Aki Pekuri

THE ROLE OF BUSINESS MODELS IN CONSTRUCTION BUSINESS MANAGEMENT
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Abstract

Although the need for change was recognized a couple of decades ago, the construction industry is still struggling with its productivity development and customer satisfaction. Usually, construction improvement initiatives focus on developing practices related to project management and delivery processes. However, this study views the general underperformance of the industry from the perspective of how the construction business is managed and conceptualized in practice.

The objective of this thesis is to understand the role of business models in construction business management. This objective is pursued by addressing specific research questions in four individual publications, two of which contribute to the research objective from a more conceptual and two from a more empirical viewpoint. The exploratory study follows the qualitative research tradition and exploits the case study approach. The primary method for data collection has been interviews.

This study demonstrates the applicability of the business model concept to the analysis and development of the construction business. However, its use requires a comprehensive understanding of the concept and proper alignment of its elements in practice. The results of this study indicate that the current business models of construction companies are too similar to enable value-based competition. Indeed, the conventional business models neglect the customer perspective and thus revolve around internal efficiency rather than customer value creation. Consequently, construction businesses are usually managed on a project-by-project basis without the governing effect of specific customer-oriented business models and a clear long-term vision or business purpose that would go beyond the objectives of growing and surviving.

A better understanding of business models provides a starting point for managers to reform the construction business and the whole industry. Explicitly defined business models provide a foundation for consistent management practice and process development. New possibilities for customer value creation can be exploited as the limitations of the current thinking are overcome and business models are approached from the viewpoints of the customer and value creation.

Keywords: business development, business models, construction, management, project selection, value creation
Tiivistelmä

Rakennusalalla on edelleen vaikeuksia tuottavuuden kehittämisen ja asiakastyytyväisyyden parantamisessa, vaikka tarve muutokseen tunnistettiin jo pari vuosikymmentä sitten. Yleensä alan kehityshankkeet kohdistuvat projektiin johtamiseen ja projektitoimituksiin liittyviin käytäntöihin. Tässä tutkimuksessa rakennusalan yleisesti heikkoa suorituskykyä tarkastellaan kuitenkin liikkeenjohdon näkökulmasta eli miten rakennusyrityksiä johtetaan ja miten liiketoimintaa käsitteellistetään käytännössä.


Liiketoimintamallien parempi ymmärrys antaa lähtökohdan rakennusliiketoiminnan ja koko alan uudistamiseen. Selkeästi määritellyt liiketoimintamallit luovat perustan liiketoiminnan johdonmukaisuudelle ja prosessien kehittämiselle. Monia huomiotta jääneitä arvonluonnin mahdollisuuksia voidaan puolestaan hyödyntää, kun vältetään takertumasta vallalla olevan ajatellutavan jaloitettiin ja suunnitellaan liiketoimintamallit toimiviksi arvonluonnin ja asiakkaan näkökulmista.


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Asiasanat: arvon luonti, johtaminen, liiketoiminnan kehittäminen, liiketoimintamallit, projektin valinta, rakentaminen
Acknowledgements

There are many people and organisations that have influenced and made this dissertation possible. But before I acknowledge their integral roles, I want to provide a brief background of how I ended up writing these sentimental words.

When I was about five years old, my dad used to bring home some strange mechanical and electric devices so that I could disassemble them. It was fascinating and perhaps sparked my interest in the kinds of activities that later led me to become an engineer. Yet I never became what I think of as an archetypical engineer whose speciality lies in technicalities and devices. Instead, it was during courses like operations and strategic management that I realised being fascinated by analysing organisations and their business activities. So I became an industrial engineer, who tries to figure out how organisations best function as a whole and why some of them perform better than others.

The business models concept, which I elaborate on in the factual part of this document, was introduced to me when I started to do my master’s thesis. A year later, this background with business models brought me back to the university and launched my career as a researcher. Granted, it took me a while to frame my research around business models, as I became fascinated by the many other possibilities that I had as a rookie scientist. Thus, I would like to express my deepest gratitude to my supervisor, Professor Harri Haapasalo, for showing great patience toward and belief in my work as well as providing guidance, support and flexibility throughout the whole project.

I am deeply grateful for the insightful comments and recommendations of the preliminary examiners of this thesis, Professor Tim Brady from the University of Brighton and Senior Researcher Sami Kärnä from Aalto University. Professor Jukka Pekkanen from Tampere University of Technology has kindly agreed to act as the opponent in the public defence of this dissertation.

Very special thanks go to everyone who worked in the Industrial Engineering and Management research group during my research project. In particular, I want to thank Dr. Aki Aapaoja and M.Sc. Tuomo Kinnunen for travelling the same PhD journey alongside me and for trying their best to wind me up with their jokes and tricks during the years. I express sincere thanks to Dr. Maila Herva for helping me in the beginning and for co-authoring one of the articles in this dissertation. In addition, I also want to acknowledge Professors Jaakko Kujala and Kirsi Aaltonen for their helpful feedback regarding the latest article.
In addition to many people, this research would not have been possible without the support of various organisations. Thus, I wish to thank the Finnish Funding Agency for Technology and Innovation for its funding of the LCIFIN1 and LCIFIN2 research projects, which have provided the platform for my research. I also want to thank all those professionals from partner companies who have actively participated in the many workshops of these two group research projects and shared their experiences and viewpoints regarding the construction business. In addition, I would like to acknowledge the direct financial support that The Confederation of Finnish Construction Industries, Finnish Science Foundation for Economics and Technology and Tauno Tönning’s Foundation have provided for my dissertation.

Finally, what I have now accomplished is because I am fortunate to have many special people around me. I am grateful to my friends Matti, Teemu and Harri for the endless banter, which, despite my occasional frustrations and outbursts, keeps me easy-going. I want to thank my soon-to-be wife Maria, who has stood by me more than half of my life already, and our two daughters Silja and Ella for being funny and cute. I am grateful to my parents Terttu and Esko and my parents-in-law Margit and Veikko for being so helpful with daily chores. You are the best support team anyone could have. Last but not least, I owe a debt of gratitude to my sister Laura. You supported and encouraged me to keep going when I thought the world was collapsing. You co-authored all my papers and put a huge amount of effort into making me and my ideas sound more rational. Thank you for your help; it has been priceless.

After finally accomplishing the work, I feel relieved and happy. Yet it does not feel like finishing anything but rather reaching an intermediate stopping point on the way to something unknown. The journey has felt like a marathon, but as my ambition has grown and curiosity increased, it is time to see if I can go for ultra distance in my chosen path. Thus, I end my writing with this apt quote from a great man:

Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning. —Winston Churchill

Kemi, April 2015

Aki Pekuri
List of original publications


All of these articles have been published after undergoing a double blind review process. The author of this dissertation is the primary author in all the original publications, holding the main responsibility for the entire research process. This included the study design, data collection, data analysis, and writing of the articles. The roles of the co-authors have mainly been centred on commenting on and providing valuable feedback for the articles as well as providing additional creative resources during the research.
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Introduction

1.1 Background and motivation

The construction industry has been characterised by poor performance for decades (Pekuri 2011, Teicholz 2001) and its problems are considered to arise from multiple sources: the fragmented structure of the industry (Dainty et al. 2001, Green 2011), separation of the design and production processes (Love et al. 2004), obsolete and short-sighted control of supply chains (Vrijhoef & Koskela 2000), low-bid tendering (Dubois & Gadde 2000, Elfving et al. 2005, Eriksson & Laan 2007, Saad et al. 2007), and narrow quality mindset (Saarenpää 2010). The industry practice is largely based on regulations and supervision rather than on genuine customer-orientation that guides all thinking and action (Saarenpää 2010). The major challenge is to improve customer satisfaction and increase customer-orientation within the industry (Dulaimi 2005, Kärnä et al. 2009), where the need for change has already been recognized in the 1990s (cf. CII 1991, Latham 1994, Egan 1998). Thus far, the construction industry has developed through technological advancement rather than new management practices (Allmon et al. 2000).

According to Leiringer et al. (2009), current research agendas are increasingly encouraging the construction industry to compete on the basis of ‘added value’ rather than cost efficiency. According to Saxon (2003), the mission of the construction industry should be ‘to add value for customers and society by shaping and delivering the built environment to meet their needs’. Consequently, the concept of value is involved in numerous current improvement initiatives. For example, in the lean construction community, projects are understood as temporary production systems, which aim to deliver a product while maximizing value and minimizing waste (Ballard & Howell 2003, Koskela 2000). The focus of this community is on developing new project practices within the framework and possibilities provided by integrated project deliveries. Integrated project delivery is built on partly similar principles as project alliancing; it seeks to improve project outcomes by emphasizing early involvement of key participants and alignment of their project objectives through shared risk and reward (Kent & Becerik-Gerber 2010). The multi-party contract agreements make both integrated project delivery and project alliancing clear advancements when compared to the practice of project partnering that emerged in the 1990s (Lahdenperä 2012).
However, despite all research regarding different aspects of construction improvement, existing discussion is centred at the project-level. The focus is on project management and delivery processes, while neglecting the impact of business management on the companies' ability to survive, compete and succeed in the market. For example, Merwe (2002) states that project management literature concentrates exclusively on projects and little research is conducted on management as it applies to the general management of an organisation in project-based business. Kujala et al. (2010) also note that existing literature rarely considers project development from a business perspective. In today's organisations, the effective management of single projects is not considered sufficient; instead the focus has shifted towards simultaneous management of a set of projects and linking this set to the ultimate business purpose (Artto & Dietrich 2004). Thus, instead of attempting to find the cure only by developing new project practice, it might also be beneficial to give more attention to the operation and management of companies rather than projects.

1.2 Research objective and scope

This research concentrates on the neglected aspect of construction business management by adopting a business model viewpoint. In literature, business models are considered essential aspects of successful businesses, as their main purpose is to differentiate a particular company from others and to provide it an advantage over its competitors (Johnson et al. 2008; Teece 2010). The research interest in business models has grown rapidly during the past decade and the concept has received increasing attention from scholars and business strategists interested in explaining firms’ value creation, performance and competitive advantage (Zott et al., 2011). In brief, a business model refers to a firm’s intended or actual response to how value is created (Magretta 2002).

Despite the growing interest in business models in general, the concept has not attracted much attention in construction-related literature thus far (Pan & Goodier 2012). The few studies that exist and utilise the business model concept have been focused on rather specific issues such as green construction (Mokhlesian & Holmen 2012), off-site construction take up in house-building (Pan & Goodier 2012), off-site system deliveries (Thuesen & Hvam 2013) and industrialised building of multi-storey houses (Brege et al. 2014). In addition, Brady et al. (2005a) study whether the integrated solutions business model, which represents the shift from individual products or services to high-value integrated
solutions addressing customers’ specific business needs, could work in construction. However, Brady et al. (2005a) do not provide any linkage to the prior literature on business models as they use the concept more vaguely. In their recent study, Höök and Stehn (2014) explore the management of multiple business models in one manufacturing firm operating in the construction industry. Also the present study places business management in central focus and the research objective for this thesis is formulated in the following manner:

– To explore the role of business models in construction business management.

