

THESIS FOR THE DEGREE OF LICENTIATE OF ENGINEERING

Managing construction challenges: Viability of a dynamic capabilities approach for the public client

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Abstract

Construction clients in the public sector face a large number of challenges in designing, procuring and managing construction projects in a manner that is conducive to the organization's overall goals. In particular, clients have faced challenges in delivering projects that satisfied the projects' goals with respect to cost overruns, delays and sustainable construction. The role of the client in managing these challenges has more recently been emphasized with a growing number of studies and governmental reports calling for the development of the client's capabilities.

This thesis examines the capabilities of the construction client through a dynamic capabilities framework, particularly with respect to the activities of sensing, seizing and transforming. Furthermore, the thesis explores whether the concept of dynamic capabilities is a viable approach for understanding how to manage the clients' capabilities in a way that ensures that construction-related challenges are addressed. The thesis is based primarily on a case study of a large public construction client located in Sweden.

Findings are presented in three appended papers. The thesis concludes with a discussion on the viability of using a dynamic capabilities framework in the specific case described in this thesis. It is argued that the concept of dynamic capabilities is inadequate for capturing the specific context in which public client organizations operate. Suggestions for alternative approaches to understanding the management and development of capabilities are then discussed.

Keywords: client organization, construction industry, capabilities, dynamic capabilities, construction challenges, case study

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Sincerely,

Abderisak Adam

Gothenburg, Sweden. May 2016.

Appended papers

The thesis is based on the following appended papers.

Paper I

Adam, A., Josephson, P. E; Lindahl, G. (2016). Aggregation of Factors Causing Cost Overruns and Time Delays in Large Public Construction Projects: Trends and Implications. *Engineering, Construction and Architectural Management*. [Accepted for publication]

Paper II

Adam, A.; Lindahl, G; Josephson, P. E. (2016). Applying the Dynamic Capabilities Framework: the case of a Large Swedish Public Construction Client. *Construction Management and Economics*. [Undergoing peer-review / in revision process]

Paper III

Adam, A; Lindahl, G. (2016). Approaches to Safeguarding Sustainability Requirements in Large Public Construction Projects – the Client’s Perspective. *Tampere. CIB World Building Congress 2016*.

Additional publications

1. Adam, A.; Josephson, P. E; Lindahl, G. (2014). Implications of cost overruns and time delays on major public construction projects. *In Proceedings of the 19th International Symposium on the Advancement of Construction Management and Real Estate, 7-9 Nov 2014, Chongqing.*
2. Adam, A.; Lindahl, G; Josephson, P. E. Developing Capabilities for Public Construction Clients. *In Proceedings of the 19th International Symposium on the Advancement of Construction Management and Real Estate, 7-9 Nov 2014, Chongqing.*
3. Adam, A. and Lindahl, G., 2015. Take a chance on me? Construction client's perspectives on risk management. *Procedia Economics and Finance*, 21, pp.548-554.
4. Adam, A; Gluch, P; Julin, J. (2014). Using actor-network theory to understand knowledge sharing in an architecture firm. *In ARCOM 30th Annual Conference, Portsmouth, UK, 1-3 September 2014.*

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1 Introduction

The construction client has repeatedly been challenged by governmental agencies to deliver better and more efficient projects (APCC, 2002; NAO, 2009; Productivity Committee, 2012). Construction projects have been described as highly contentious (Winch, 2010), in part due to the challenge with managing the different and at times discrepant interests of its stakeholders (Olander & Landin, 2005). A central function of the construction sector's activities is carried by the client who is responsible for developing the project requirements (Lindahl & Ryd, 2007).

Looking at research in construction, it appears that the industry is inundated with studies reporting low productivity, inefficient operations and a reluctance to embrace innovative solutions (Koskela, 1997; Love & Gunasekaran, 1997; Ofori, 1993; Segerstedt & Olofsson, 2010). These studies span several decades and although a considerable amount of resources have been spent on researching ways to improve the industry in these regards, questions remain as to whether results have been gained that effectively manage and deal with the challenges on a project and industry level (e.g. Bankvall, et al., 2010; Fulford & Standing, 2014; Vrijhoef & Koskela, 2000). Most of these studies have focused on the supply side by looking at contractors and consultants whereas less interest has been given to the client's perspective (Forgues, 2006). The client's perspective and the client organization's development constitutes the focus of this thesis.

Murray and Langford (2003) studied construction reports spanning half a century from 1944 to 1998 and showed that construction projects, throughout this period have had difficulties delivering efficient projects in terms of cost, time and defect-free buildings. In later years, the concept of 'sustainable construction' emerged which meant that the industry now faced yet another challenge; delivering projects that fulfill the sustainability aspect of construction (Myers, 2005).

The complexity of the construction industry is often mentioned as a factor in reference to these challenges (Enhassi et al., 2009; Gidado, 1996). Researchers stress the significance of construction projects being complex with certain authors claiming that the complexity is higher in construction compared with other industries, e.g. Winch (1989, p. 338) who claimed that construction projects are " amongst the most complex of all production undertakings " and the similarly strongly worded statement by Baccarini (1996, p. 201) that "the construction process may be considered the most complex undertaking in any industry." Adding to the statements concerning complexity, the construction industry is also often criticized for its inefficiency and waste (Doloi, 2008; Josephson & Saukkoriipi, 2005). A common argument is that construction has fallen behind other industries like manufacturing in implementing new techniques that would improve its processes (Dubois & Gadde, 2002). Of the many challenges that the construction industry faces, this licentiate thesis engages with three challenges:

1) cost overruns, 2) delays and 3) sustainable construction. The challenges are sector-specific and affect the client organizations' performance.

Challenge 1: Cost overruns

A cost overrun refers to increase in the amount of money required to complete a project above the original budgeted amount (Alinaitwe, et al., 2013). This is equivalent to the difference between the figure stated in the contract and the actual final cost of the project. The challenge here is not that the cost of the project is high, many construction projects are huge undertakings that will undoubtedly yield high costs. Instead, the challenge with cost overruns is that they exceed the planned costs of a project.

Cost overruns have persisted in the construction industry for many years (Akinici & Fischer, 1998; Memon, et al., 2011). Particularly large construction projects have been shown to experience excessive cost overruns (Morris, 1990; Raftery, 2003; Siemiatycki, 2009). Indeed, a majority (63%) of 1,778 construction projects funded by the World Bank exceeded their budgets (Morris & Hough, 1987). Flyvbjerg et al. (2007, 2014) reports that large infrastructure projects such as rail and road construction often exceed their initial budgets, with cost overruns reaching 50–100% and in many cases reaching above 100%. The data that was collected for their study spanned 20 countries over five continents, going as far back as the late 1920's to the late 1990's. This shows that the challenge of cost overruns stretches across geographical settings, and although certain minor differences exist depending on the location, the challenge exists globally. According to Kaming et al. (1997), the primary factors causing cost overruns are due to increases in material cost, inaccurate material estimating and project complexity, i.e. related to organization, staffing, decision making etc.

