of our interviewees indicated that it was important to be aware of the client’s budget. It was also essential to balance product and price, to understand whether the client wants minimum capital cost or minimum life cycle cost. Offering effective project and program management also provided additional benefit to the client that would enable the firm to charge a higher price. Several of our interviewees also took significant opportunities to promote themselves through the tender exercise.

As with the previous stage, probity is a key rule. A constraint from within the contractor is the need to apply lessons learnt, and apply internal and external standards.

At this stage, all four enablers of collaboration are important. Relationships and communication became more formal. In the onshore oil and gas industry, it is very formal. The only contact allowed with the client is to post questions on the client’s webpage that all contractors can see. In the past, the client would allow each contractor one meeting and then distribute minutes of the meeting to all contractors. But since only 30 percent of communication is in the words used, the minutes only communicate 30 percent of what the contractor learnt. Therefore, contact is now limited to questions posted on the client’s webpage, so no contractor gains unfair advantage. The defense contractor worked hard at this stage to understand the client’s true need, and that required more meetings with the client. In this industry, it may be more difficult to divine the client’s true need and so a closer working relationship may be needed. Several of our interviews also talked in terms of developing a partnership with the client, indicating the significance of collaboration. There are also several components of trust, including trust of competence and trust of ethics (Turner, 2014). The client will be concerned about the adverse selection problem at this stage (Turner, 2014), and so it is important for the contractor to build the client’s trust in its competence and ethics, and make the client believe that the contractor is a company that the client wants to work with.

Providing local content is often an important requirement, particularly in the offshore oil and gas industry (Merrow, 2011). If it is, then it becomes significant at this stage.

Project delivery
Key results for the project delivery stage are shown in Table IV.

The focus of marketing is now operational. It becomes the responsibility of project managers. Patel (2010) found that, in general, project managers do not think they have much
responsibility for marketing, but we found that they have significant responsibility at this
stage. Most of our interviewees said that performance on the project was important for
winning future business and that project managers should be looking for future
opportunities. One of our interviewees said:

Real business development is the project itself. The business development task is the ongoing project.
Delivering the client’s requirement is important. The client gets no benefit until the output
works and produces the outcomes (Lusch et al., 2007; Groenroos and Gummerus, 2014).
Effective project and program management provide the customer with value. Regular
meetings with the client will take place on the project. The contractor should be looking for a
win–win solution with the client (Groenroos and Gummerus, 2014). Our interviewees talked
in terms of a partnership with the client rather than collaboration with the client. One said:

We do with the client rather than unto the client.
The contractor looks to the post-project stage, and initiating going-with, providing mentoring
and looking ahead to providing logistics support. At this stage, adherence to standards and
codes and to local laws and regulation, and to the terms of the contract is important. It is also
important to maximize the use of lessons learned. Local content is also important.

Post-project
Key results for the post-project stage are shown in Table V.
It is important to build and maintain trust for the next project. Lecoeuvre and Deshayes
(2006) suggested that at this stage of the project, of the four enablers, three are important:
relationships, communication and trust. We specifically identified trust. The emphasis now
has changed from trust in competence to trust in ethics. Going-with, that is the provision of
mentoring and logistics support, will also maintain the relationship with the client.
At this stage, a common rule among our interviewees is to gather lessons learnt. A rule
observed at the earlier stages was to make use of the lessons learnt. At the post-project
stage gathering the lessons learnt was an important part of the cycle that populated
the knowledge base. We observed at the earlier stages that trust of the client in the
contractor’s competence was important such as at the pre-tender quantification.
The lessons learnt are an enabler for the contractor to improve competence and further
develop trust with the client.

Enablers of collaboration
Our interviewees all reported that they put substantial effort into building and maintaining
the four enablers of collaboration. The activities identified for developing the four enablers
of cooperation are shown in Table VI.

Relationships
Relationships are essential. They are to an extent what it is all about, and are a key part of the
service-dominant logic since that is about building networks. One of our interviewees said:

It is all joint. […] Because we have a good relationship, we know how to deal with everybody. They
all have their own peculiarities, but we know them well. […] How we maintain the relationship
makes us the partner of choice.
Our interviewees emphasized the arrangement of meetings and joint events with the client.
But, the need for probity limited the extent that contractors in the onshore oil and gas
industry could interact directly with clients. The four enablers of collaboration are all linked.
Communication and trust are key elements of building and maintaining relationships, and
relationships are a key part of going-with. Training, mentoring, logistics and maintenance
support are also all essential elements of building and maintaining relationships. Probity is an important rule for relationships. Building trusts is also an essential rule. Demonstrating ethics and adhering to the client’s cultural norms are key to trust.