While acknowledging that alternatives exist to investigate construction from a business perspective, the choice of business model concept in this study is justified with the following statements:

1. Business models provide a systemic perspective for studying the functioning of organisations and explaining how enterprises work (Magretta 2002).
2. The business model concept revolves around customer-focused value creation by focusing on the functions of value creation and capture (Zott et al. 2011).
3. A business model reflects the strategic choices made within a company and their operational implications (Shafer et al. 2005), thereby realizing managerial actions (Tikkanen et al. 2005).

In order to achieve the stated research objective, the research is divided into four more focused research tasks and a research question is attributed to each of them (Table 1). The answers to each of these questions are based on published articles that share the common aim of understanding the role of business models in construction business management.

Table 1. The research questions.

<table>
<thead>
<tr>
<th>RQ#</th>
<th>Research question</th>
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<tbody>
<tr>
<td>RQ1</td>
<td>How can the business model concept be utilised in construction business management?</td>
</tr>
<tr>
<td>RQ2</td>
<td>How do managers understand and deploy business models in construction companies?</td>
</tr>
<tr>
<td>RQ3</td>
<td>What is the role of a business model in project selection in construction companies?</td>
</tr>
<tr>
<td>RQ4</td>
<td>Why is the understanding of business models essential in construction business development?</td>
</tr>
</tbody>
</table>

From the viewpoint of production, construction is characterised by uniqueness, site production and temporary organisation that lead to complexity, variability and lack of transparency in projects (Koskela 2000). However, from the viewpoint of management, it is essential to understand construction as a certain type of project
Artto and Wikström (2005: 351) define project business as ‘the part of business that relates directly or indirectly to projects, with a purpose to achieve objectives of a firm or several firms.’ In addition, project business is considered a research field that adopts a business-centric view to the management of projects, firms and networks of projects and firms (Artto & Kujala 2008). Figure 1 illustrates these four areas of project business. The scope of this study is restricted to ‘management of a project-based firm’ in the context of the construction industry. According to Artto et al. (2011), the management of a project-based firm addresses the activities of a firm involved in managing multiple simultaneous or sequential projects for achieving the firm’s business purpose.

Fig. 1. Framework of project business: four distinctive management areas (Artto & Kujala 2008, published by permission of IJMPB).

In addition to being a type of project business, the construction industry is characterised by its heterogeneity. In addition to actors that actually build things – which again range from buildings for different purposes to all kinds of infrastructure – the industry also includes the manufacturers and suppliers of construction materials as well as architects, designers, consultants and several other special trades such as plumbing and electrical contractors. The industry also has various kinds of clients, but no particular group is focused upon in this study. Instead, the client is understood as a complex system (cf. Bertelsen & Emmitt 2005) in which it is not just the paying customer whose value should be
maximized. It is also the users, the future users and the wider society whose values should be addressed. The whole-life perspective is noted to possess an additional challenge for the treatment of value, as the created artefact may be in function for decades or even centuries and have a number of different owners and users at different points in time (Jorgensen & Emmitt 2008, Salvatierra-Garrido & Pasquire 2011).

Of the various actors operating in the construction industry, the analysis of this study applies best to companies that build things. In general, construction companies execute only a small part of the project with their own personnel and capacity and are thus highly dependent on subcontractors and material suppliers (Segerstadt & Olofsson 2010, Dubois & Gadde 2000). Yet, irrespective of the design and the organisation/person(s) responsible for it, construction companies maintain the overall responsibility of delivering value via projects. In addition, from the client’s perspective, it is often insignificant who conducts the work; whether it is their own personnel or subcontractors, the construction company must guarantee successful value delivery.

1.3 Research methodology

The way a problem appears to a researcher is related to the view he or she uses for reflection. The appearance of the problem, for one, delineates the conceivable and available set of techniques and, therefore, determines the nature of the knowledge that is produced. A researcher’s view is dependent on the philosophical assumptions (Arbnor & Bjerke 2009) that he or she carries consciously or unconsciously. These assumptions are related to the profound questions regarding the reality that is believed to exist (ontology) and regarding the manner in which it is possible to gain knowledge about the existing reality (epistemology) (Guba & Lincoln 1994). Ontological and epistemological assumptions go hand in hand, in that the former defines the latter.

In this study, the adopted ontological view on business models is similar to that of Magretta (2002: 6), who states that ‘every viable organization is built on a sound business model, whether or not its founders or its managers conceive of what they do in those terms’. To be specific, it is believed that every organisation, not only the viable ones, has a business model – a logic according to which it operates. Thus, although business models can and should embody strategy (as is explained later), it does not mean that if a company does not have a formal
strategy it does not have a business model either. Every company has a business model which is either excellent or horrible, or something in between.

According to Checkland (2012), the point of a well-defined concept is that it provides an epistemology in terms of which the world can be researched, explored, investigated and made sense of and, perhaps, changed. In the epistemological sense, the defined ontological stance becomes meaningful when studying business management through business models. As every organization is believed to operate using a certain business model, every organization can be studied and its operation reflected with theoretically derived business model concepts. In addition, as Tikkanen et al. (2005) note, a business model is realized through the actions of a company and the members in the company. Therefore, by examining these actions, it is possible to gain knowledge even about subconscious business models.

This thesis can be characterized as an exploratory study. According to Stebbins (2008: 327), ‘researchers explore when they possess little or no scientific knowledge about the group, process, activity, or situation they want to examine but nevertheless have reason to believe it contains elements worth discovering. To explore a given phenomenon effectively, they must approach it with two special orientations: flexibility in looking for data and open-mindedness about where to find them.’ This thesis is built on a premise according to which one of the possible explanations for the general underperformance in the construction industry can be found from the management of the companies and from business models in particular. A definite cause-and-effect relationship cannot be drawn at this point; however, tentative, inductively derived empirical generalizations are provided, which is common in exploratory research (Stebbins 2008).

The use of inductive logic of reasoning exposes the research to the problem of induction. It is both a strength and weakness of this logic that the conclusions state more than the premises that the conclusions are built upon (Nickerson 2010). Whereas deduction involves reasoning from the general to the particular, induction does the exact opposite. Without observing all the possible cases that belong to the group that is under study, making generalizations is always more or less risky business; one contradictory case that is subsequently observed may endanger the validity of the conclusions. Despite this drawback, induction is also a necessary enterprise in science, particularly in qualitative approaches, as it enables extending existing theories into new settings and develops understanding and theory where none currently exist (Fox 2008). Inductiveness is also considered necessary in this research, as it is set up to build initial understanding
regarding the role of business models in construction in order to point future studies towards the whereabouts of related cause-and-effect relationships.

### 1.4 Outline of the research process and thesis

This thesis contains four separate articles. In the first three articles qualitative methods are utilised in collecting and analyzing data. The fourth article is conceptual. Table 2 presents an overview of these articles.

<table>
<thead>
<tr>
<th>Article #</th>
<th>Title</th>
<th>Approach and data collection</th>
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<tbody>
<tr>
<td>I</td>
<td>Managing value creation: the business model approach in construction</td>
<td>Illustrative case study. Qualitative data collected from secondary sources</td>
</tr>
<tr>
<td>II</td>
<td>The role of business models in Finnish construction companies</td>
<td>Qualitative data from eight semi-structured interviews</td>
</tr>
<tr>
<td>III</td>
<td>Business models and project selection in construction companies</td>
<td>A multiple case study. Qualitative data from eight semi-structured interviews (same as in Article II)</td>
</tr>
<tr>
<td>IV</td>
<td>Lean as a business model</td>
<td>Conceptual paper: no empirical data</td>
</tr>
</tbody>
</table>

Article I is an illustrative case study, where the business model concept is used as a scientific instrument to understand and describe three real-life business models. In illustrative case studies, theory functions as a starting point and is used to interpret empirical data as well as demonstrate the application of that theory to particular phenomenon or field (Lukka 1999). Their objective is to provide analytical evidence in demonstrating the plausibility of a theoretical perspective and to describe how the illustrated theory fills gaps in existing theory (Keating 1985). The objective of the case illustrations in Article I is to test the applicability of the business model concept in describing value creation as a whole in different types of companies that operate in the built environment. The three cases were selected on the basis that they had shown visible commitment to improving themselves by becoming more customer-oriented. Thus, the cases highlight the distinctive characteristics of business models that are developed with the customer in mind and emphasize the importance of managing value creation at the level of business management. Data was collected from chief executives’ presentations at conferences and research workshops, company websites, and from informal face-to-face discussions with managers. Table 3 presents an overview of these companies and the informants who approved the final business model descriptions.
Table 3. Overview of informants, companies and company sizes\(^1\) in Article I.

<table>
<thead>
<tr>
<th>#</th>
<th>Informant</th>
<th>Company description</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Head of national business unit</td>
<td>International construction group</td>
<td>Large</td>
</tr>
<tr>
<td>2</td>
<td>Chief technology officer</td>
<td>Domestically operating construction company</td>
<td>Large</td>
</tr>
<tr>
<td>3</td>
<td>Chief executive officer</td>
<td>Leading manufacturer of playground equipment</td>
<td>Large</td>
</tr>
</tbody>
</table>

Articles II and III explore managers’ understanding of business models and the relationship between business models and project selection in construction, respectively. Article II follows an interpretative research tradition, while Article III can be characterised as a multiple case study that aims at mapping issues and common patterns across cases (Eriksson & Kovalainen 2008). The main data for both studies was collected by conducting semi-structured interviews in eight construction companies. Case selection in Articles II and III was information-oriented (Eisenhardt 1989). In particular, a minimum annual turnover of five million Euros was required, because smaller companies are more likely to exhibit less sophisticated practices and, thus, would not represent the practices of key players in the industry. Initially, 26 such construction companies headquartered in Northern Finland were considered for selection. Furthermore, from these 26 companies, only noted players in the regional construction market were selected. ‘Noted’ indicates that the candidate has a long history in the construction business or a reputation as a successful and growing company. By applying this criterion, 11 companies were selected and contacted for interviews, three of which declined. The remaining eight companies are considered as typical cases that represent the entire population (Finnish construction companies). Interviews were scheduled with eight experienced managers who worked in top positions in their company or business unit. Thus, they were the key decision-makers and in a position where a comprehensive view of the company’s business activities is required, thereby making them the most suitable informants. Interviewees were from three large, two medium and three small-sized construction companies to provide the opportunity to compare differences between managers functioning in companies of different sizes. Table 4 presents an overview of these companies and interviewees.