Challenge 2: Delays

Similar to cost overruns, construction projects being delayed has constituted a persistent challenge in the industry (Anastasopoulos, et al., 2012; Bhargava, et al., 2010). A scheduling delay occurs when the project has not been completed at the planned completion date. The construction industry has had a poor record in terms of completing projects on time. In a report by the World Bank (1990), of 1,627 projects completed between the years 1974 and 1988, the average delay varied between 50% and 80% (Bordoli & Baldwin, 1998). The main causes for delays are design changes, poor labor productivity and inadequate planning (Kaming, et al., 1997).

Challenge 3: Sustainable construction

The built environment constitutes a significant contributor to environmental issues such as climate change (Younger, et al., 2008). The construction industry is responsible for approximately 40% of the total energy consumption thereby making it one of the largest producers of greenhouse gas emissions (Abbas, et al., 2009). The industry is also responsible for other types of sustainability related challenges, such as pollution, environmental damage

and resource depletion (Ortiz, et al., 2009). As the world's population continues to rise, and significantly larger groups of people relocate to urban areas, the environmental impact is expected to worsen in coming years. According to a report by the UN (2014), continued urbanization stands as a significant sustainability challenge, particularly with respect to urban dwellers in the lower social-economic stratum. This poses a challenge to construction clients, and in particular public clients as they are often responsible for infrastructure, hospitals, schools and housing developments.

Addressing construction challenges through improving capabilities

A report published by the National Audit Office in the UK connects the poor performance with what the issuers of the report recognize as a lack of commercial skills and expertise to manage large-scale projects. In particular, the report claims that there is a shortage of formal mechanisms to allocate staff across the various governmental departments in a way that ensures optimal use of capabilities (NAO, 2009). This claim is echoed in the Swedish construction industry where procurement of infrastructure projects have undergone extensive investigation leading to the conclusion that there is a “significant potential” for improving productivity, but in order to do so the client needs to be more capable in planning and procuring projects (Productivity Committee, 2012). Similarly, Szentes and Eriksson (2015) argue that “public clients need to develop more competence”, particularly with respect to using soft parameters when selecting partners. The notion of needing ‘more competence’ opens up for questions as to what the role and responsibilities of the client need to be.

In light of the current situation on a societal level in Sweden to refurbish housing areas, develop healthcare facilities and expand infrastructure (Regeringskansliet, 2015), there is a need to do more with less. This puts a strain on organizations in the construction sector, from clients to suppliers that imply a strong focus on the ability to deliver. Considering the three challenges identified earlier, development of how and with what organizations deliver becomes crucial. The construction sector is expected to deliver on time, on budget and meet quite a few sustainability requirements. The construction client is responsible to set and follow up on requirements and criteria to manage these challenges. This leads to formulation of a research question aiming at describing and understanding how organizations can deliver considering all the challenges that they face. The starting point being if the terms capability and dynamic capabilities can aid in understanding and managing those challenges.

1.1 Development of the research question

The starting point of this thesis was the research grant application addressing construction clients' capabilities. The initial research question sought to understand the particular “mix” of capabilities that were necessary for a client organization to possess in order to deliver projects that satisfied the projects' goals, particularly with respect to cost overruns, delays and sustainable construction.

The above research question influenced the approaches covered in the initial papers and framed the discussion on what would constitute the focus of the thesis. The aim of this research was geared toward contributing to industry development. However, it later became clear that it was unfeasible to connect the writings in the research application to a specific case study and then adapt this to industry needs whilst at the same time contributing to the development of theory. As the concept of dynamic capabilities was investigated, it seemed that the original aim of the research had to be amended. This led to the development of different research questions which are covered below.

1.2 Aim and research questions

The aim of the studies covered in this licentiate thesis has been to examine how capabilities are managed by public client organizations. Furthermore, the thesis explores, as a result of the starting point in the research application mentioned above, whether the concept of dynamic capabilities can aid in managing those capabilities in a way that ensures that construction-related challenges are addressed. In particular, the study covers the case of a large Swedish construction client (PubClient). My own involvement in this study came as a result of having had an interest in public construction, and in particular, an interest to investigate ways in which public construction could be improved.

The thesis investigates public construction clients' capabilities through two perspectives: i) examining the process whereby capabilities are managed within the organizational structure and ii) the effects of capabilities on construction-related challenges. By focusing on capabilities, the input as well as the output in regards to project specific goals such as delivering projects that are cost-efficient, time-efficient and sustainability-compliant, a more comprehensive view of capabilities may be described. The dynamic capabilities framework is essentially used as an interpretive tool to make sense of statement *i)* and *ii)* and the role that capabilities may have had in shaping the eventual outcome of a large public construction client.

The research questions are formulated as follows:

RQ1: What are dynamic capabilities?

RQ2: How can dynamic capabilities be understood and used in a public construction context?

Although the first question might seem as an objective, a matter of merely defining a term and providing an answer; it is however crucial as the response to that question will shape aspects of the discussion later in this thesis. The structure of the research questions begins by first inquiring about the dynamic capabilities concept, then seeking to understand how that concept may be used in a public construction context.

1.3 Case overview

PubClient is one of Sweden's largest maintainers of public facilities, the organization is involved in both the construction of public facilities and the refurbishment and maintenance of

those facilities. The organization has a yearly expenditure of approximately one billion SEK, of which the majority (70%) is made up of investments in newly built facilities. The remainder consists of renovations of the current stock. The different projects PubClient is involved with includes: nurseries, homes for people with special needs, educational facilities and residencies for the elderly. PubClient also manages its own planned maintenance as well as receives requests from customers who purchase additional changes and maintenance work to existing facilities. These requests exceeded 8,000 in 2014. The scope of the requests tends to vary; some are smaller requests such as customers asking that lighting equipment be changed whereas others are larger such as relocating entire walls.

Beginning in 2008, PubClient has undergone a significant reorganization. This process culminated in 2011 when PubClient combined two facilities management divisions (educational facilities and housing for elderly) and its project division while relocating its strategic planning unit to the municipality's central planning and management division. The reorganization also included a creation of two separate support units: a procurement unit and a technical unit. Prior to this, the individuals in the organization would have individual responsibility for the areas that would be covered by the procurement and technical units, in parallel to them being project managers. Later this progressed into a situation where project managers that had carried the responsibility for procurement and technical issues became specialists and spent less time in the projects. The different support units that developed had similar objectives, serving primarily three purposes: the first was to offer support to the project organization that delivers and manages the individual projects. The second purpose was to handle matters that relate to national and municipal laws, governmental regulations and EU directives. The third purpose was to provide market research, experience feedback and reports on internal development.

The decision to reorganize came at a time when the construction industry in the region had faced a number of corruption scandals that had affected some of the public client organizations in the municipality, but not PubClient. It also came during a time of economic recession which led to a reduction of construction work following the subprime crisis of 2008. In 1992, the real estate market in Sweden was affected by a severe decline in property value. Prior to this recession, client organizations possessed greater capabilities in the form of having their own technical departments with in-house project planners, technicians and other roles needed to deliver projects. As a result of the economic recession, client organizations were downsized and functioned primarily in an administrative capacity. The economic recession of 2008 also led to a reorganization of client organizations but instead of downsizing, the client organizations expanded diminishing their dependence on external PM consultants.