Communication
Communication pervades collaboration. Communication is two way; it involves listening as well as talking. Solving the client’s true problem shows you are listening. Several of our interviewees emphasized the need to listen to the clients and solve their true problem, by not just providing with the project output they are asking for, but understanding their true need and provide them with the project outcome they require, which will deliver the benefit they require and thereby provide them with value. Regular contact with the client is a key part of communication, and so communication is strongly linked to relationships. It is also important that communication occur at the right level, so an escalation procedure is key.

Going-with
Many of our interviewees talked in terms of developing a partnership, which goes beyond collaboration. As we have said, one of our interviews talked in terms of doing with rather than doing unto (Akaka et al., 2013). Another said:

Fit with the customer can provide a strong competitive position.

The four enablers of collaboration are all linked. Communication and relationships are part of going-with, going-with builds trust, and many of the activities are repeated, such as solving the client’s true problem and holding of regular meetings. It is about establishing networks, processes and dialogues with clients to provide offerings they value (Vargo and Lusch, 2004; Lusch et al., 2007; Groonroos and Gummerus, 2014). Training, logistics and maintenance support are project management activities which are all a key part of collaboration.

Trust
There are two key elements of the client’s trust of the contractor, trust in ethics and trust in competence. This is related to the adverse selection problem (Turner, 2014). Several of our interviewees emphasized the need to make the client trust them, to make it easier for the client to select them. Probity, honesty and transparency are rules for maintaining trust in ethics. It is also related to the moral hazard problem (Turner, 2014). The client must be confident that the contractor will not behave opportunistically. Trust is also two way. The contractor must trust the client, and most of our interviewees said they would walk away from relationships where they did not trust the client.

Discussion
We can now propose answers to our three research questions.

RQ1. What practices are adopted by contracting companies in project-based industries to find and win new business and to persuade their clients that they have the competence and trustworthiness to undertake their projects on their behalf?

We used activity theory to identify the practices adopted by contractors in project-based industries to market their competencies to their clients. Our interviewees recognized the four stages of the contract life cycle suggested. The practices adopted at each stage are described in Tables II–V. Contractors exist to integrate and transform their specialist competencies into services that are demanded in the market place, and which can provide their customers with value. That ability provides them with competitive advantage. Our interviewees suggested they are not marketing projects. They are marketing their competence, trustworthiness and
nature as an organization that clients want to work with. This is different than suggested by previous research (Cova and Salle, 2005), which posited that project management is part of project marketing. Our results are supportive of the ideas of Turner and Lecoeuvre (2017) that both project marketing and project management are part of project portfolio management. The aim of project marketing is to win new business, not by marketing projects, but, as we said, by marketing the firm’s competence and trustworthiness, and thereby reducing the adverse selection problem. Successful project marketing will result in new projects, but they will also be managed as part of the project portfolio.

We identified the focus of project marketing changes through the contract life cycle. In the pre-project stage, the emphasis is strategic: identifying new business, understanding the client’s true need and matching the firm’s competence to that need. The emphasis is also on developing relationships with potential customers and developing trust. In tender preparation and contract negotiation, the emphasis is tactical: it widens to selling the firm’s competence to the client, and matching the price to their expected benefit. In project delivery, the emphasis is operational: on delivering the desired outcome capable of working to deliver the required outcome, and on forward selling, that is identifying new opportunities. The focus of collaboration is on maintaining the relationships. Finally, in post-project, the emphasis is now on mentoring and providing logistics support, that is going-with, to maintain the relationship. It is not a sleeping relationship as Lecoeuvre and Deshayes (2006) suggest, but an active one. There is also a focus on maintaining trust, but the focus is now on trust in ethics, that is the contract is a firm the client wants to business with, rather than trust in competence.

RQ2. What practices are adopted by contracting companies in project-based industries to create conversations and dialogues with their clients to persuade the clients that they can make product offerings that will provide the client with value?