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\(^1\) The European Commission (2003) defines small- and medium-sized companies as follows: A small company has fewer than 50 employees and an annual turnover and/or balance sheet total not exceeding EUR 10 million. A medium-sized company has fewer than 250 employees, an annual turnover not exceeding EUR 50 million and/or an annual balance sheet total not exceeding EUR 43 million.
The interviews for Articles II and III were semi-structured and consisted of two parts. The first part encompassed questions regarding the interviewee’s perception and familiarity with the concept of a business model, as well as questions aiming to decipher the company’s business model(s). The latter part of the interview concentrated on the company’s project selection practices and related decision-making processes. The posed questions were related to the formality of the process and the criteria used to evaluate whether to bid for or initiate a development project. Moreover, the interviewees were asked to describe a couple of their company’s recent projects and the decision-making processes followed in those projects.

Each of the interviews lasted 1–2 hours and was recorded digitally. For the purposes of the analysis, the recorded materials were first transcribed. Then, the analysis of the qualitative data proceeded with meaning condensation, that is, abridging of the interviewees’ thoughts into shorter formulations (Kvale & Brinkmann 2009). Each interview was condensed individually, which enabled the piecing together of relevant insights and common patterns from the interviews. Furthermore, the analysis involved meaning interpretation, which involves working out structures and relations of meanings from what is not directly said and, thus, not immediately apparent in the interview texts (Kvale & Brinkmann 2009). In this particular context, it implied interpretation of what was said regarding business models. In addition to the interviews, relevant information (particularly with regard to the companies’ business models) was collected through company websites and publicly available brochures.

Article IV is a conceptual paper, which explains why it is necessary for managers to understand their companies’ current business models, how they operate and why they are successful (or not) before making comprehensive changes in the operating logic of a company. In this article, discussion revolves
around lean, which is suggested to be adopted as a new business model. By doing so, a company can better focus on developing business as a whole and from the viewpoint of emphasising customer value creation rather than seeing lean only as a tool for cost-cutting.

Outline of the thesis

Beginning from the shortcomings of the construction industry and lack of attention devoted to analysing its problems from a business perspective, the research objective of this thesis revolves around exploring the under-researched area of business models and their role in construction business management. This objective is pursued by answering the four research questions in the articles described above. In these studies, the business model concept is mostly used as an analytical tool through which the construction business, particularly its real-life business models and premises to customer value creation, is examined and understood. In the summary part of the thesis, the findings from the individual articles are condensed, combined and finally analysed through the theoretical framework to make inferences regarding the role of business models in construction business management. In addition to presenting the central focus of each individual article regarding the business model concept, Figure 2 also illustrates the positioning of these articles based on how they contribute to understanding the role of business models in construction business management.
Chapter 1 has now introduced the research problem and stated the research objective. In addition, it has encompassed methodological issues and described the research process. The remainder of this thesis is organized in the following manner. Chapter 2 presents the theoretical framework for the study. Chapter 3 summarizes the findings from the individual publications, including the condensed answers to the four research questions. Chapter 4 makes a final conclusion regarding to the research objective and presents the theoretical contribution as well as managerial implications of this thesis.

Fig. 2. How the articles contribute to the research objective.
2 Theoretical foundation

In this thesis, the theoretical framework (Figure 3) is constructed for the purpose of understanding the role of business models in construction business management and to develop an understanding on companies’ value creation, thereby providing an initial conceptualization for the research. According to Anfara Jr. (2008), theoretical frameworks are constructed from the theories, experiences and general set of ideas researchers bring to and draw upon in conducting the study. They allow researchers to understand certain aspects of the phenomenon under study while concealing others.

An overview of generic management literature provides the context for the other concepts in the framework and for the entire study. This overview contains brief reviews of literature focusing on strategic management, while operations management is considered from the viewpoint of lean management. These functional areas of management were chosen out of many, because business models are often referred to as the critical link between strategy and operations (Osterwalder 2004, Wikström et al. 2010), with an emphasis on value creation. Thus, the theoretical framework excludes many other functional areas of management, such as financial management and human resource management, which are indisputably essential functions in business management. Similarly, many specific areas of management research such as knowledge management (e.g. Nonaka & Takeuchi 1995) or innovation management (Afuah 2003) are omitted. Instead, the theoretical framework builds on the concepts of value and value creation that are also central in business model literature.
2.1 The field and function of management

Drucker (2001) credits the development of management for the global social and economical transformation over the past 150 years: ‘the emergence of management has converted knowledge from social ornament and luxury into the true capital of any economy.’ Management explains, for the first time in human history, why it is possible to employ a large number of skilled and knowledgeable people in productive work (Drucker 2001).

The field of management has developed in stages with differing beliefs about what managers do and how they should do it (Robbins & Coulter 2012). In the early twentieth century, scientific management (Taylor 1911) aimed at improving productivity and efficiency of manual workers in production. Then, overall organization and its effectiveness became the main concern of management during the era of general administration (Fayol 1949). The Hawthorne Studies conducted in the period 1924–1932 had a dramatic impact on management beliefs regarding the role of human behaviour in organizations (Mayo 1933).

The focus was placed on the customer, when the advocates of quality management emphasised that meeting customer needs and requirements is the responsibility of everyone within an organization (e.g. Deming 1986). According to Webster Jr. (1988), it was the emergence of strategic planning that shifted the focus of management away from customers and their needs towards competitors, growth and short-term financial measures. The stance of Womack et al. (1990) is that principles of quality management were not really adopted by most producers outside Japan as the consumption boom after the Second World War ensured that everything produced was also sold. However, the rise of strategic management (Porter 1985, 1996, Prahalad & Hamel 1990, Barney 1991) has, at least in theory, redressed the balance by bringing focus back to strategy implementation and the search for long-term, sustainable, competitive advantages over competitors serving the needs of a carefully defined set of customers.

The term ‘business model’ entered into management vocabulary in the late 1990s, when the Internet opened up new avenues for doing business. Entrepreneurs used the business model concept to describe how their innovative ideas and offerings, which exploited the openness and connectivity of the Internet, would turn into profitable business and to communicate this logic to investors (Magretta 2002). The business model concept emphasises customer value creation instead of competition (Chesbrough & Rosenbloom 2002, Morris et al. 2005).
The different eras with different aspects of focus have not really replaced each other; rather, they complement the overall picture of business management and reveal its broad and multidimensional nature.

**What managers do and what is the purpose of business?**

Henri Fayol was the first to propose that all managers perform five functions: planning, organising, commanding, coordinating and controlling (Fayol 1949). After Fayol, this has been condensed and it has become widely accepted that the following four functions encompass managerial practice (Robbins & Coulter 2012):

- Planning: setting goals, establishing strategies and developing plans to coordinate activities.
- Organising: determining what needs to be done, how it will be done and who is to do it.
- Leading: motivating, leading and any other actions involved in dealing with people.
- Controlling: monitoring activities to ensure that they are accomplished as planned.

All these functions aim at achieving the organization’s stated purpose. According to Drucker (2001), through these functions, it is possible to exercise the fundamental task of management – to make people capable of joint performance through common goals, common values, the right structure and the training and development they need to perform and respond to change. Similarly, Robbins and Coulter (2012: 8) define management as ‘coordinating and overseeing the work activities of others so that their activities are completed efficiently and effectively.’ Here, efficiency refers to obtaining the most output from the least amount of inputs, while effectiveness is doing those work activities that will help the organisation attain its goals.

What, then, is the purpose of an organisation that these functions ought to serve? Even if, by definition, businesses exist for the sake of economic performance, Drucker (1986) opines that there is only one valid definition of business purpose – to create a satisfied customer. He states that profits do not provide the explanation, cause or rationale for business behaviour and business decisions, but rather test their validity. Thus, the answer to the previously presented question is not determined by the producer but by the customer; it is
what the customer sees, thinks, believes, wants and values that determine what constitutes one’s business (Drucker 1986).

The above viewpoint of Drucker, which was originally presented in the 1950s, is shared by many and echoes the long-term proclamation of the marketing concept (Keith 1960, Levitt 1960). Grönroos (1994: 6) condenses the inherent idea of the marketing concept in the following manner: ‘the firm is best off by designing and directing its activities according to the needs and desires of customers in chosen target markets.’ This is supported by the evidence of positive relationships between market orientation and specific measures of business performance, including profitability, sales growth, return on assets, product innovation and new product success (Atuahene-Gima 1996, Balakrishnan 1996, Jaworski & Kohli, 1993, Morgan et al. 2009, Narver & Slater 1990, Slater & Narver 1994).

According to Drucker (2001), marketing is related to seeing the entire business from the customer’s viewpoint rather than as being a specialised activity. This view also includes internal customers, because superior value must be provided at each point of the value chain otherwise the end customer will not receive the optimal product or service (Mohr-Jackson 1991). However, often, value creation is approached from the shareholders’ viewpoint, that is, that companies exist to create value for their shareholders (Khalifa 2004). This idea is legitimate on the basis of the notion that strategies that create the most shareholder value will also yield the greatest competitive advantage for companies (Rappaport 1987).

Yet, market-orientation requires a long-term commitment to understanding both expressed and latent needs of customers as well as the capabilities and plans of their competitors through the processes of acquiring and evaluating market information in a systematic and anticipatory manner (Slater & Narver 1998). In addition, this information must also be disseminated throughout the organisation in a coordinated manner to provide a unifying focus on and clear vision of the organisation’s strategy centred on creating superior value for customers (Kohli & Jaworski 1990, Gulati & Oldroyd 2005). Thus, in a market-oriented company, the generated market intelligence guides not only the product and service decisions but also the strategy and organisational structure.
Chandler (1962: 7) defines strategy as ‘determination of the basic, long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for those goals’. In the field of strategic management, there are distinct schools of thought, each of which has a unique perspective that focuses on some major aspect of the strategy-formation process (Mintzberg et al. 1998). Some of these schools are prescriptive in nature – concerned with how strategies should be formulated, while others describe how strategies are realised rather than formulated.

Porter’s (1980) view is that strategy is about finding a favourable position in an industry; his generic positioning strategies – cost leadership, differentiation and focus – are widely known. The other well-known perspective on strategy is the resource-based view. Essentially, the resource-based view conceptualises the firm as a bundle of resources, and it is the manner in which these resources are combined that differentiates firms from one another (Barney 1991, Hamel & Prahalad 1994). Thus, the resource-based view departs from Porter’s (1980) market-based view that considers firms somewhat homogenous and competing with different market positions. What is not questioned in the market-based view is whether the firm in question has the resources and competences to compete in a market that is considered attractive. Yet, when markets change, the manner in which a firm’s resources are deployed must change too to be relevant in the marketplace. This is the key idea in the concept of dynamic capabilities that considers the ability to reconfigure a firm’s operating routines to enable responses to changing environments as a key to competitive advantage (Teece et al. 1997).

Recently, the Blue Ocean strategy (Kim & Mauborgne 2005), in which a company creates its own business realm with very little competition, has inspired strategic thought in business.