New governmental regulations in the years 2008-2010 required public construction clients to change some of their operating procedures. PubClient began working under more rigid guidelines, which included a requirement to comply to governmental policies regulating public procurement, most notably the Law of Public Procurement (LoU). Prior to this, PubClient had

complied with LoU on an irregular basis, at times adhering to the law when procuring large projects, and ignoring it when projects were small or it proved too complicated to follow. The changes in the organizational structure meant that the project managers who previously had more control would now have to relinquish some of that control and instead seek assistance from the support units.

In 2011, PubClient assumed its current form by merging three municipal client organizations, a change that coincided with a larger regrouping of the municipality's districts/local councils, from 21 districts to 10 districts. As the capabilities of PubClient's core personnel were consolidated in specialized units, the use of external consultants would diminish, particularly in regards to the core areas of the organization. The most important core area being the capability of the organization to procure projects.

2 Method

A qualitative approach is adopted for its ability to account for the complexity of social phenomena (Remenyi, et al., 1998; Yin, 2015). This approach was chosen in line with Bryman (1988, 2016) who noted that qualitative research emphasizes the interpretations and perspectives of the studied individuals; the meanings they create and the interpretations that they form. As such, the study lies within the interpretive paradigm in that the focus is on interpretation as opposed to quantification. The interpretive paradigm is informed by an attempt to interpret events at the level of subjective experience, a position that highlights the process and not necessarily the outcome. This is a viewpoint that regards the social world as an emergent process that is made up by the experiences of the individuals involved (Burrell & Morgan, 1979; Kakkuri-Knuuttila, et al., 2008).

Since the purpose of this study involves the understanding of complex social interactions, i.e. the management of dynamic capabilities in a construction context, a positivistic approach has not been used in favor of a view that leans toward a more interpretive approach. This has a number of important implications: regarding interviewees not as “objects” but as social beings, collecting empirical data in a natural environment, and an acknowledgment that the interpersonal skills of the interviewer influences the results (Bryman, 2016; Remenyi et al., 1998).

As Silverman (2001) notes, the qualitative approach includes a range of different methods which includes but are not limited to: observations, conducting interviews and transcribing the recorded audio, and the analysis of written material. The design of the research is that of a case study. The decision to adopt either a quantitative or qualitative approach comes as a consequence of the stated research purpose, the same can be said about deciding to use a case study approach. By adopting the case study approach, the aim is to reach a more in-depth perspective on how dynamic capabilities can be understood in a client organization.

In order to address these issues, a combination of methodological approaches was adopted within the qualitative research tradition. The research is founded on a multi-method design (Leech & Onwuegbuzie, 2009), allowing for a degree of flexibility in order to adjust to emergent findings. It consisted of a review of the available literature followed by a case study of a client organization that included interviews and an examination of internal documentation. The research was undertaken in two phases:

- 1) *Exploratory phase*. The focus was on scoping the available literature on the topic of client capabilities in relation to construction-related challenges such as cost overruns and delays. The dynamic capabilities concept was then used to address these challenges.
- 2) *Postulating phase*. Once the research landscape had been covered, it became possible to formulate postulates of how capabilities might be managed in a client organizational setting. These postulates were tested by studying a large Swedish client organization

(PubClient) and the management of its organizational capabilities amidst external pressure and internal reconfiguration of the organizational structure.

The details surrounding the way in which these studies were conducted are stated below.

2.1 The case study approach

A case study is a type of empirical inquiry that examines a contemporary phenomenon within its real-life context, especially when the boundaries between that phenomenon and its context is not clear (Yin, 2009). By allowing for more than one source for collecting data, in this case in the form of interviews and internal documentation, the researcher is able to gain a better understanding of the phenomenon in question. Many different approaches to case study research have been suggested in the past, their differences mostly relating to the methods. However, the primary objective of the case study is similar in all approaches, i.e. the objective of exploring a specific topic and seeking to reveal the essence of that phenomenon (Baxter & Jack, 2008). The adopted approach for conducting case study research was that of systematic combining, an abductive approach to case study research that emphasizes the use of a singular in-depth case study (Dubois & Gadde, 2002).

The case study investigated one of Sweden's largest public construction clients, referred to as PubClient. Of particular importance were the capabilities involved in changing the organizational structure; the way in which the organization adapted to internal and external pressure. I opted for a single case in accordance with Siggelkow's (2007) precepts for persuasive case studies. The reasons for this being that the case of PubClient is somewhat novel in that it represents a large public construction client organization that has undergone *extensive* and *repeated* organizational restructuring as a result of adapting to external factors. It is this aspect that is of interest in the case study, an aspect that does not seem to exist to the same extent in other similar organizations. PubClient is in this sense an atypical case for which a single case approach may be suitable (Siggelkow, 2007).

2.1.1 Interviews

In the case of PubClient, four interviews were conducted with managers of the different units of PubClient, the result of which is covered in Paper II. The criteria for choosing interviewees was based on finding individuals in a managerial position who had been present at the time of PubClient's organizational restructuring. This criteria undoubtedly limited the number of personnel who could be contacted. However, it also ensured a more targeted selection that only included individuals with expertise in their areas and who had witnessed first-hand the changes in the organization from a position that allowed them to describe and have an understanding of the organizational setting in which the decisions that lay behind the restructuring were taken. The group is small but due to their expertise and long-term involvement with PubClient, their responses were considered as adequate in covering the changes that took place in the organization. This is in line with Romney et al. (1986) who argue that having a small number

of participants is justified when the participants possess a higher degree of expertise on the research topic. The results are particular and the data can not be viewed as generalizable to all client organizations, however they cover the situation studied in the case.

The interviews with PubClient personnel followed a semi-structured design allowing for new ideas to emerge throughout the interview whilst at the same time adhering to a set of predetermined themes. The purpose of utilizing this approach was to better explore the topic at hand without adhering stringently to any preconceived ideas. Each conducted interview lasted on average one hour and was carried out by the author and in one case by the author and his academic supervisor. The interviews were conducted at the location of the interviewee, often in their office or in a nearby venue such as a conference room. The interviews were recorded and then transcribed in order to provide a record of what was said.

These four interviews were then followed by an additional three interviews via telephone with senior personnel in three different public client organizations. The additional interviews were conducted to examine if the perception of PubClient's development, particularly as it related to the sustainability concept, was comparable to that of other similar client organizations in the industry. The result of these interviews has been covered in Paper III.

2.1.2 Internal documentation

Considering that organizations studied in this thesis were public organizations, the right to public access (Regeringen, 2009) allowed for internal documents to be obtained through their websites. In addition to this, various publicly available reports and studies that documented PubClient's development were also used in order to provide a more comprehensive description of the organization's past. These reports were published either directly by the Gothenburg Municipality or in collaboration with the municipality.

3 Literature review

This section provides the theoretical underpinnings of this study. It begins with a literature review that gives a brief historical overview of the theories that led to the development of the dynamic capabilities concept. The review highlights issues that have been raised both in favor and against the dynamic capabilities concept. In outlining the critique of the dynamic capabilities concept, a summary of the critique levelled at the resource-based view (RBV) is also described. The reasons for describing this being that the resource-based view constitutes the foundation that the concept of dynamic capabilities is based on and the critique of RBV is therefore relevant and necessary to relate to when discussing dynamic capabilities. This section is then followed by a discussion of the dynamic capabilities concept, its definition and how it can be used as a framework.