We used activity theory to identify the practices adopted to develop collaboration with the client against the four elements: relationship management, communication, going-with and trust (Table VI). Our interviewees thought all four elements were significant in building and maintaining relationships with clients. In accordance with both the service-dominant logic of marketing (Vargo and Lusch, 2004; Lusch et al., 2007; Groonroos and Gummerus, 2014) and the concepts of organizational project management (Aubry et al., 2012; Turner and Lecoeuvre, 2017), contractors aimed to build networks, conversations and dialogues with customers, to develop solutions of value both to their clients and themselves. There was a changing emphasis during the contract life cycle. During pre-invitation to tender stage, the emphasis was on building trust and relationships with the client. At invitation to tender and contract negotiation, the focus widened to building the channels of communication with the client. At project delivery, there is an ongoing need for communication, but implicitly the contractor also looks forward to the post-project phase, and initiates going-with, that is mentoring and logistics support. During the post-project phase, the emphasis is on going-with and trust. But the main component of trust is now trust in ethics; the contractor wants to convince the client that they are a company that will treat the client well and with respect, and that they are a company the client wants to do business with, which is grounded in their experience with the contractor in the delivery phase. Common rules included the need for probity, trust, honesty and transparency. They also included the need to listen to the client and solve their true need, and to have an escalation procedure to deal with issues.

RQ3. Who is responsible for the project marketing activity, at what stage are they engaged, and who is their target audience?

Executive managers, marketing and account managers and project and technical managers have responsibility for different elements of marketing; their focus is strategic, tactical and
operational, respectively, targeting appropriate managers in the client organization. Again there is changing responsibilities throughout the contract life cycle. During the pre-invitation to tender stage, the executive managers have a strategic focus on identifying the client’s true requirement by understanding their strategic need. The account/client managers are also trying to understand the client’s true need and initiate the building of relationships. At tender preparation and contract negotiation, the focus is tactical; the account/client managers manage the bid process, while the project and technical managers prepare the bid. During project delivery the focus is operational, project managers are responsible for delivering a project output capable of achieving the client’s desired outcome. They must also be forward selling, looking for future opportunities and making account and executive managers aware of them. During the post-project phase, all three have a responsibility. Project managers must ensure the output works to achieve the outcome (Turner, 2014). Project managers must also gather lessons learnt, and be aware of future opportunities. Client managers focus on those issues and also look for opportunities of providing the client with logistics and operational support. Executive managers work with the client to look for new strategic needs.

Conclusions
Four points stood out:

(1) The emphasis on project marketing varies through the contract life cycle, and is the responsibility of different managers at different stages. In the pre-receipt of the invitation to tender stage, the focus is strategic and marketing is the responsibility of executive managers. The main concern of collaboration is the initial building of relationships. In the tender preparation and contract negotiation stage, project marketing is tactical, and is mainly the responsibility of the account or client managers. The main concern of collaboration is establishing the channels of communication. In project delivery stage, the emphasis is operational, and marketing is the responsibility of project managers. The main concern for cooperation is on going-with, establishing mentoring, coaching and support. In the post-project stage, the emphasis is strategic, tactical and operational, and all three sets of managers are involved. The main concern of collaboration is on maintaining trust for future projects, and maintaining the relationship.

(2) Project managers have a responsibility for project marketing. Patel (2010) suggested they are often not aware of this. They need to understand that tender preparation is a key element of project marketing. In addition, during project delivery, they need to be aware that successful delivery of this project will build trust in competence for future projects, and be aware of potential future opportunities. They also need to build relationships through post-project activities such as training, mentoring, logistics and maintenance support. Additionally, the ability to provide effective project and program management provides competitive advantage, which demonstrates competence, helps a contractor to develop relationships with various clients, win work and charge a higher price.

(3) There are differences by industry, though the main difference was provided by the client’s desire for probity. In the onshore oil and gas industry, there could be no one-to-one contact with the client during the pre-receipt of invitation to tender and tender preparation and negotiation stage. This limited the contractor’s ability to build all four elements of collaboration in those four stages. The clients’ concern was that direct contact with one contractor would give that contractor an unfair advantage. This of course is precisely what Bernink (1995) recommended, and
quoted an example of a contractor who said that if they had not been working with the client during the pre-receipt of the invitation to tender stage, their competitors will have been and it may not be worth bidding. Similar sentiments were expressed by three of our interviewees. In the offshore oil and gas industry, there is a strong emphasis on maintaining relationships with clients between projects. There is also a strong emphasis on local content in projects, maintaining workshops to employ local labor to build modules for use offshore. In the defense industry, there was a strong emphasis on maintaining an ongoing relationship with clients between projects to understand and guide the definition of their future requirements.