Green et al. (2008) argue that understanding of competitive strategy in construction firms has progressed little since Lansley’s (1987) work on how firms adopt different strategies to suit different environments. According to Hillebrandt (1984), slimness and mobility – that is, agility – may be the best determinants of success for contracting firms. Thus, in construction companies, which are usually labour intensive rather than capital intensive, strategic planning is essentially a dynamic process of matching resources to projects over time (Cannon & Hillebrandt 1991). The net result of this is a competitive strategy based on structural flexibility, that is, the ability to expand and contract in response to
fluctuations in demand (Winch, 1998). However, arguments regarding the extent to which strategy is predetermined or emergent continue to characterize the generic literature on competitive strategy, which may have also led to a disconnection between generic literature and that relating to the strategic management in construction (Green et al. 2008).

2.1.2 Lean perspective to operations management

Lean management originates from the production floors of Toyota Motor Corporation, where the initial focus was to develop a production system that would be capable of competing with established mass producers. Tools and methods were developed and used to eliminate waste from the production process, guided by the principle that it is the throughput time that is most significant. Thus, lean management emphasises the efficiency of value streams (or production flows) over resource efficiency, which dominantly focus on high resource utilization and low unit costs (Ohno 1988, Womack et al. 1990, Womack & Jones 2003). Outsiders who observe the Toyota Production System are often overwhelmed by the tools and methods that it involves, but the true secret of Toyota lies in the rigorous problem-solving process, which follows the scientific method (Spear & Bowen 1999). Toyota employees follow specific rules to create feedback loops, which repeatedly test the efficiency of activities and indicate the way toward continuous improvement (Christensen & Raynor 2003).

The other key development has been the move away from merely eliminating waste and reducing costs to an approach that seeks to enhance value for customers and links this to customer needs (Hines et al. 2004). This development traces back to the book entitled Lean Thinking, which was published in 1996. In this book, Womack and Jones (2003) laid out the five principles – specify value, identify value stream, make value flow, produce only what is needed, and pursue perfection – that helped companies around the world apply lean in their operations regardless of the business they were in. Their stance is that, when looking from the customers’ perspective, companies exist only to create value for them (Womack & Jones 2003). The subsequent works by Liker (2004), Morgan and Liker (2006) and Mann (2010) have since placed stronger emphasis on multidimensional aspects of lean. In general, lean management is now understood as a comprehensive business system that encompasses all functions in and around a company as well as philosophical aspects that are integral in creating a culture of continuous improvement.
In the context of construction, Koskela (1992, 2000) was among the first to
discuss lean and his work formed the foundations for what is now called lean
construction (Jorgensen & Emmitt 2008). According to Koskela (2000),
management focus in construction is overly dominated by the willingness to
maximize efficiency of individual tasks and transforming (T) inputs to outputs.
This viewpoint neglects the importance of managing projects as a flow (F) of
interdependent activities that create value (V) only by meeting customer
requirements. Thus, the different conceptualizations of production are not
alternative but complementary, thereby forming the basis of what is often referred
to as the TFV theory of production.

According to Howell (1999), managing the interaction between activities, the
combined effect of dependence and variation is essential if projects are delivered
within the shortest time period. The findings of Pekkanen (2005) suggest that it is
the better management of total process that establishes a good relationship in a
building project. Several managerial concepts, such as the Last Planner system of
production control (Ballard & Howell 1998, Ballard 2000), integrated project
delivery (Matthews & Howell 2005, Lichtig 2006) and target value design
(Ballard & Reiser 2004, Ballard 2008, Zimina et al. 2012) have been developed to
address the shortcomings of traditional methods and provide solutions to the
problems that are found in contemporary construction. Despite being a breath of
fresh air within the industry, also lean construction focuses on problems mainly at
the project level rather than examining them from a business perspective.

2.2 Business models

The business model concept emerged in the context of e-business and many of the
early definitions are composed in this context (e.g. Timmers 1998, Afuah & Tucci
2001, Amit & Zott 2001). Since then, the concept has been applied in various
industries ranging from airlines to music recording (Chesbrough 2010, Morris et
al. 2005), and definitions have been presented from perspectives such as strategy,
technology and entrepreneurship (Chesbrough & Rosenbloom 2002, Morris et al.
2005, Shafer et al. 2005). Despite numerous attempts to explicitly define the
concept, there is still no consensus on its definition or elementary components.
One reason for this is that the business model concept draws on ideas from
various academic and functional disciplines, but has gained prominence in none
(Chesbrough & Rosenbloom 2002). Table 5 presents some commonly cited
definitions to demonstrate the linchpins of the concept.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Definition for a business model</th>
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<tbody>
<tr>
<td>Timmers (1998)</td>
<td>‘An architecture for the product, service and information flows including a description of the various business actors and their roles, the potential benefits for the various business actors, and the sources of revenues’ (p. 4).</td>
</tr>
<tr>
<td>Hamel (2000)</td>
<td>‘A business model is nothing more than a business concept that has been put into practice’ (p. 66).</td>
</tr>
<tr>
<td>Afuah &amp; Tucci (2001)</td>
<td>‘The method by which a firm builds and uses its resources to offer its customer better value and to make money in doing so’ (p. 3).</td>
</tr>
<tr>
<td>Amit &amp; Zott (2001)</td>
<td>‘Depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities’ (p. 511).</td>
</tr>
<tr>
<td>Chesbrough &amp; Rosenbloom (2002)</td>
<td>‘The heuristic logic that connects technical potential with the realization of economic value’ (p. 529).</td>
</tr>
<tr>
<td>Osterwalder (2004)</td>
<td>‘A conceptual tool that contains a set of elements and their relationships and allows expressing a company’s logic of earning money. It is a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams’ (p.15).</td>
</tr>
<tr>
<td>Seddon et al. (2004)</td>
<td>‘A business model outlines the essential details of a firm’s value proposition for its various stakeholders and the activity system the firm uses to create and deliver value to its customers’ (p.440).</td>
</tr>
<tr>
<td>Morris et al. (2005)</td>
<td>‘A concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets’ (p. 727).</td>
</tr>
<tr>
<td>Shafer et al. (2005)</td>
<td>‘A representation of the underlining core logic and strategic choices for creating and capturing value within a value network’ (p. 202).</td>
</tr>
<tr>
<td>Johnson et al. (2008)</td>
<td>‘A business model consists of a number of interlocking elements that, taken together, create and deliver value’ (p. 52).</td>
</tr>
<tr>
<td>Teece (2010)</td>
<td>‘A business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers’ (p. 173).</td>
</tr>
<tr>
<td>Baden-Fuller &amp; Haefliger (2013)</td>
<td>A business model is ‘a system that solves the problem of identifying who is (or are) the customer(s), engaging with their needs, delivering satisfaction, and monetizing the value’ (p. 419).</td>
</tr>
</tbody>
</table>
Despite the apparent versatility of definitions, it seems that the issues regarding value creation and value capture are the uniting aspects among most of them. In general, definitions for the business model concept have become more generic over time, particularly after Magretta (2002: 4) referred to them as ‘stories that explain how enterprises work’ in the widely cited article *Why business models matter?*

Baden-Fuller and Morgan (2010) suggest that business models have a multivalent character as models. Business models can be considered descriptions of ‘kinds’ in a taxonomy, model organisms for investigation and recipes – they can play any or all of these different roles simultaneously. Similarly, Osterwalder *et al.* (2005) distinguish between the business model concept, business model types, and instance models that describe business models of real world companies.

In addition to efforts to define business models, several authors (e.g. Hedman & Kalling 2003, Morris *et al.* 2005, Shafer *et al.* 2005, Johnson *et al.* 2008, Osterwalder & Pigneur 2009) have also attempted to determine and classify the elements that constitute a business model. For example, Shafer *et al.* (2005) studied 12 different definitions and identified 42 different components that they classified under headings which are also present in their definition for the concept – strategic choices, creating and capturing value and value network. Hamel’s (2000) framework includes customer interface, core strategy, strategic resources, and value network. Similarly, Johnson *et al.* (2008) proposed a framework that contains four elements: customer value proposition, profit formula, key resources, and key processes. Alternatively, Osterwalder and Pigneur (2009) created the ‘Business Model Canvas’ with nine building blocks: value proposition, partners, activities, resources, customer relationships, channels, customer segments, cost structure and revenue streams.

Regardless of differences in coverage and depth of business model frameworks, it is possible to identify certain similarities that appear in most of them. Basically, all frameworks contain resources, activities or value networks that relate to the requirements of value creation. Most definitions and frameworks also refer to the output of value creation, that is, to the value proposition or the actual offering of a company. In addition, the business model addresses the question of how profit is made; thus, the elements of a customer/market and revenue model are usually included either in an integrated or separated form. Hamel (2000) and Shafer *et al.* (2005) provide exceptions as their conceptualizations include core strategy and strategic choices, respectively. In this study, strategy is understood as something that influences a business model but is
not an integral part of it. The relationship between strategy and business models is discussed in more detail subsequently in the paper.

Henceforth, in this paper, a business model is understood as including three main elements, as illustrated in Figure 4. These elements – the value creation system, value proposition, and revenue model – are most commonly included in different business model frameworks (e.g. Osterwalder 2004, Suikki et al. 2006, Johnson et al. 2008) and also appear in several definitions (e.g. Seddon et al. 2004, Osterwalder & Pigneur 2009).

Fig. 4. The main elements of a business model.

Value propositions and offerings are regarded as essential aspects of a business model (e.g. Osterwalder 2004, Morris et al. 2005, Johnson et al. 2008). They are based on the company’s value creation system and largely define the nature of business the company is in. Offerings can range from products, services, and solutions to experiences, information and content (Linder & Cantrell 2000). The goal of any offering is to provide value to a specific customer segment by solving their problems and satisfying their needs (Osterwalder & Pigneur 2009). Thus, to succeed in the market, an offering made by a particular firm must have a favourable quality or price position compared to other service providers’ offerings (Hedman & Kalling 2003). Value proposition describes the manner in which a firm differentiates itself from its competitors and is the reason why customers turn to one company over another (Osterwalder 2004). There is no business without a defined value proposition (Morris et al. 2005).

Value creation system or infrastructure consists of the most important assets, competences, suppliers and partners required, and of things that a company must do to make a business model work. The purpose of the value creation system is to develop and produce offerings that are valuable for customers (Osterwalder & Pigneur 2009). According to Hamel (2000), both value creation and value capture occur in a value network, which extend a company’s own resources and can include suppliers, competitors, partners, distribution channels and coalitions. Whether the key capabilities are internally-developed or externally-obtained, they
are found to vary significantly by business model type (Rajala & Westerlund 2008). The value creation system is not a bundle of independent activities, but an integrated whole of many interdependent ones (Porter 1985). Any improvements in value chain activities must be materialized by an offering that increases customer-perceived quality and/or reduces cost (Hedman & Kalling 2003).