3.1 The resource-based view

The resource-based view (RBV) is based primarily on the works of Wernerfelt (1984), Barney (1991) and Peteraf (1993). Unlike the competitive positioning school of Porter (1980), RBV once again relocated the focus back toward firms' internal strengths and weaknesses as opposed to external opportunities and threats (Green, et al., 2008; Priem & Butler, 2001).

In some ways, RBV paralleled earlier research in the field, Ansoff (1965) and Learned (1969) looked at firms' internal characteristics to identify 'best practices' for achieving firm success. Building on the works of Penrose (1959) and Rubin (1973), Wernerfelt (1984) argued for the importance of internal resources as the antecedents of products and more importantly of performance. The focus here being on the internal. By providing an inside-out view for understanding organizational performance that is not directly connected to competition, RBV becomes a useful approach in the public sector where competition is not a main issue. For that reason, RBV has been used to explain value creation in public organizations (Matthews and Shulman, 2005).

RBV seeks to explain the sources of a firm's sustained competitive advantage. According to Barney (1991), a firm can achieve sustained competitive advantage if it can acquire and manage resources and capabilities that are valuable, rare, inimitable and non-substitutable (commonly referred to as VRIN resources).

Makadok (2001) distinguishes between the terms 'capability' and 'resource' arguing that capability is essentially a special type of resource that is organizationally embedded, non-transferable, firm-specific and whose purpose is to improve other resources in the organization. Despite the popularity of RBV as a theory, there were dissenting voices. Critics questioned whether RBV was essentially a tautology (Foss, et al., 1995; Hoopes, et al., 2003; Priem & Butler, 2001). RBV theorists contended that a resource could be a source of competitive advantage if it was both rare and valuable (Barney, 2001) which Priem and Butler (2001) argued was a tautology if one were to assume that 'value' and 'competitive advantage' were defined

in similar terms. For instance, a tautology could be said to exist if ‘valuable’ resources are those that improve effectiveness/efficiency, and ‘competitive advantage’ is defined as the achievement of improvements in effectiveness/efficiency.

In response to the critique put forward by Priem and Butler, Makadok (2001) stated that Priem and Butler were mistaken since they equated RBV solely to the works of Barney and his views of sustained competitive advantage. Instead, Makadok (2001) argued that the RBV tradition should be viewed as a whole, beginning with Wernerfelt (1984), who focused on resource heterogeneity on a corporate level to Barney’s (1991) framework of competitive advantage, and ending with Peteraf (1993), who produced a coherent framework on how competitive advantage was sustained in both the business-unit and at the corporate level. To take Barney’s work in isolation according to Makadok (2001, p. 498) would be akin to having “removed a brick from a wall and concluded that the brick is not a wall.” Barney’s work, or for that matter that of Wernerfelt or Peteraf, when taken in isolation would fail to constitute a separate theory as each of the authors only contributed one component to the overall theory. RBV has also been criticized for the theory’s frequently opaque terminology (Green, et al., 2008). It is not always clear how terms such as *skill*, *competence*, *capability*, and *resource* differ from one another.

The important contribution that RBV has brought to strategic management research should be noted. Contributions which even critics affirm, namely that RBV provides a theoretical framework for discussing the relationship between resources and competitive advantage. However, it does not specifically address the process whereby future valuable resources are generated nor does the theory account for how the current stock of VRIN resources are amended in dynamic environments (Ambrosini & Bowman, 2009). To address this issue, an extension to the theory was proposed, an extension that centered around the term dynamic capabilities.

3.2 Dynamic capabilities

The dynamic capabilities concept traces its theoretical heritage to that of the RBV tradition of the 1980’s. Similar to RBV, proponents of dynamic capabilities, chief among them Teece et al. (1997), Eisenhardt and Martin (2000) and Zollo and Winter (2002) argue that a firm’s competitive advantage lies in its ability to manage its resources. The concept of dynamic capabilities can thereby be firmly placed in the ‘internally-focused category’ described by Hoskisson et al. (1999).

Teece et al. (1997, p. 516) define dynamic capabilities as “the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments.” Unlike ordinary capabilities (also referred to as operational capabilities) that enable an organization to perform its current activities, dynamic capabilities seek to build new resource configurations for the organization (Teece, 2012). Examples of dynamic capabilities include: alliance and acquisition capabilities, R&D teams that are cross-functional, new product development routines, resource allocation routines, quality control routines, and performance

measurement systems used to build, integrate, or reconfigure other resources and capabilities (Fischer et al; Eisenhardt and Martin, 2000; Teece, 2007)

Contrary to RBV that has a more static conceptualization of resources, Teece et al. (1997) emphasize the importance of the dynamic environment (Green, et al., 2008). The key differences of RBV and dynamic capabilities are shown in Table 1.

Table 1: A comparison of RBV and dynamic capabilities (adapted from Cavugsvil et al., 2007).

	Resource based view (RBV)	Dynamic capabilities
Conceptualization	Bundle of heterogeneous resources.	Specific organizational resource by which organizations alter their resource base.
Resources/capabilities	Idiosyncratic.	Idiosyncratic with commonalities.
Environment	Does not differentiate.	Dynamic.
Competitive advantage	From VRIN resources: valuable, rare, inimitable and non-substitutable. Seeks <i>sustained</i> competitive advantage.	From valuable, rare and substitutable dynamic capabilities. Seeks competitive advantage.

Instead of seeking sustained competitive advantage like RBV, proponents of the dynamic capabilities view argue that sustained competitive advantage cannot be attained due to the fast-changing environment (Wójcik, 2015). In this view, competitive advantage is merely transient and not sustainable. Eisenhardt and Martin (2000) clarify this point by arguing that the sustained competitive advantage that RBV attribute to VRIN resources are not fully applicable when discussing dynamic capabilities. They argue that dynamic capabilities are typically *valuable* and to some extent *rare* but they are not *imitable* nor are they *non-substitutable*. Instead, Eisenhardt and Martin (2000) state that dynamic capabilities are ‘equifinal’ in that organizations can gain the same capabilities from many different paths independently from other organizations. Thus, whether they can imitate other firms or find substitutes is not that relevant since managers of organizations can discover them on their own. For this reason, Eisenhardt and Martin (2000, p. 1110) suggest that “dynamic capabilities per se can be a source of competitive, but not sustainable, advantage.”

Despite the widespread use of the definition put forward by Teece et al. (1997), no consensus has been reached in how dynamic capabilities are to be defined. Indeed, a number of varying definitions have been suggested. The table below describes some definitions that are frequently used in the dynamic capabilities literature.

Table 2: Common descriptions of dynamic capabilities.

Author(s)	Definition
Griffith and Harvey (2001)	Global dynamic capabilities is the creation of difficult-to-imitate combinations of resources, including effective coordination of inter-organizational relationships, on a global basis that can provide a firm a competitive advantage
Helfat et al. (2009)	The capacity of an organization to purposefully create, extend and modify its resource base.
Teece et al. (1997)	The firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments
Wang and Ahmed (2007)	A firm's behavioural orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage
Winter (2003)	[Dynamic capabilities are] those that operate to extend, modify or create ordinary capabilities
Zahra et al. (2006)	The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker(s)
Zollo and Winter (2002)	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness.