(4) The service-dominant logic pervades marketing by contractors in project-based industries to win new business. Contractors exist to undertake work on projects that the client (initiator) cannot do for themselves. The contractor has knowledge, competencies and skills that the client does not have internally, and can provide those services to the client to enable the client to undertake their projects, and provide them with value, delivering a project output and outcome that will provide the client with benefit (Lusch and Vargo, 2014). The emphasis is on building collaborative relationships, and working with the client rather than for the client (Akaka et al., 2013). The results-based view of project management also suggests that project success is achieving the business objectives, that is the project output works to achieve the outcome and deliver the desired benefit (Turner, 2014). (Project management success is delivering the output in time, cost and quality, Serrador and Turner, 2015.) Our interviews were aware of this. As Lusch et al. (2007, p. 7) suggested, “There is no benefit until the offering is used.” Finally, as we have seen, developing collaborative arrangements with the client is about establishing networks, processes and dialogues with clients to provide offerings they value (Vargo and Lusch, 2004; Lusch et al., 2007; Groenroos and Gummerus, 2014).

Next we present the contributions from our research in the form of academic (theory) and practical implications (practice) to project marketing.

Academic implications
We have used activity theory to identify practices adopted by contractors in project-based industries to market their competencies to clients to win new work. We show that the emphasis is on selling the firms competencies and skills to deliver a project output that will work to deliver benefit and thereby provide the client with value. We observe that the project marketing principle to develop trust in the contractor, to work with the client and to deliver a project plays an implicit and important role in winning new work. We have shown how the practices vary through the contract life cycle, and the responsibilities of different managers at the different stages. We also identified practices adopted to develop collaboration.

Practical implications
The results provide guidelines to contractors in project-based industries who wish to improve their marketing activity to achieve sustainable performance. Industry may also find it useful to train or coach their project managers to be conscious of their marketing role.

References


**Further reading**


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Book review

Governance and Governmentality for Projects: Enablers, Practices, and Consequences
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Introduction
Edited by Ralf Müller, the renowned and respected scholar and Professor of Project Management at BI Norwegian Business School, the research book Governance and Governmentality for Projects: Enablers, Practices, and Consequences is a compelling and powerful contribution to the field. Governmentality pertains to the leadership and human side of governance.

With over 200 academic publications (including 13 books) and numerous awards (e.g. recognition as researcher of the year by the Project Management Institute® and International Project Management Association®), Dr Müller has breadth and depth on the topic of governance. As part of Routledge’s Studies in Corporate Governance Series, the book is intended primarily for an academic audience. Since literature on governance and governmentality in project management emerged primarily within the last 15–20 years, the concepts and theories covered in this book may be new to many readers. The book will assist readers in coming up to speed on recent advances.

Although there are theses, International Organization for Standardization and project management standards as well as practitioner/consultant books on governance, to this writer’s knowledge, there is nothing that compares with respect to breadth and depth along the lines of Müller’s book. When an edited book is developed by an authority, readers look forward to chapters written by experts. They may look forward to being able to appreciate a concise set of readings on one topic vs searching for various academic articles and trying to develop an integrated understanding on their own. For those seeking benefits such as these, Müller’s book will not disappoint. Chapter contributors included the following academics/consultants:

- Christopher Biesenthal: Senior Lecturer, School of the Built Environment, University of Technology, Sydney, Australia.
- Gro Holst Volden: Research Director of the Concept Research Program, NTNU, Trondheim, Norway.
The above contributors to the book are well-known researchers in governance (i.e. Andersen, Biesenthal Klakegg, Sankaran, Volden and the Walkers). Other contributors, such as Kvalnes, brought expertise in ethics to the book and Li, for example, has exceptional experience in implementing governance structures. Joslin was one of Müller’s doctoral students. He founded the Association for International Project Management Officers. Located in Switzerland, it is the first professional organization for project management office managers and members.