Revenue model is an inherent part of a business model. It describes how the company finances its operations, that is, how and from whom the revenue is generated. For Chesbrough and Rosenbloom (2002), the revenue model is a set of mechanisms that enable the firm to capture value from its offerings. Johnson et al. (2008) include an element of profit and describe it as a blueprint that defines how the company creates value for itself while providing value to its customers. Shafer et al. (2005) argue that many companies have a tendency to ignore the value-capturing part of their business model, which means that they fail to capture corresponding economic returns relative to the value they create. Revenue generation measures a company’s ability to translate its value proposition into revenue streams that are vital to its long-term survival (Osterwalder 2004). Profits are important not only for their own sake, but also because they imply whether the model is working or not (Magretta 2002). A profitable business is the best early indication of a viable business model.

In general, the business model elements are understood to be interdependent, that is, changes in one component influence other components (Zott & Amit 2010, Burkhart et al. 2011). According to Magretta (2002), business models focus managers’ attention on how well these elements fit together as a whole while answering the questions ‘Who are our customers and what do they value?’, ‘How does my company make money in the business and what is the underlying economic logic that explains how to deliver value to our customers at an appropriate cost?’

2.2.1 The relationship between business models and strategy

The relationship between business models and strategy has been discussed often. According to Magretta (2002), a business model describes ‘as a system, how the pieces of a business fit together’; she considers competition as ‘strategy’s job’. However, as Seddon et al. (2004) note, strategy – as defined by Porter (1996, 2001) – also defines how all the elements of a company fit together. In this regard, Seddon et al. (2004) argue that there appears to be little difference between the terms ‘strategy’ and ‘business models’. Yet, they propose an alternative view
under which business models are viewed as abstract representations of some aspects of a firm’s strategy; however, unlike strategy, these business model representations do not consider the firm’s competitive positioning (Seddon et al. 2004). Similarly, Christensen (2001) argues that the business model can be a source of competitive advantage that is distinct from the firm’s product market position. Firms that address the same customer need and pursue similar product market strategies can do so with very different business models; business model design and product market strategy are complements, not substitutes (Zott & Amit 2008).

Wikström et al. (2010) refer to a business model as a critical link between strategy and operations. According to them, a business model explains how the activities of a firm come together to execute strategy, thereby bridging strategy formulation and implementation (Richardson 2008). According to Nenonen and Storbacka (2010), business models can be viewed as concepts positioned below strategy through which major strategic decisions made by the firm can be explicated. Osterwalder (2004) positions business models in between the strategic and process layers, stating that different concepts at each layer all aim for the same goal – that is, earning money in a sustainable manner; however, they address related problems at different levels (Figure 5).

According to Shafer et al. (2005), the common element of different views on strategy is that of making choices. Their view is that a business model reflects these strategic choices and their operating implications. In addition, business models facilitate the analysis, testing and validation of the cause-and-effect relationships that flow from the strategic choices that have been made. According to Tikkanen et al. (2005), ‘the function of the strategy is to give meaning and direction to the development of the company’s business model’. It is the business model of a company that reflects and realizes the strategic intent of a company. Morris et al. (2005) define the difference between the concepts so that the
business model places greater emphasis on the creation of value for customers in the present, while strategy focuses on competition over time. According to Casadesus-Masanell and Ricart (2010), this is the main purpose of strategy – ensuring the competitiveness of a company in the long run. Thus, an observation of the current business model produces a reflection of the firm’s realized strategy but does not reveal how it might change (Casadesus-Masanell & Ricart 2010).

To conclude, business models are more inward looking than business strategy, focusing on the activity-system side of how a firm creates value; on the other hand, business strategy is more outward looking, focusing on competitive positioning (Seddon et al. 2004). Despite the differences between the concepts, business models should not be created or evaluated in isolation, because their success or failure depends largely on how they interact with the models of other players in the industry (Casadesus-Masanell & Ricart 2011). Indeed, competition must still be taken into consideration as a major element of the environment in which the business model is designed, but it cannot be included in an actual business model as the nature of competition changes depending on what kind of choices are made when designing a model. Strategy focuses on building competitive advantage by defending a unique position or exploiting a valuable and idiosyncratic set of resources. These positions and resources are created by virtuous cycles, so executives should develop business models that can activate such cycles (Casadesus-Masanell & Ricart 2011).

### 2.2.2 Types of business models and business model innovation

In addition to the attempts to define the business model concept and its elements, many authors have also tried to classify the different models that they have observed or contrive generic types of models that they claim can be found in the marketplace. For example, Timmers (1998) identified 11 different types of e-business models and classified them on the basis of their degree of innovation and extent of integration of functions or information flows. Further, Wirtz et al. (2010) classified four types of Internet business models based on their content, commerce, context and connection-orientation. Kujala et al. (2010) assessed the distinctive features in the business models of project-based firms and provided a typology of five solution-specific business models based on the value proposition and logic of revenue generation. The types of business models they identified were ‘basic installed base services’, ‘customer support services’, ‘operations and maintenance outsourcing’, ‘delivery of life-cycle solutions’ and ‘development of’
life-cycle solutions’. In addition, Osterwalder and Pigneur (2009) classified business models on the basis of their similar characteristics and behaviour that they termed patterns. These six patterns are explained in Table 6.

Table 6. Business model patterns (adapted from Osterwalder & Pigneur 2009).

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unbundling</td>
<td>Unbundling is a concept where corporations who often have different types of businesses within a single corporation can avoid undesirable trade-offs and conflicts by unbundling into separate entities.</td>
</tr>
<tr>
<td>The long tail</td>
<td>The long tail entails selling a small amount of each niche product but offer large amounts of niche products in the inventory, as opposed to only focusing on the bestsellers.</td>
</tr>
<tr>
<td>Multi-sided platform</td>
<td>Multi-sided platform creates value by bringing different customer groups together and facilitating interactions between them.</td>
</tr>
<tr>
<td>Freemium</td>
<td>Freemium is a pattern where one customer segment benefits from a free-of-charge offer, often financed by other customer segments or other parts of the business model, that charges for an up-scaled or premium version of the same offering.</td>
</tr>
<tr>
<td>Bait and hook</td>
<td>Bait and hook refers to a business model pattern characterized by an attractive, inexpensive or free initial offer that encourages continuing future purchases of related products or services.</td>
</tr>
<tr>
<td>Open</td>
<td>Firms with open business models systematically collaborate with partners outside of the firm.</td>
</tr>
</tbody>
</table>

According to Breiby and Wanberg (2011), the value of creating these classification schemes is not in choosing either the taxonomy or typology approaches, but in recognizing that differences do exist among business models and that a number of authors have made an effort to classify and structure the differences to better understand the concept. For many researchers, moving from one class of business model to another class is, by definition, a business model innovation.

A global CEO study conducted by IBM in 2006 reveals that business model innovation, in general, has become even more important for success than product or service innovation (Johnson et al. 2008). Innovations related to business models appear to drive profitability to a larger extent than other types of innovation. From the same IBM study, Giesen et al. (2007) identified three categories of business model
innovation. These categories are defined as industry model innovation, revenue model innovation and enterprise model innovation. In addition, Breiby and Wanberg (2011) identify five levels of business models and indicate that innovation and development can occur at any of these levels:

1. The abstract level is industry-independent and describes the general principles on how to operate.
2. The industry level is also generic, but it focuses more on how companies are operating or could operate within an industry.
3. The enterprise level is less focused on the environment and describes how the specific company operates.
4. The business unit level describes the business model of strategic business units within larger diversified corporations, where the enterprise level is too abstract to capture different business models at work.
5. The lowest level is the product or service business models that illustrate all the aspects regarding a product or service.

According to Zott et al. (2011), the business model represents a new form of innovation, which complements the traditional focus on process, product and organizational innovation and involves new forms of cooperation and collaboration. Hamel (2000) argues that business model innovation is the only way to avoid competition even temporarily, as it is business models – not products or companies – that compete against each other. Business models can themselves provide a competitive advantage if they are sufficiently differentiated to meet particular customer needs and are difficult to replicate (Morris et al. 2005, Teece 2010).

According to Drucker (2001), the most productive innovation is the one that creates a new potential of satisfaction rather than an improvement. Innovation in the field of business models includes the ability to imagine new business concepts and new ways of differentiating existing business models (Hamel 2000). The key to unlocking the potential value of new technologies is in commercialising them via a suitable business model (Chesbrough & Rosenbloom 2002). Moreover, business models are also capable of changing entire industries by shifting the focus from developing individual technologies to creating entirely new systems (Johnson & Suskewicz 2009). Thus, the business model can be a vehicle for innovation as well as a subject of innovation (Zott et al. 2011). The key to developing new possibilities of value creation is in renewing business models.
The problem with innovating business models is that only a few managers understand their companies’ current business models well enough to develop them further or to change them at the right time (Linder & Cantrell 2000, Johnson et al. 2008). In addition, difficulties in innovating business models are related to the problem of recognising what might be the appropriate model and to the opposition towards developing new models as they often conflict with prevailing business models and organisational structures (Chesbrough 2010).

2.3 Evolving perspectives on the nature of value creation

Amit and Zott (2001) found that value creation arises from multiple sources and no single theory can capture it. Thus, an integration of different theoretical perspectives is necessary to fully understand the value creation potential of a company. Drawing on ideas and theories from several fields of research, it has been suggested that the business model concept offers a unifying unit of analysis to understand value creation, competitive advantage and firm performance (Afuah & Tucci 2001, Zott et al. 2011). In the following account, the multidimensional nature of value is clarified and an evolutionary view on how the logic of value creation has changed is presented.

2.3.1 The concept of value

Anderson and Narus (1998) argue that remarkably few companies are able to define or measure their value to customers. However, to persuade customers – who increasingly look to procurement to increase profits – and get them to focus on total costs rather than simply on acquisition price, a supplier must have an accurate understanding of what is valuable to its customers (Anderson & Narus 1998). In literature, the term ‘value’ is used to refer to different phenomena, thereby causing definitional problems. Thus, Bowman and Ambrosini (2000) suggest that a distinction should be made between exchange value and use value. Exchange value refers either to the monetary amount realized at a single point in time when the exchange takes place, or the amount paid by a user to the seller for the use of value (Lepak et al. 2007). Use value refers to the specific qualities of the product perceived by customers in relation to their needs. Thus, judgements of value are subjective (Bowman & Ambrosini 2000).

Ouden (2012) discusses the same phenomenon, that is, that value does not mean the same for everyone in every context; instead, there are different levels of
which value can be perceived as well as different perspectives or views on value. Figure 6 presents Ouden’s (2012) value framework that integrates four perspectives on value – economic, psychological, sociological and ecological – with different overlapping levels of value: user, organisation, ecosystem, and society. This framework illustrates how multidimensional the concept of value is.

![Fig. 6. Perspectives and levels of value (adapted from Ouden 2012).](image)

The multidimensional nature of value becomes apparent in construction, where it is not just the paying customer whose value should be maximized. It is also the users, the future users and the wider society whose values should be addressed in construction, because of the durability of products. It is natural that when the main focus is on construction costs, the paying customer is the centre of attention and becomes the one whose requirements will be recognized. However, as Salvatierra-Garrido and Pasquire (2011: 16) argue, ‘society is too important to be postponed over particular customer requirements; it does not mean money is not important, but questions whether profitability should be placed in the first priority or accepted as necessary but not leading’.