The range of definitions above show that the term 'dynamic capability' means something different depending on who is asked. It also shows that authors such as Teece et al. (1997) do not differentiate between competence and capability. According to Helfat et al. (2007), a capability denotes the ability to perform a particular task or engage in a specific activity. This is in line with its dictionary definition in which capability is viewed as "the power or ability to do something" (Oxford Dictionaries, 2016). To be able to do something suggests that there exists a potential for improvement. This potential is more explicitly stated in Merriam-Webster's Dictionary (2016) where capability is defined as "a feature or faculty capable of development." Therein lies an implication that capabilities can be regarded as a type of resource, one that could be both managed and developed. This view of capability as a "tool" that can be managed, harvested and deployed at will is a viewpoint that is seen in the writings of Eisenhardt and Martin (2000), Teece et al. (1997) and Zott (2003).

Like its predecessor, RBV, much of the terminology that deals with dynamic capabilities, including terms like capability, resource, competence and skill are not always clearly defined in the dynamic capabilities literature, rather they are often opaque (Green, et al., 2008). Even though there are varying definitions, some common ground does exist in regards to what constitute dynamic capabilities. Winter (2003) argues that there is a consensus in the literature that dynamic capabilities have to do with adapting to organizational change which is evident from the body of work published by dynamic capabilities researchers (Eisenhardt & Martin, 2000; Helfat, et al., 2007; Teece, et al., 1997; Zollo & Winter, 2002).

As for the critique that the dynamic capabilities concept has received, much of it consists of repeating previous critique levelled at RBV (Green, et al., 2008). Proponents of dynamic capabilities have in many ways been left with the ‘intellectual baggage’ that RBV had been dealing with. This includes what Green et al. (2008, p. 66) regard as the “tortuous nature” of its contested terminology. Aside from this, the framework has also been criticized for its circular logic. Zahra et al. (2006) illustrate the tautological aspect of arguing that an organization is better than another due to its capabilities if dynamic capabilities are those that only result in competitive advantage. In response to this line of reasoning, Eisenhardt and Martin (2000) have proposed that no argument was being made that dynamic capabilities must result in competitive advantage; they may or may not do so. Instead the value of a dynamic capability is defined independent of the organization’s performance which enables empirical falsification. Thus, dynamic capabilities are not a sufficient condition for competitive advantage, but a necessary one.

3.3 Dynamic capabilities framework

The dynamic capabilities framework that is referenced in this thesis refers to the framework developed by Teece et al. (1997, 2007 and 2012). In those studies, the authors describe a number of key characteristics of the proposed framework which has been summarized in Figure 1.

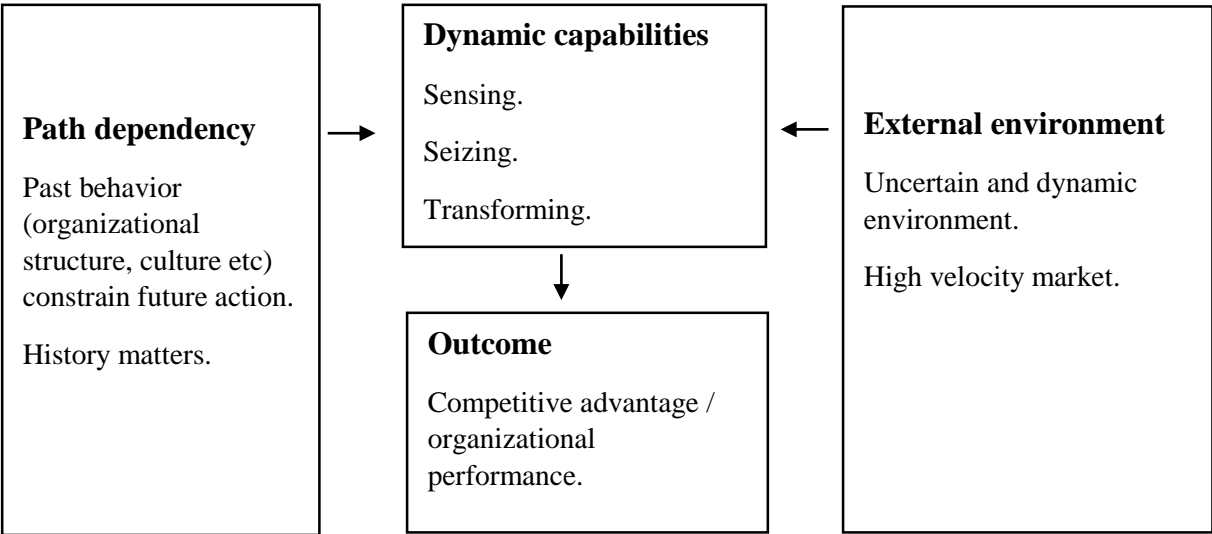


Figure 1: The dynamic capabilities framework (based on Teece et al., 1997).

The dynamic capabilities framework consist of a number of characteristics, the most important of which are shown in Figure 1 above and further explained below. The framework does not provide prescriptive guidance (Teece, 2012), it is instead used as an interpretive tool to understand the relationship between capabilities and organizational performance in a dynamic setting.

3.3.1 Path dependency

A key concept in the dynamic capabilities literature relates to the notion of path dependency or what Teece et al. (1997, p. 522) refer to as “bygones are rarely bygones”. It is argued that dynamic capabilities are idiosyncratic (they are unique to each organization) and that past events in an organization’s history will (partly) constrain and affect its future behavior. Consequently, in order to understand how resources can be created or altered to address change, it becomes necessary to look at the organization’s past and how its history and the actions it has executed may have influenced its current trajectory.

3.3.2 Sensing, seizing and transforming

According to Teece (2012), dynamic capabilities can be categorized into three clusters of activities and adjustments: (1) *sensing* which refers to the identification and assessment of an opportunity; (2) *seizing* which consists of mobilizing resources in order to address an opportunity and capture its value; and (3) *transforming (resource configuration)* which refers to the continued renewal of the organization.

Sensing is an activity that involves scanning, learning and interpretation. It typically requires investments in research, development work and related activities (Teece, 2007). The purpose of sensing is to identify and shape new opportunities that arise, and by doing so, provide market intelligence (Kindström, et al., 2013). In order to identify and shape opportunities, organizations need to perpetually search and explore different technologies and markets, in both local markets and distant ones (Nelson & Winter, 1982; Teece, 2007). It is an activity that goes beyond investments in research and the probing of customer needs; it also includes understanding latent demand, the structural development of markets, and probable responses from suppliers and competitors. To be capable of sensing new opportunities, organizations need to overcome having a narrow search horizon (Teece, 2007). The wider the search horizon, the likelier the identification of new opportunities.

Seizing refers to the determining and implementing of new opportunities that have been identified as conducive to competitive advantage (O’Reilly & Tushman, 2008; Teece, 2007). In order to seize capabilities, the organization needs to be capable of sustaining and exploiting new opportunities as they occur (Hodgkinson & Healey, 2011; Teece, 2012).

Transforming is the activity by which the organization continuously reconfigures its resource base by adjusting internal/external resources and operating capabilities as needed (Teece, 2007). Although minor adjustments may be adequate to sustain the exploitation of current

opportunities, if the environment changes, the organization needs to undertake more extensive reconfiguration (Helfat et al., 2007).