Governance stems from the Greek word kubernain (kubernáo) which means “to steer.” Over the years, a number of Müller’s research streams have been anchored within the subject of governance. His research seems to have “steered intuitively” in this direction. For example, his doctoral dissertation was on communication between sponsors and project managers. His research with Blomquist was on roles and responsibilities of middle managers, program and portfolio managers (Blomquist and Müller, 2005; Müller et al., 2008). This stream of research also informed the Project Management Institute® practice standard for portfolio management (Blomquist and Müller, 2006). His research with Aubry was anchored in project management offices (Aubry et al., 2011, 2012). Müller’s research with Turner explored selecting the right project manager from a leadership perspective (Turner et al., 2009; Turner and Müller, 2006). The above foci on sponsorship, program and portfolio management, project management offices and leadership roles and responsibilities are all about governance.

According to Müller, the distinction between governance and management involves thinking about governance in such terms as authorizing, defining, directing and monitoring. Governance is a framework for management involving such terms such as implementing, communicating, selecting and optimizing.

Muller’s (2009) first governance book entitled “Project governance” targeted Masters students and practitioners. That book introduced readers to governance concepts in relation to individual projects. His new book contributes to governance theories by developing a theory on the governance of projects and elucidating related models and paradigms. Written in a clear, concise and engaging style, the book takes an organizational perspective to governance. By defining projects as temporary organizations, the emphasis is on governance of the entirety of projects in an organization as a subset of corporate governance. The following quote articulates these relationships:

Organizational project governance coexists within the corporate governance framework and is the means by which individual projects, groups of projects (such as programs or portfolios), and the totality of all projects in an organization are directed and controlled and managers are held accountable for the conduct and performance of them. Governance provides the value system,
structures, processes, and policies that foster transparency, accountability, responsibility, and fairness to allow projects to achieve organizational objectives and foster implementation that is in the best interest of all stakeholders, internal and external, and the corporation itself. (Müller, 2017b, p. 14)

Governance principles pertain to the norms, values and rules along with governance structures used to steer an organization. The Organization for Economic Cooperation and Development (OECD) is a consortium of 35 countries that develops social policies to stimulate trade and economic progress. As per the quote above, the four governing principles that the OECD uses are transparency, accountability, responsibility and fairness. These principles reflect effective leadership, trust and ethical behavior.

Organization
Consisting of 15 chapters, the book is divided into five parts. In addition to Müller sole or co-authoring 10 of the 15 chapters, he sole authored Parts 1 and 2 which provide the conceptual and theoretical foundation for the book. As such, the book is highly cohesive. The first two chapters set the stage by introducing key terms, definitions and a framework for the book. For example, projects were discussed as temporary organizations, the concepts of governance and governmentality were introduced and the four OECD principles of governance covered.

An integrative feature of the book was the use of the OECD governance principles. An extremely powerful figure is presented in Chapter 2 (Governance Principles across Governance Levels). The figure shows different governance levels and their linkage through the OECD governance principles. Throughout the book, Müller links each chapter to the four OECD governance principles and their importance and role in the governance structures. Each chapter ends with a reflection on these principles. The four OECD principles constitute the nexus that links the concepts and theoretical foundations in the book.

Part 1: concepts, theories and models
In Part 1 (Chapters 3–5), “Concepts, theories, and models”, the book succinctly introduced readers to the popular organizational corporate governance theories (stakeholder theory and shareholder theory) and behavioral governance theories (agency theory, stewardship theory and transaction cost economics). Then, four models of organizational project governance were introduced (process models, governance and governmentality-based models, nested models and layered models). Each model portrays a different worldview. Müller’s paradigm model was a layered governance model depicted as a $2 \times 2$ matrix. The horizontal axis spanned shareholder orientation (whereby companies maximize return on investment for shareholders) and stakeholder orientation (whereby the focus was on maximizing benefits for numerous stakeholder groups). The vertical axis addressed behavior control (e.g. focusing on compliance, such as project process) and outcome control (e.g. focusing on results, such as project outcomes). The matrix resulted in four governance paradigms, or thinking patterns. The model was further elaborated with findings from empirical studies on governance paradigms by country, project size and project type.