### 2.3.2 Value creation

Value creation is a central concept in management and organisational literature and refers both to the content and process of value creation. It is often confused with the process of value capture or value retention (Lepak et al. 2007). Bowman and Ambrosini (2000) clarify that the term ‘value capture’ refers to the exchange value that is realized when a sale is made. At the organisational level, profit represents the portion of value that companies are able to capture from the use value created for customers. Thus, it is suggested that value creation and value
capture should be viewed as distinct processes, since the sources that create value may or may not be able to capture or retain value in the long run (Lepak et al. 2007). The business model concept addresses the above-mentioned problems by separating the customer value creation process (value creation system) from value created (value proposition) and value capture (revenue model).

According to Normann and Ramírez (1994), ‘the ultimate goal, if not the very nature, of economic activity is to create value’ for the customer. The difficult aspect of this notion is that, ultimately, value is created in the mind of the end customer, which implies that the value created and obtained is always perceived subjectively. If companies can accurately define what customers perceive as valuable, then they can use this insight to assess all their operations to determine which of their current activities are creating value and which are not. However, any improvements in value chain activities must be materialised by an offering that increases customer-perceived quality and/or reduces cost. All these factors and their causal inter-relations must be understood for any specific business model (Morris et al. 2005).

From value chains to value eco-systems

A well-known representation of the value creation process is the concept of the value chain that was described and popularized by Porter (1985). According to him, firms’ activities are performed to create and deliver products or services for the market. The value chain is a sequential representation of these activities that are divided into primary activities (inbound logistics, operations, outbound logistics, marketing and sales and service) and supporting activities (procurement, technology development, human resources and firm infrastructure). The objective of these activities is to offer a level of value to a customer that exceeds the cost of the activities, thereby producing a profit margin. Further, a competitive advantage may be achieved by conducting any of the activities differently, that is, more cheaply or otherwise in a better manner, than the competitors (Porter 1985).

Although Porter (1985) also presents the idea of a value system, where a firm’s value chain is embedded in a larger stream of activities, his representation is linear by nature and mainly useful in analyzing and understanding a firm’s sources of competitive advantage in the context of a particular industry. To understand the process of value creation better, Normann and Ramírez (1994) present another view – ‘a value constellation’ – in which different actors perform activities simultaneously, rather than sequentially, and produce value together. In
this so-called value network, organizations focus on the value-creating system itself rather than that of the company or the industry (Peppard & Rylander 2006).

Parolini (1999) suggests that rather than seeing a value network as sets of economic players, value creating systems should be seen as sets of activities that are jointly involved in the creation of value. In such systems, important activities and relationships are defined from the customers’ viewpoint, as customers tend to make judgments at the level of the entire value-creating system (Parolini 1999). Thus, it is logical to broaden the perspective from value chains of individual companies to value-creating systems or value networks. In value networks, the actors constituting the net perform specific activities based on the overall resource constellation that is controlled by the actors. These resources may include both assets and capabilities, and have a fundamental role in defining the current activities that an actor can perform as well as its capacity to renew current capabilities and develop new ones (Möller & Rajala 2007).

Prahalad and Ramaswamy (2004) argue that the role of the customer has shifted from isolated, unaware and passive to connected, informed and active. They suggest that the co-creation of value has replaced the traditional exchange process, where value creation was conceived to occur within the firm (through its activities) and outside markets (cf. Porter’s (1985) concept of the value chain). Previously, the firm and the consumer had distinct roles of production and consumption and the interactions between companies and customers were not considered a source of value creation (Prahalad & Ramaswamy 2004). Thus, from the supplier’s viewpoint, customer value creation begins with an understanding of the customer’s value creating processes so that the supplier’s processes can be aligned with those of its customer. At least three types of value co-creation opportunities exist: opportunities provided by technological breakthroughs, opportunities provided by changes in industry logics and opportunities provided by changes in customer preferences and lifestyles (Payne et al. 2008).

The development in the conceptualization of value creation in business has also led to the emergence of value ecology thinking (Hearn & Pace 2006). In this view, companies are considered as parts of a business ecosystem that includes a variety of industries (Moore 1993). Iansiti and Levein (2004) clarify the analogy between a biological ecosystem and business networks in that both have a large number of loosely interconnected participants that depend on one another for their effectiveness and survival. The ecology metaphor is considered useful in describing how value is generated in business, because it emphasizes the idea of networks and relationships and suggests a holistic dynamic view rather than a static linear view. In addition, the
ecology metaphor suggests that value generation is not merely embedded in the product itself, but it occurs also in competitive and cooperative processes that interact with each other. Finally, it encompasses the idea of an environment of factors that engender and create value without necessarily being part of the first-order factors of productivity and opens the door to evolutionary metaphors to analyse change and development of the context of businesses (Hearn & Pace 2006). Building on this, the ecology metaphor provides three shifts of thinking regarding the manner in which value creation functions in business, namely the shift from 1) separation of producers and consumers to co-creators of value, 2) product value to network value and 3) simple co-operation or competition to simultaneous co-operation and competition – that is, co-opetition – among members of an ecosystem (Hearn et al. 2007).

Figure 7 illustrates the evolution of the views on the nature of value creation. In the traditional company-centric conception of the process of value creation, value creation occurs within the firm and through its activities; therefore, the firm and customer are considered to have distinct roles of producing and consuming. However, customers are now increasingly questioning traditional value chains and, in the emerging view, the interaction between the firm and customer is becoming the locus of value creation and value capture. By neglecting the evolution of the views on the nature of value creation and by believing that market can be separated from the value creation process, firms will have no choice but to squeeze as much costs from their ‘value chain’ activities as possible to identify new sources of value. If any differentiation is not offered to customers, they will continue to buy smart and cheap (Prahalad & Ramaswamy 2004).
From goods-dominant to service-dominant logic of value creation

What was described earlier can be linked to a generic shift from goods to service(s) (Vargo & Lusch 2004, Vargo & Lusch 2008a, Grönroos 2011). It has been argued that the focus has shifted from a traditional goods-dominant view in which tangible outputs and discrete transactions were central, to a service-dominant perspective of value creation that emphasises intangibles and relationships. Lusch (2011: 14) argues that ‘the movement from goods-dominant logic to service-dominant logic is the move from viewing business as focused on things (nouns) to actions and processes (verbs)’.

In the goods-dominant view, the relationship between the producer and customer is dyadic; the producer is supposed to produce, distribute and promote goods (products or services) where value is embedded and determined by the producer (Vargo & Lusch 2004). In this relation, the plural form ‘services’ refers to a unit of output to separate (tangible) goods from (intangible) services that enhance the value of a good (Vargo & Lusch 2008b). In the service-dominant view, the singular ‘service’ refers to a process of doing something for another party without reference to goods and identifies service as the basis for all exchange (Vargo & Lusch 2008a, 2008b). In addition, the service-dominant view always considers the customer as a co-creator of value (Vargo & Lusch 2008a). Vargo and Lusch (2008b) state that whether the service is provided directly or as embedded in a good, it is the knowledge and
skills (competences) of the providers that represent the essential source of value creation and competitive advantage. According to Vargo and Lusch (2004), these resources are often invisible, intangible and dynamic rather than tangible and static resources on which an operation or act is performed to produce an effect.

2.4 Managing value creation through business models

This chapter synthesises the theoretical framework for managing value creation through business models. The purpose of the framework is to provide the initial conceptualization for research so that the function of management and its relationship with regard to business models and customer value creation can be understood.

In sum, the literature analysis indicates that the management both defines a company’s reason for existence as well as shapes the approach and methods in which the company operates to fulfil its purpose. The approach and methods should be stated in the company’s strategy and reflected in the company’s business model(s). Modern management literature, regardless of specific disciplines, is rather uniform in seeing customers as the ultimate source of profits and, thus, creation of customer value as a generic purpose of any given business. Market-orientation requires long-term commitment to understanding both the expressed and latent needs of customers. In addition, the entire organisation must be unified by providing a clear focus on creating superior customer value. Thus, the market-oriented business approach should have an influence on not only the products and services that a company offers, but also to its strategy and organisational structure.

Because businesses exist to make money, they must be able to create and provide customer value profitably. The business model concept provides a useful managerial tool to analyse a company’s business, because it helps to understand the value a company is creating for its customers as well as how the value is created (for customers) and captured – that is how revenues are generated and profits are made. Furthermore, a business model provides the critical link that is often missing between strategic plans and their implementation by providing an overview of business at the level of its activity system.

A business model embodies the managerial actions taken in a company and determines the precise form according to which a company chooses to address the needs of its customers. For each distinct business, a company needs a business model that is capable of producing the kind of value that satisfies its customers.
This is necessary, because otherwise a company cannot design processes in alignment with meeting the needs of its customers, thereby resulting in value loss and use of ad-hoc practices. With a clear and appropriately formulated strategy and a business model designed for creating specific value, a company can increase stability in its operating environment and, by doing so, provide conditions in which there is continuous improvement and a value creation system is developed. This idea stems from lean production, which emphasises the importance of managing production flows and constantly reducing unnecessary variation from all processes. Yet, lean management is more than just reducing variation; it is a complete business system, which only functions effectively if all subsystems (e.g. functions) operate coherently towards the overall objective of providing only value (no waste) in all steps along the value stream.

In addition, understanding of business models is important as such, because business model innovation has assumed greater importance than traditional product or service innovations – currently, it is business models not product or services that compete against each other. Thus, differentiated business models that are both internally consistent and fit externally, can provide a competitive advantage that any individual product or service cannot. In addition, while management perspectives are changing, the business model concept can facilitate the translation of a new strategic perspective (e.g. quality management, lean thinking or service-dominant logic) to managerial practice and to develop business towards increased customer-centricity.
3 Findings from individual publications

3.1 Article I: Managing value creation in construction

This article assesses the applicability of the business model concept to construction and emphasizes its importance in terms of value creation. The article contains three illustrative case examples that are described by using a business model framework with three elements: the value creation system, value proposition or offering and revenue model (Table 7).

Table 7. Summary of the key aspects of the case companies’ business models.