3.3.3 External environment

Teece et al. (1997) and Eisenhardt and Martin (2000) place an importance on the dynamic aspect being tied to the external environment. In other words, because the external business environment is ever-changing, organizations need to adapt to these changes by building, and reconfiguring their internal and external capabilities.

3.4 Summary of the literature review

This section began by describing the dynamic capabilities concept, its definitions and its origin. It showed that that the dynamic capabilities concept emerged from the resource-based view (RBV) and that the critique of dynamic capabilities was similar to that of RBV. Although it was indicated that the term dynamic capabilities had varying definitions, there were common characteristics. These characteristics include the focus on internal resource configuration, dynamic environment and path dependency. The characteristics were explained further in the discussion of the dynamic capabilities framework as described by Teece et al. (1997).

Looking back at the literature review, the purpose was not to provide an exhaustive description of dynamic capabilities that included a discussion of all of the different interpretations that exist of the term. Instead, my goal was to i) convey a brief history of the term in order to make sense of the context in which the concept emerged and to ii) provide an understanding of how dynamic capabilities can be used as a framework. It is this framework that is featured in the discussion section and in Paper II.

The upcoming section contains a brief summary of each of the appended papers followed by a discussion section that describes how the dynamic capabilities framework was applied in the case of a large public client organization. The application of this framework centered around identifying how the different aspects of the framework (sensing, seizing and transforming) related to development that was seen in the studied case.

4 Summary of papers

Paper I: Aggregation of Factors Causing Cost Overruns and Time Delays in Large Public Construction Projects: Trends and Implications

Purpose: This paper explores the impact that cost overruns and time delays have on large public construction projects. The purpose is to clarify how past and current research regards factors causing cost overruns and time delays in large public construction projects.

Design: Based on an analysis of a literature selection consisting of 40 journal articles (filtered down from an initial selection of 3,833 papers) that rank causes for cost overruns and delays, this paper provides average rankings of the causes of cost overruns and delays in large public construction projects. The study makes use of a kiviati diagram (radar chart) in order to visualize multivariate data.

Findings: Aggregated rankings of the causes of cost overruns and delays are reported (i.e. an average of the different rankings listed in the selected journal papers). These indicate a strong emphasis on the management aspect as a primary cause of cost overruns and delays. Additionally, there seems to be a trend toward deemphasizing the role of financial considerations in explaining cost overruns and delays.

Paper II: Applying the Dynamic Capabilities Framework: the case of a Large Swedish Public Construction Client

Purpose: The purpose of this paper is to examine the development of capabilities in a client organization through the lens of a dynamic capabilities framework. In particular, what was investigated was the process whereby a public construction client senses, seizes and transforms opportunities in pursuit of organizational improvement.

Design: A case study approach was adopted examining one of Sweden's largest public client organizations, referred to as PubClient. Four interviews were conducted with senior personnel who had been present prior to the reorganization.

Findings: PubClient utilized a top-bottom approach for sensing large opportunities and a bottom-up approach for sensing smaller opportunities. The case also indicated that seizing opportunities was more difficult than sensing them. The latter relied on having a wide contact network.

Paper III: Approaches to Safeguarding Sustainability Requirements in Large Public Construction Projects – the Client’s Perspective

Purpose: The purpose of this paper is to investigate how requirements for sustainable construction are managed by large public construction clients.

Design: The results are based on four interviews that were conducted with four representatives of four different construction client organizations in Sweden. In each organization, the individual responsible for handling issues relating to sustainable construction was interviewed (e.g. “head of the sustainability department”).

Findings: The findings support a multifaceted approach to sustainable construction; it is suggested that concepts that are difficult to measure such as ‘social sustainability’ and ‘cultural sustainability’ may be managed under a different department than sustainability issues that are quantitative, e.g. toxicity, waste and energy consumption. The study would also suggest that the issue of complying with sustainable construction is not one where there is a significant lack of capability but rather where there is a need for increasing the resources required for managing sustainability in a more efficient manner.

5 Findings

This thesis has explored the use of the dynamic capabilities framework in the context of construction with a focus on construction client organizations. A literature review was carried out to clarify the concept of dynamic capabilities (RQ1). I then explored how capabilities were conceptualized in a construction context (RQ2), in the context of a public construction client and with respect to construction related challenges. This is then followed by a discussion of the broader implications of using the dynamic capabilities concept.

The review indicated that although there was no consensus on how dynamic capabilities were defined, authors agreed that dynamic capabilities differed from ordinary capabilities in that: i) they constitute a set of routines that either create or modify an organization's resources in pursuit of competitive advantage and ii) that they are unique to each organization and path dependent (bound by each organization's history).

The definition of dynamic capabilities that was used in this thesis was that of Teece et al. (1997). In this view, dynamic capabilities refer to the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Teece (2012) argues that dynamic capabilities can be categorized into three groups of activities and adjustments: (1) *sensing*: the identification and assessment of an opportunity; (2) *seizing*: mobilizing resources in order to address an opportunity and capture its value; and (3) *transforming*: the continued renewal of the organization through reconfiguring its resources.

The difficulty with adapting the concept of dynamic capabilities in a construction context lies in primarily two areas: i) the vagueness of the term dynamic capabilities and the lack of a unified definition and ii) the particularities of the construction industry which may differ from the context in which the concept of dynamic capabilities was developed. The examples used by Teece et al. (1997) when describing dynamic capabilities are often taken from the manufacturing industry or IT. Many of the studies utilizing the concept of dynamic capabilities deal with organizations that have production development where innovating new products is viewed as paramount for the organization's survival (Fischer et al., 2010; Teece et al., 1997; Zahra et al., 2006). Construction on the other hand is not primarily concerned with developing new products nor is the industry signified by having homogenous predictable processes. Instead, construction projects are typified by their complexity and non-standardized nature (Clough, et al., 2000).

Although these differences exist between construction and manufacturing, I nonetheless adopted the concept of dynamic capabilities in the context of construction clients because it seemed that the differences that existed were not that extensive. Additionally, some authors have previously used dynamic capabilities in a construction context. This includes Green et al. (2008) who used the dynamic capabilities concept to study the development of a contracting

firm in the UK and Gajendran et al. (2014) who used dynamic capabilities to study innovation in construction SMEs.

5.1 Applying a dynamic capabilities framework in the case of PubClient

Figure 2 illustrates how PubClient can be viewed through a dynamic capabilities framework.