Thereafter, the commonly used governance institutions in both public and private sectors for the governance of projects were covered. These included board of directors, portfolio and program management, and project management offices. Then, institutions for project governance were discussed and included project owner and sponsor project steering groups. To offer an example of the OECD principle of transparency, “at the individual project level, PMO’s are often involved in auditing troubled projects and consulting with project managers in the ways to manage projects, which provides for transparency on the part of the practices applied in projects” (Müller et al., 2017, p. 62).
Part 2: organizational enablers for organizational project governance and governmentality

Part 2 of the book was entitled “Organizational enablers for organizational project governance and governmentality” and spanned Chapters 6–7. This section offered a succinct overview of the research that Müller spearheaded. Using a sense making perspective to categorize enablers, Müller discussed organizational enablers as the “interplay and coexistence of both structural and mental elements” (Müller, 2017d, p. 70). The section presented survey findings of a large-scale international study and depicted distinct enabler profiles of organizations of different sizes and at four levels of success. The section also mapped organizational enablers to institutional theory to categorize enablers, their roles in the organization, and the levels and boundaries of success. Although discussed using the term success, readers are encouraged to also think about success in terms of organizational competitive advantage.

As the aim of this part of the book was to present a preliminary theory of organizational enablers for governance, Müller’s study findings indicated that:

The strongest enabler for successful governance is the organization’s discursive ability. This ability is driven by two enabling factors, which are leadership and governmentality. These factors are supported by the five mechanisms of professionalism, meeting structure, institutionalization for leadership, as well as governance orientation and incentive structure for governmentality. (Müller, 2017c, p. 94).

At the project governance level, organizational enablers focus on executing “governance frameworks, policies, and projects specific structures” (Müller, 2017d, p. 75) through such practices as procuring and implementing. At the governance of projects level, organizational enablers have to do with flexible corporate structures “which allow for effectiveness in project selection and efficiency in project execution” (p. 76). And finally, organizational enablers for governmentality pertain to empowerment through mindfulness/awareness of the organization, self-responsibility and self-organizing. These three sets of enablers were presented by means of comprehensive tables. For example, an organizational enabler for governance of projects which was categorized as a mechanism/process facilitator would be the mandate that a project management office has to deal with program and portfolio management issues.

Part 3: practices in the private and public sector

Part 3 of the book – “Practices in the private and public sector” was covered in Chapters 8–9. This part was also based on Müller’s literature review on governance (Müller et al., 2014) and empirical study (Müller et al., 2016). The mixed method study involved six case studies and a worldwide survey. The section covered tactical practices in the private sector, followed by strategic practices, and then a multidimensional framework that cohesively presented the concepts. Examples of tactical project governance included methodologies, project management offices and steering committees. In terms of strategic practices, the chapters elaborated on a range of governance and governmentality approaches. These chapters enable readers to appreciate organizational variations in governance and governmentality profiles with respect to degrees of project and organizational success.

Having reviewed and used a number of textbooks over the years in both project management and strategic management wherein the public sector has been overlooked and students have raised this as a concern, the writer of this review especially appreciated Chapter 9 (Governance in Public Projects: the Norwegian Case) because it accentuated the unique aspects of public projects. Both chapter authors are Norwegian:

Norway is a pioneer in the area of governance in public projects, having introduced a governance scheme applied to all the largest state-funded investment projects across sectors, with external quality assurance of the planning documents as the essential elements. (Klakegg and Volden, 2017, p. 129)
Part 4: consequences for and of governance

This brings us to Part 4 of the book “Consequences for and of Governance,” as covered in Chapters 10–12. The multidimensional concept of project success has had a long history within the project management literature. Using project management methodologies helps improve success. The writer appreciated the concise overview of the success literature and the discussion on terminology confusion with respect to methods, knowledge areas, processes and methodologies. Joslin (2017) neatly related Müller’s layered model on governance paradigms (as discussed in Part 1 of the book) to the use of comprehensive and less comprehensive methodologies. Joslin adopted Khan et al.’s (2013) five success dimensions (project efficiency, organizational benefits, project impact, future potential and stakeholder satisfaction) to examine the direct and indirect relationships of governance on project success. The findings indicated that:

Governance plays an intermediate role in the effectiveness of the methodology, but governance does influence the project environment in terms of directly increasing the probability of success if the project environment is stakeholder oriented. (p. 169)

Both cognitive trust (consisting of ability, benevolence and integrity) and control were presented as governance mechanisms. Müller used stewardship theory to discuss trust and agency theory for control. If trust is the subjective and emotional component of governance, control is the objective and rational dimension. It appears that control in governance is a fledgling area of study. The chapter discussed trust as an antecedent of project success. Müller’s study examined both trust and control in different governance paradigms. Trust is “an important contextual factor for project managers’ acceptance of governance structures” (Müller, 2017a, p. 176). An important consideration was that “trust and control impact projects differently and are therefore not complementary or substitutes of one another” (p. 178).