<table>
<thead>
<tr>
<th>Company 1</th>
<th>Value creation system</th>
<th>Value proposition or offering</th>
<th>Revenue model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Streamlined process with an incentive for further improvements</td>
<td>Additional value through shorter delivery time and quality that is guaranteed</td>
<td>Value-based rather than ‘selling and doing hours’</td>
</tr>
<tr>
<td>Company 2</td>
<td>Co-creation of value with other stakeholders; building virtually to enhance shared understanding of building and its cost of construction</td>
<td>Predictable, worry-free and competitive investment with better constructability, shorter delivery time and lower cost</td>
<td>Based on added value; services offered in portions to increase transparency and enable customers decide what is valuable to them</td>
</tr>
<tr>
<td>Company 3</td>
<td>Competence in design, selling and marketing supported by collaboration with experts, researchers and sub-contractors</td>
<td>Safe, sustainable and technologically advanced products for users and society; life-cycle services for buyers</td>
<td>Multiple revenue-streams generated from products and supplementary services</td>
</tr>
</tbody>
</table>

The first case example illustrates the changes in the business model of a company that offers project and construction management services. In particular, the company aims to implement a new value-based revenue logic for some of its offerings that were previously priced on the basis of hours worked. This is due to the recent improvements in the company’s value creation system that streamlined the order-delivery process from erratic to lean. The improvements made no sense with the old revenue logic that supported ‘doing hours’, because the customer bought and paid for hours. Thus, it was believed that a company could utilise its new capabilities to provide a distinctive offering based on additional value to customers. In particular, value is added by faster delivery, which comes with a guarantee for perfect quality. Now, due to the change in revenue logic, the
company has not only a new value proposition but also an incentive to use as few hours as possible for maximum value delivery.

The second case example describes the business model of a construction company. The company aims to provide value to its customers by sharing reliable cost information as early as possible so that customers’ business requirements are able to drive the design and realisation phases of projects. In practice, the company has developed unique processes to source and manage customers’ requirements and to develop design alternatives together with clients, users and other project participants. Strong emphasis is also placed on building everything virtually at first so that all stakeholders such as designers, owner representatives and users can have the same visual understanding of the building. In addition, the structural information is instantly linked with quantity surveying and cost information to provide better control over costs and to inform customers of the cost consequences of different design alternatives. The company refers to their business model as service construction that aims to offer optimal solutions with better constructability, lower total costs and shorter delivery time so that safe, worry-free and competitive investment can be offered to all clients.

The third case example describes the business model of a company that manufactures playground equipment and park furniture. The company has a vision of bringing people of all ages together by developing inspiring environments to play, learn and exercise outdoors. In addition to users, the company identifies the buyers of its products and society in general as other stakeholders whose needs it must satisfy. In practice, this implies that the company’s offering comprises not only physical products but also many supplementary services such as financing and maintenance. The company has developed multiple themes for the playground equipment and offer various features so that their physical offering appeals to different customer segments from children to their grandparents. Indeed, the themes have been developed in collaboration with experts from specific fields (e.g. shipbuilders or professional climbers and deejays). Partnerships with universities and other research partners enhance the company’s understanding of social interaction, physical development, interactive learning and new technology that will keep products up-to-date with their users’ needs. Thus, it is not merely the core product that is important, but the comprehensiveness of the business model where different elements strongly support each others’ existence.

These three illustrative examples demonstrate the applicability of the business model concept for the analysis of the construction business and highlight the
systemic nature of value creation. A change in one element of the business model can affect all other elements as well and, thus, may require a company to come up with an entirely new business model as elements need to be aligned relative to each other. The illustrations also show that changes in business models can be triggered by innovations made at different levels, that is, from process improvements to new value propositions and revenue models. Designing business models requires a deep understanding of customers’ needs, because business models, as illustrated, should be able to respond to the requirements of specific customers or market segments. Thus, it is important to use appropriate means in managing value creation throughout the organization. Well-defined business model frameworks enable managers to understand how their companies create value for customers as systems, because they provide managers with a common language to discuss and visualize their business models as well as communicate these models to employees and other important stakeholders that need to be aligned with a shared vision.

3.2 Article II: The role of business models in construction companies

The aim of this article is to explore how managers understand business models in eight construction companies. The results are mainly based on interview data. From interviews it became apparent that almost every manager seemed to believe that they know what business models are in general and what theirs is, but the reality was that there were as many definitions and explanations as there were managers. This resulted in difficulties in describing the business logic and the business model of each company. Thus, other sources of materials such as company websites are also used to formulate an understanding of the logic according to which these construction companies operate.

Based on the findings, managers in construction understand business models rather differently than what is typical in other sectors or within the academic literature. Their conception of what constitutes a business model appear to be partial as they understand different fields of operations, business segments, modus operandi, certain project delivery modes and contract types to embody business models as such. Moreover, interviewees placed greater emphasis on using business models to set financial objectives and acquiring work. However, these views indicate a limited understanding of business, because the viewpoints of a
customer and value creation are mostly neglected, although they should be integral for any given business or business model.

Despite the apparent variety in companies’ business models, it was difficult to identify any truly unique characteristics in these models that would make them distinctive in the eyes of a customer. Instead, the differences stem from their diversification; the bigger the company, the more diversified its portfolio of businesses (Table 8) as more protection is sought against market volatility.

<table>
<thead>
<tr>
<th>Type of business</th>
<th>Development for a client</th>
<th>Company and its size (S/M/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business premises</td>
<td>1 - L</td>
</tr>
<tr>
<td></td>
<td>Commercial buildings</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Nursery schools</td>
<td>x</td>
</tr>
<tr>
<td>Own development</td>
<td>Residential units</td>
<td>x</td>
</tr>
<tr>
<td>Construction contracting</td>
<td>Industrial</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Renovation</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Infrastructure</td>
<td></td>
</tr>
</tbody>
</table>

In short, managers are unable to explain the basis for their companies’ long-term existence, profit generation or competitive advantages that could be related to the functioning of a particular business model. For example, the importance of human resources is largely considered to be limited to supervisors, their suitability for certain types of projects and their ability to successfully steer projects. Moreover, construction workers are considered almost interchangeable. Thus, in practice, it appears that sources of advantages stem from the size of the company; larger companies have the financial resources to engage in more valuable projects, while smaller firms do not have to carry the back-office costs of large companies and thus they are more competitive in smaller projects. In addition, specialisation through doing something over a longer span of time is identified as a source of competitive advantage. However, even these identified advantages appear to be far-stretched in light of Barney’s (1991: 102) definitions for competitive advantage, which is ‘a value creating strategy not simultaneously being implemented by any current or potential competitors’, and sustainable
competitive advantage – ‘...when these other firms are unable to duplicate the benefits of this strategy’.

3.3 Article III: Business models and project selection

In this article, the aim is to understand the role of business models in project selection in eight case companies. More specifically, it is explored if there are any business models that are derived from strategy and consciously guide the decision-making in construction companies.

The initial review on previous literature on project selection in construction companies resulted in a conclusion that the quantitative models that researchers have developed to assist practitioners in these decision-making situations aim at emulating rather than deviating from and developing the current industry practice. These quantitative models have not gained popularity in practice.

Thereafter, a theoretical foundation on how to manage a construction company through business models is presented. It was suggested that in construction companies, there should be a structure in place where business models are drawn from strategy to ensure effectiveness of projects, and for each business model, there are processes in place to ensure efficiency of operations during project delivery. Figure 8 depicts this concept.

![Fig. 8. From strategy to business models to specified processes (Ill, published by permission of CI).](image)

Then, a conceptual framework was developed to set up the managerial context in which projects are selected and decisions are made as well as to facilitate both the analysis of interviews and the prevailing logic of project selection in construction companies. As opposed to previous studies, the focus of this framework is not so
much on actual decision-making factors but on the logic by which the projects are selected. Figure 9 illustrates the conceptual framework according to which projects’ fitness to company’s existing business models should be evaluated (filter 1) before the more traditional evaluation between project risks and profit potential is made (filter 2). By ensuring the fitness of the selected projects so that projects could be delivered by using pre-designed and effective processes, managers could attempt to avoid adhocracy during project delivery and, thus, increase the chances of executing a successful project.

Fig. 9. Framework for project selection that is guided by business models (III, published by permission of CI).

However, it was evident from the interview results that the majority of the studied companies do not follow such logic. Firstly, the strategy does not actually restrict or guide the companies in any meaningful manner; instead, there is substantial flexibility in the kinds of projects companies may actually be willing to do. Secondly, regardless of the manner in which interviewees defined and described their business models, there was no consensus at all regarding whether the business models were tailored for each project and customer or if they were more or less fixed under certain project modes and could not be altered at the project level. Yet, even in these companies, it was possible to ‘tune’ the model under certain market conditions to secure a basic work load and to keep employees employed and the turnover at a certain level. This indicates that there is no precise business model guiding the project selection of these companies. Instead, the decision-making is dominated by more short-term factors and financial objectives.

The interviews revealed that in smaller companies, the decision-making practices are person-centred and intuitive and that related processes are highly
informal. In larger companies, decisions are made among a small group of cross-functional managers, and there are specified processes and criteria in place to evaluate projects under consideration. Yet, the practices in all companies, regardless of their size, aim at a common objective: to chart the level of risk associated with a project on the basis of which the estimation of profitability and/or return on investment can be determined. Thus, decision-making processes are strongly associated with calculations that take into account multiple factors that vary from a general economic situation to project complexity and from a particular client to project mode.

The interviewees also reckoned that the company is set apart from its competitors by its know-how; they further indicated that know-how is also a factor in cost estimation as well as construction. Thus, the estimation know-how strongly governs what these companies do. In complex projects, the know-how in estimating is accentuated and, thus, complexity is considered strategically important as it eliminates competition because the price formation is different than in simpler projects. Although project delivery modes as such were not stated to have any recognisable effect on the decision-making process, different project modes were perceived to have peculiar risks that affected the magnitude of the return on investment from certain kinds of projects and, thus, the decision-making outcomes.

Finally, one interviewee argued that decision-making is something that the companies want to hold in secrecy; therefore, no one wants a standardised, industry-wide decision-making framework, as it would skew the competitive setting. However, what this statement actually confirms is the notion that it is not that business models compete in the construction industry, but that companies compete with similar business logics where the company that gets its calculations right succeeds.

### 3.4 Article IV: Lean as a business model

In this conceptual study, it is argued that a company’s existing business model plays an integral role in lean transformation and that, as a concept, business models can be used to understand, study and develop a company’s business as a whole. Initially, Toyota’s business model was illustrated as an example of lean as a business model. Toyota was chosen because the company is widely acknowledged as being closest to ‘the lean ideal’ (Liker 2004). Information for the business model is collected from multiple literature sources and structured and
illustrated by using the business model framework. Figure 10 depicts the business model of Toyota. It is acknowledged that in the modern world, Toyota’s business model is more complex and contains multiple revenue streams, such as all-in-services, insurance, spare parts and maintenance to generate profits. However, it is considered that inclusion of these in the illustrated business model is not essential to enhancing the understanding of lean as a business model.

![Business Model Diagram]

**Fig. 10. Toyota’s business model (IV, published by permission of IGLC & Akademika forlag).**

Toyota’s business model indicates the overwhelming influence of lean on all business model elements. Replacing one part of the model with an equivalent subsystem from a traditional business system (e.g. from mass production) will cause the entire system to become immediately handicapped. Despite numerous attempts, companies have not been able to copy Toyota’s business model in practice. This might be due to the emergent properties created by the interaction among the different elements of the system, which is rather crucial to Toyota's business model working as successfully as it does and, simultaneously, making it almost impossible to replicate in another company or environment.