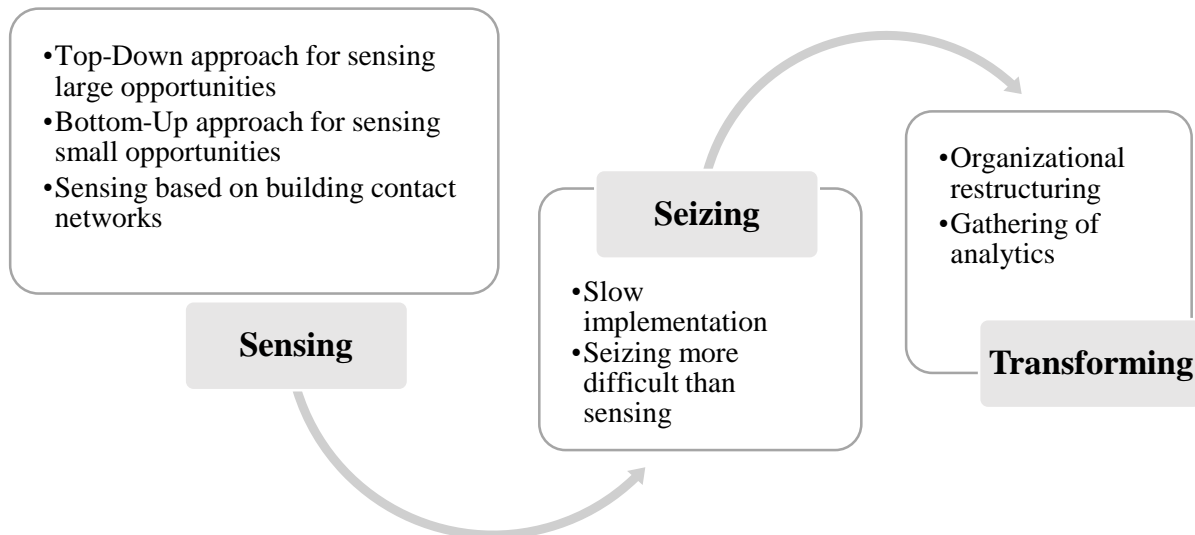


Figure 2: How PubClient senses, seizes and transforms opportunities.

In the case described in Paper II, it is suggested that PubClient sensed, seized and transformed opportunities in the manner illustrated in Figure 2. Sensing refers to the identification and assessment of an opportunity (Teece, 2012). For PubClient, it seemed that larger opportunities were identified by upper management in a top-down approach whereas smaller opportunities were identified within the different units, in a bottom-up approach. In order to sense new opportunities, PubClient built an extensive contact network consisting of different client organization with whom they shared information on new developments. However, their contact network did not usually include individuals working in the private arena, which made it difficult for PubClient to identify changes that occurred in private companies. This was not consistent with Teece's (2007) recommendation for widening the search horizon to sense new opportunities. Although it seemed that PubClient had allocated resources for sensing opportunities, seizing those opportunities appeared to be more difficult. This was indicated by PubClient having identified a number of important initiatives that were never implemented. Furthermore, PubClient worked to continuously transform the organization by means of reorganizing its structure. This process of continuous renewal, in which the organization consistently sought ways to improve its organization (Teece, 2012), seemed to have been aided by the analytics they had gathered. By gathering analytical data on how they interacted with their suppliers including response rates for their tendering proposals, they were able to proactively improve their results.

5.2 Applying the dynamic capabilities framework with respect to cost overruns, delays and sustainable construction

The issues presented in the research application that was mentioned in the beginning of this thesis were addressed in Paper I. It lists a number of factors that have been identified as causes for cost overruns and delays. These factors were categorized into eight categories (Table 3) of which factors relating to finance, management and organization were noted as the most significant categories causing cost overruns and delays in the research literature. Below follows a discussion on whether the dynamic capabilities framework can be applied to address these factors in a similar fashion as seen in the previous section.

The dynamic capabilities concept seem to address decisions that occur on a managerial or organizational level. For this reason, factors that relate to organization or management can be described in terms of the dynamic capabilities concept. The ability to sense, seize and transform opportunities apply to situations where it is possible to sense (identify) the opportunities. This means that the dynamic capabilities concept is not suitable to explain factors relating to the weather or other unpredictable factors such as inflation as these cannot be identified beforehand. Similarly, psychological factors cannot be sensed, seized or transformed since psychology (i.e. cognitive psychology) constitutes the foundation by which such actions are taken. The same can be said about communication in that it facilitates the ability by which opportunities are sensed, seized and transformed but communication itself cannot be described by those three activities.

Table 3: Factors affecting cost overruns and delays and if dynamic capabilities can be used to address those factors.

<i>Category</i>	<i>Examples of factors</i>	<i>Applicability of the dynamic capabilities framework</i>
Communication	Lack of communication between contractors and clients	Not applicable
Financial	Financial solvency Price increases (inflation)	Partly applicable
Management	Poor site management Inadequate managerial skills Client initiated change orders Inadequate design specs Rework	Applicable
Material	Shortage of equipment Poor material planning	Partly applicable
Organizational	Unsuitable management structure	Applicable

	Poor organization structure	
	Poor process procedures	
Project	Project complexity	Partly applicable
	Project duration	
Psychological	Optimism bias	Not applicable
	Deception	
Weather	Harsh weather conditions	Not applicable
	Unforeseen ground conditions	

As for sustainable construction, unlike the concepts of cost overruns and delays, the terms ‘sustainability’, ‘sustainable development’ and ‘sustainable construction’ are not well defined (Sourani & Sohail, 2011). These terms have been used to describe an assortment of different topics ranging from social and economic issues such as poverty, consumption and inequality to environmental issues relating to climate change, conservation of water, energy and ecological systems (UN, 2015). The key interest is not to explore the difficulties with the term sustainability but rather to investigate the capability of client organizations insofar as complying with sustainable construction criteria is concerned. The discussion on sustainable construction is featured in Paper III. Therein, a case is made for abandoning a simplistic view of sustainable construction in which vastly different areas such social and cultural sustainability are lumped together with more ‘quantitative aspects’ of sustainable construction like that of energy reduction and toxicity removal.

The attitude towards the more ‘qualitative aspects’ of sustainable construction, e.g. social and cultural sustainability, among all of the four client organizations studied in Paper III were positive. However, the interviewees were also not able to provide a systematic way of working with these issues or for some, even an understanding of what they actually meant. Contrary to this, the organizations all had a structured way with working with the quantitative aspects of construction such as energy reduction and they were able to point to significant progress in these areas.

It would seem that the quantitative aspects of sustainable construction could be more clearly described using the terminology of sensing, seizing and transforming. The more qualitative aspects may not be susceptible to such an analysis seeing as there does not appear to be a way of identifying areas of improvement and subsequently no way of continuously reconfiguring resources to improve those areas.

6 Discussion

In this thesis, I have attempted to examine the concept of dynamic capabilities and how it relates to the role and function of the construction client. A key, albeit small, study in this thesis dealt with the case of a public construction client (Paper II) and the challenges that this organization faced through the perspective of a dynamic capabilities framework. These challenges were discussed in Paper I and III respectively, in the former with respect to cost overruns and delays and in the latter with respect to sustainable construction. These studies are in line with the dominate position in the research literature suggesting that the construction-related challenges that construction clients have faced have persisted over time (Akinici & Fischer, 1998; Memon, et al., 2011), although Paper I would suggest that the *occurrence* of cost overruns and delays has been consistent over time but the *explanations* for their occurrence have varied.