As Müller gathered data on ethics as part of his large-scale study on governance, Part 4 concluded with a chapter on this subject. The chapter outlined normative and behavioral ethics and explained that most of the project management literature has focused on normative ethics. With its roots in philosophy and theology, normative ethics pertain to what someone should do when faced with a decision. Normative approaches include a process orientation, outcome orientation and character of orientation. In contrast, behavioral ethics has its roots in social psychology. From a behavioral ethics perspective, unethical behavior in an organization can be driven by conduct at the individual level (referred to as bad apples), within the workplace (labeled bad cases), and at the organizational level (called bad barrels) (Kish-Gephart et al., 2010). The chapter highlighted the types of ethical issues by project governance paradigm and depicted correlations of ethical issues and success with project governance dimensions. It was very interesting to read about the types of ethical issues that can exist within governance approaches.

Part 5: cases of organizational project governance

Part 5 of the book was entitled “Cases of organizational project governance” and covered three very engaging case studies that portrayed governance between projects and corporate levels of organizations (Chapters 13–15). The Sugarloaf Alliance was about building a pipeline to protect against future droughts in Melbourne, Australia. The chapter discussed the four governance principles by the OECD and added Lockwood’s (2010) principals of legitimacy, inclusiveness, conductivity and resilience. These additional dimensions aided the pipeline alliance in dealing with corporate social responsibility matters.
Chapter 14 discussed two mini case studies about governance issues specific to the front-end of projects and internal conflict with respect to behavioral ethics. The interspersion of participant quotes enhanced the richness of the chapter. The final chapter of the book was a brief case study about Tasly Pharmaceuticals in Tianjin, China. Tasly Pharmaceuticals manufactures traditional Chinese medicines and recently expanded in the areas of pharmaceutical chemistry and biological pharmacy. The company received the 2006 International Project Management Association® Excellence Award and Forbes recently recognized Tasly as a best company in the region. The case study discussed conflicts during the organizational transformation from a functional structure to a project based firm and the governance challenges related to the project management office. Throughout, the writer appreciated the conceptual connections that these chapters made to Parts 1 and 2 of the book where the governance foundations were established.

Technical aspects of the book
The front matter of the book identified the other books in the Routledge Studies in Corporate Governance Series. The Table of Contents was clearly organized into five parts, followed by a list of tables and figures, and brief contributing author biographies. Unlike some edited books that include a foreword by others, this book began with an introduction by Müller. Throughout, the references reflect academic rigor and currency without ignoring the classics. Tables and figures were used judiciously with salient points clearly laid out. Each chapter used an appropriate level of headings to allow readers cover the material at various levels of detail. Unlike some books that include footnotes or endnotes, each chapter concluded with its own set of references, making it much easier to refer to them. The index was comprehensive and reflected appropriate key terms and authorities on governance. The writer of this review appreciated the attention taken to connecting each part of the book to the prior and subsequent part.

Given that the literature on governance may be new to many, a glossary of key terms would help novice readers follow the concepts and refer back to key terms as needed. It would have been helpful to include a final chapter to the book rather than concluding with a case study.

Recommendation
Müller’s book provided a robust conceptual overview on the theories of governance as they pertain to projects. Throughout, numerous examples and in particular, the case studies reinforced the concepts. We need more theory driven research in project management. Given the rigor of this edited book, including the methodical application of governance theory to project management, this book is an exemplar and sets a high bar on theoretically driven research. The writer envisions graduate students, new scholars and academics with a keen interest in contributing to governance theory initiating discussions with the authors of this book and leveraging Müller’s governance framework to extend theory and contribute to empirical research in this stream.

Müller’s edited edition successfully achieved its aim as laid out in the first chapter. This book is definitely value for price. It would make a valuable addition to a graduate student’s bookshelf as it would for an academic, educator and consultant.

I highly recommend this research book to scholars and consultants. Given that the research in this book is recent, in addition to it being of value to academics, it would make an excellent handbook for graduate level courses and seminars. I envision the discussions to be lively as the topics will engender debate and motivate students to elevate the quality of their contributions to the field. This book is an exemplar on research anchored within existing managerial theories (in this case, theories in governance).

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