Authors that have utilized a dynamic capabilities approach to study a case have often found it to be difficult to grasp empirically (Priem & Butler, 2000; Williamson, 1999), suggesting that dynamic capabilities may instead be regarded as something that organizations do, as opposed to something that they have (Green et al., 2008). The difficulty with grasping ‘dynamic capabilities’ through empirical studies is essentially an extension of the difficulty with grasping ‘capabilities’ empirically. The elusiveness of the term ‘capabilities’ has been a difficult term to deal with in this thesis. Initially, I opted to conceive capabilities as tangible ‘things’ that can be readily identified and connected with the outcomes that they produce. This approach was not particularly fruitful as it became apparent that capabilities are embedded within the organization (Ambrosini & Bowman, 2009) and difficult to separate from one another, let alone establish causality in terms of how a particular capability can affect a particular outcome (e.g. cost, time or sustainable construction). A different approach to handling this issue would be that of Winch and Leiringer (2016) who call for ceasing the search for ‘best practices’ or the ‘right capabilities’ needed to produce a particular outcome and instead focus on explicating which actor in the project coalition is deploying which capabilities. In doing so, they advocate for the term *owner project capabilities*, which is based on the premise that the dynamic capabilities that owners require in investing in infrastructure and operating infrastructure services are different from the dynamic capabilities required by the project-based organizations that eventually undertake the design and construction of that infrastructure. Their research raises a number of questions that are relevant to the discussion in this thesis, the most important of which is: *at what level does the topic of capabilities belong?* Is it on the organizational level as Teece et al. (1997) and Eisenhardt and Martin (2000) have suggested or should capability development be regarded as part of continuous learning initiatives, that occur on the individual level, as suggested by Zollo and Winter (2002)? There does not appear to be a clear answer to which path is the “better” option. Indeed, it may very well be that neither of the two approaches is ‘better’ than the other but instead that studying ‘capabilities’ or ‘dynamic capabilities’ on one of these levels merely allows for a *different* perspective and not necessarily a more *accurate* perspective of these concepts. Perhaps one way of determining the level at which these concepts

could be studied would be to differentiate between the level at which capabilities can be *developed* and at the level in which they are *managed*. The issue of developing capabilities is different from managing capabilities. In order to describe how capabilities are developed, one would need to describe the acquisition of knowledge and its categorization into tacit and explicit (Gherardi, 2001; Nicolini, et al., 2003; Nonaka & Konno, 1998); and how this knowledge acquisition occurs jointly through collective learning, a process that requires a structured praxis as well as a legitimate place and time in the organization for it to function (Räisänen & Gunnarson, 2007). In the dynamic capabilities literature, this focus on learning is represented by Zollo and Winter (2002) who argue that the principal method by which learning new capabilities occur is through experience accumulation, knowledge articulation, and knowledge codification. As for studying the management of capabilities, the theories of Teece et al. (1997) and Eisenhardt and Martin (2000) become more relevant approaches as these authors have been primarily concerned with conceptualizing capabilities at an organizational level, particularly in relation to bringing about competitive advantage. This was the reason for using the approach of Teece et al. (1997) to study PubClient, i.e. because the case in question was studied at an organizational level.

However, the concept of dynamic capabilities, as conceived by Teece et al. (1997) which was later developed into a framework (Teece, 2007/2012) was not entirely compatible with our case. There were two important differences, the first being that PubClient was a public organization whereas Teece et al. (1997) developed their concept with the assumption that organizations would seek competitive advantage. This is different in the public sphere where there are no direct competitors to compete with. In PubClient's case, when other client organizations began copying their ways of working, that was seen as a positive outcome rather than a negative one. The lack of competitors can be addressed by reframing the issue into one where the organization pursues growth instead of competitive advantage (Winch & Leiringer, 2016); or where the objective becomes the pursuit of improved effectiveness (Zollo & Winter, 2002); or like in PubClient's case, regarding the "competitors" to be internal by having individual units compete against each other.

The second difference that made Teece's (1997, 2012) conceptualization of dynamic capabilities as not fully compatible with the case of PubClient was due to PubClient having utilized a project-based structure. The dynamic capabilities concept as described by Teece et al. (1997) focuses on the permanent organization whereas construction clients function in both the temporal project organization where the projects are executed and the permanent organization that supersedes it. To bridge this gap, Davies and Brady (2016) propose a different conceptualization of the dynamics of project capabilities in which they argue that there is an ambidextrous dimension to project capabilities; deploying dynamic capabilities in project-based industries such as construction requires a level of balance between replication and renewal strategies. The more stable and predictable the conditions in the projects are, the more stable and operational the capabilities needed to maintain current project capabilities.

Conversely, a more unstable project environment necessitates a more explorative approach where dynamic capabilities facilitate the creation of new project capabilities.

Judging from the above discussion, it would seem that the dynamic capabilities concept is not adequate to describe the specifics of public construction clients and for that reason, future research might instead focus on developing a more relevant framework to study these types of organizations. This supposed framework could build on Davies and Brady's (2016) concept of project capabilities and make it more applicable for public client organizations. As a framework, it would perhaps be too specific to be applied outside of the context of public client organizations, however, when applied in a case that fits that description, the results might be more relevant. In developing such a framework, a key component would be to avoid studying 'client capabilities' as a whole and instead examine a *subset* of the clients' capabilities that can be more clearly described through empirical observations (e.g. through routines or processes).

Dynamic capabilities - where to go from here

It is not clear how using a dynamic capabilities framework would be advantageous to using other methods of analysis. On the contrary, I would argue that the convoluted terminology that the dynamic capabilities concept is associated with might instead complicate the situation. It serves to reframe the question of individual learning and growth of staff to a question of developing dynamic capabilities, a reframing that makes it more difficult and abstract. Furthermore, it is currently not possible to use dynamic capabilities to predict future outcomes (Teece, 2013) which would mean that construction clients would be unable to utilize it to improve their decision making process and thereby reduce the construction related challenges that they face.

It is difficult to describe precisely what constitutes dynamic capabilities in a concrete way, the concept has more to do with looking at activities in an organization. It is not easy to grasp or alter the organization's dynamic capabilities as these are embedded in the activities of the organization. This leads me to question how to proceed with the research described in this licentiate thesis. One possible way of continuing this line of research would be to simply refrain from using the term altogether. Instead the focus could be placed on ways in which organizations acquire and manage knowledge/competence in an organization. Future studies might instead study the core behind the client organization's capabilities: the capabilities they possess or lack, and how they manage these through their organizational culture, rather than looking at their systems or knowledge management models.

Another possible approach would be to instead regard the management of capabilities as an issue that belongs to HRM (Human Resource Management). The argument being that 'capabilities management' is really about managing staff and thus an HRM responsibility. Therefore, the staff requires support in order to become more dynamic and responsive on the level required for the organization to be competitive and/or effective. This would open up for studies into the interaction between HRM and how an organization is coached and managed to

become capable. This would relate to the concept of *people capability* in HRM, introduced by Bredin (2008), referring to the organizational capability of managing the relationship between the organization and the individuals who are part of that organization.

The difficulty with grasping 'dynamic capabilities' empirically might indicate that the term leads to a cul-de-sac. Dynamic capabilities are not "things", they represent a concept, a way of viewing how organization's act. Future studies could therefore lead to a number of different directions, an open field of sorts. However, in formulating the future path of this research, it becomes important to define the scope and focus in order to arrive at something that adds to the body of research as well as being beneficial for practice. Dynamic capabilities represents a way of understanding and describing how organizations gain competitive advantage. It does not however describe how individuals acquire capabilities and how they utilize them. "*How are our dynamic capabilities developing?*" is probably a question that is seldom asked in the boardroom.

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