After describing Toyota’s business model, the discussion shifts toward the two most commonly used business models in construction, that is, the contracting and developer models. As either of these models is not seen as customer-focused or offering anything distinctive to market, they are condensed into one and given
the ‘anything to anyone’ label. Table 9 summarises the key characteristics of such a business model, while portraying some of the characteristics that a lean-driven business model might possess.

Table 9. Main characteristics of a traditional business model and portrayed elements of a lean-driven business model for construction.

<table>
<thead>
<tr>
<th>Value creation system</th>
<th>Value proposition</th>
<th>Revenue model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional ‘anything to anyone’</td>
<td>Construction management</td>
<td>Lowest cost</td>
</tr>
<tr>
<td>business model</td>
<td>Tender preparation</td>
<td>According to plan</td>
</tr>
<tr>
<td></td>
<td>Financial resources</td>
<td>No defects</td>
</tr>
<tr>
<td></td>
<td>Human resources and qualifications</td>
<td>References</td>
</tr>
<tr>
<td></td>
<td>Lowest cost</td>
<td>Payments according to contract and progress</td>
</tr>
<tr>
<td></td>
<td>According to plan</td>
<td>Change orders</td>
</tr>
<tr>
<td></td>
<td>No defects</td>
<td>Additional work</td>
</tr>
<tr>
<td></td>
<td>References</td>
<td>Financing from client</td>
</tr>
<tr>
<td>Lean-driven business model</td>
<td>Business development</td>
<td>Optimised outcomes</td>
</tr>
<tr>
<td></td>
<td>Marketing</td>
<td>Predictability</td>
</tr>
<tr>
<td></td>
<td>Modern technologies such as</td>
<td>Competitive investment</td>
</tr>
<tr>
<td></td>
<td>building information modelling</td>
<td>Integrated project</td>
</tr>
<tr>
<td></td>
<td>Long-term partners and</td>
<td>Gains/pain share</td>
</tr>
<tr>
<td></td>
<td>supply chain management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>delivery capability as an offering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of waste</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance or value-based</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transparency</td>
<td></td>
</tr>
</tbody>
</table>

The subsequent discussion argues that the mere implementation of lean tools here and there by a few individuals makes it difficult to realise systemic change, which is needed for comprehensive transformation. In the best case, it will make the old model slightly more efficient. However, without an intention to change the entire business model, the objective of accomplishing a comprehensive transformation is likely to fail due to clashes between new ideas and the logic of the old business model. The mission of initiating a comprehensive lean transformation is only possible if the company is willing to change its old business model. Thus, it is necessary for managers to understand their company’s current business model (or models), how it operates and why it is (or is not) successful before ‘going lean’. Without the understanding of their current business model, managers are unable to see and make the systemic changes that different business logic may require.

3.5 Summary of the findings

The main objective of this research is to explore the role of business models in construction business management. This objective was divided into four research questions that were attributed to independent studies. The answers to these
research questions based on the above presented findings from individual publications are presented in the following account. Based on the following answers, a final conclusion regarding to the research objective is presented in the beginning of Chapter 4.

**RQ1: How can the business model concept be utilised in construction business management?**

The first article emphasized the importance of business models in terms of managing value creation and illustrated how customer focus can be increased when business is developed in a systemic manner. It was revealed how the business model concept was used in changing the fundamental logic according to which a delivery process was optimized: from producing and selling hours to providing added value to customers. Then, the importance of understanding the different aspects of a business model was highlighted when service logic was adopted as the guiding principle for business development in one company. In addition, a customer-oriented business model was described to illustrate how the needs of different stakeholders (users, buyers and society) were understood and addressed by means of thorough business development. Together, the three illustrative case examples demonstrated the applicability of the business model concept for the analysis of the construction business and highlighted the systemic nature of value creation as well as interdependency of different elements of a business model. Thus, understanding the business model concept provides managers a consistent framework for management, development and analysis of construction business.

**RQ2: How do managers understand and deploy business models in construction companies?**

The second article explored the understanding and deployment of the business model concept among managers in Finnish construction companies. According to the interview results, managers in construction understand the business model concept rather differently than what is typical in other sectors or within academic literature. For example, Chesbrough and Rosenbloom (2002: 535) state that, ‘…the business model starts by creating value for the customer, and constructs the model around delivering that value’. In construction companies, managers evidently neglect the aspect of customer value creation as an essential element of
a business model. Instead, a business model was confused with different types of business such as project development or construction contracting, which are conducted in different market sectors varying from infrastructure to constructing buildings of many kinds. In addition, business models were linked to different contract types or project delivery modes with strong emphasis on using ‘business models’ to set acceptable risks and financial objectives as well as acquiring more work – all of which are important in managing construction business but simultaneously limit the considerations solely on internal matters. As the other side of the coin – that is, customer value creation – was omitted, it was difficult to identify any unique characteristics that would make a company distinctive compared to another in the eyes of the customer. Indeed, the only distinctiveness appeared to stem from companies’ size: larger companies have more diverse business portfolios and engage in projects with more substantial commercial value.

**RQ3: What is the role of business models in project selection in construction companies?**

The third article aimed at understanding the role of business models in project selection. It was explored if the companies have certain business model or models that they execute consistently over time – from one project to another. The research question was first considered from a theoretical perspective that suggested that business models should be drawn from the strategy to ensure effectiveness of projects and that there are specified processes in place for each business model to ensure efficiency of operations during project delivery. In addition, existing business models should be used as a filter when selecting projects to exclude those that do not fit with the business models. Such practice was believed to reduce adhocracy during project delivery and the likelihood of unsuccessful project, because better fit between a project and an organization and its business model would enable the use of specified processes and other organizational routines. Yet, in practice, the role of business models in project selection seemed to be limited to adjusting profit requirements to the levels of risk that are associated with projects of certain type or characteristics. Thus, project selection is mainly governed by the rate of resource employment rather than guided by business models. Based on this finding, it was hypothesized that ignorance of business models in project selection and their general underutilization in management have negative effects on performance of the
construction industry. More consistent management practice would enable the development of business models and processes that contribute to better performance and help companies to distinguish themselves from each other.

**RQ4: Why is the understanding of business models essential in construction business development?**

The fourth article argued that a company’s existing business model plays an integral role in lean transformation and that, as a concept, business models can be used to understand, study and develop a company’s business as a whole. The understanding of business models was considered essential, because the objective of accomplishing a comprehensive transformation is likely to fail if the entire business model is not considered and changed accordingly. The failure is due to clashes between new ‘lean-driven’ ideas and the logic of the old ‘anything to anyone’ business model, which may even lose its current strength with new ideas disrupting the prevailing system. Similarly, a company will not achieve the benefits of lean if the transformation remains superficial. Although the discussion in the paper revolves around lean, the same can be said of business development in general: improvement being incremental and rare, it is soon caught up by competitors. Thus, business development should aim at comprehensive changes at the level of business model (or revolution as manifested by Hamel (2000)) to avoid unhealthy competition based solely on costs. Incremental improvement can only lead to sustainable competitive advantage if it actually is continuous – that is, takes place daily rather than seldom – and the practice is supported by the entire business model, as is the case with Toyota as described in the article.
4 Discussion

The main objective of this research was to explore and understand the role of business models in construction business management. This chapter begins by making an inference regarding the role of business models in construction business management based on the research findings that were presented in the previous section. Then, the theoretical contribution is presented and discussed in relation to other studies on construction business management. Finally, the discussion shifts to managerial implications, evaluation and limitations of this study, before suggestions for future research topics are provided.

4.1 The role of business models in construction business management

Based on the empirical findings in Articles II and III, it appears that in practice the business models according to which construction companies operate are too similar to be useful in value-based competition. This is not to imply that all the companies have precisely identical business models. However, too often, the logic governing the models seems to revolve around internal efficiency rather than customer value creation. Consequently, business management in construction appears to concentrate on cash flow management, where securing continuous stream of projects to ensure high resource utilization is the main responsibility (hence, the ‘anything to anyone’ aggravation for the traditional contractor and developer models in Article IV). This becomes apparent in project selection situations, where financial objectives and market situation, rather than specific business models, drive the decision-making process. Consequently, construction businesses are managed on a project-by-project basis without the governing effect of long-term vision or specific business purpose that would go beyond the objectives of growing and surviving. This is not to say that issues related to cash flow and efficiency would not be important, but rather that the other, more long-term aspects seem to be omitted.

The manner in which managers in construction understand and deploy business models supports the argument presented above. Their partial conception of what constitutes a business model neglects the customer as an integral part of a business model and the viewpoint of value creation altogether (Article II). Yet, the unique cases described in Article I demonstrate that construction business can also be developed from the perspectives of customers and value creation as long
as all the elements that a business model contains are understood and aligned accordingly. Article IV conveyed the same message, where it was argued that lean should be adopted as a new business model (rather than a collection of tools and methods) if one wants to achieve the sustainable benefits that a comprehensive lean transformation is understood to generate. Otherwise, the new ideas and the logic of old business model clash due to misalignments between new ideas and old business models or the elements of a business model in transition.

The business model concept has multiple useful roles in construction business management: It provides managers a consistent framework to understand and develop business from the viewpoint of customer value creation. The business model terminology and well-defined business model elements also provide a common language for discussing and communicating business models among the members of an organization and aligning their efforts. In turn, the explicitly defined business models provide the foundation for consistent management practice and process development, thereby shaping the real-world business models that ultimately determine the business as well as industry performance. Therefore, I argue that one of the reasons for the widely berated industry performance is the current practice of construction business management as well as prevailing business models, which focus almost solely on companies’ internal needs rather than those of customers. Better understanding of business models, their contents and potential, provides a starting point for creative managers to reform the construction industry by breaking out from the limitations that the current industry recipe\(^2\) retains and exploiting many overlooked possibilities in customer value creation.

### 4.2 Theoretical contribution

This study contributes to the literature on construction business management by presenting a business model viewpoint. In construction research, the business model viewpoint has been adopted only recently. Most of these studies place focus on specific technology triggers that can be used in business development but require new business models to be competitive. For example, Mokhlesian & Holmen (2012) study the changes required in the business models of construction

\(^2\) Spender (1989: 10) defines industry recipe as ‘the business-specific world-view of a definable “tribe” of industry experts, and is often visibly articulated into its rituals, rites of professional passage, local jargon and dress’.
companies when they are involved in green construction projects. Other studies analyse and develop business models regarding off-site construction in house-building context (Pan & Goodier 2012, Thuesen & Hvam 2013, Brege et al. 2014). Thus, this research provides a good supplement to the construction business model literature by providing a viewpoint of their role in construction business management. Previously, only Höök and Stehn (2014) have adopted a similar viewpoint that utilises the business model concept to study construction business management in general. They describe a case study, which focuses on the management of multiple business models in one manufacturing company operating in the Swedish construction industry. In addition, Brady et al. (2005a) assess the changes required if a construction industry is to adopt a business model based on the integrated solutions concept. However, unlike the other above mentioned studies, Brady et al. (2005a) use the business model concept vaguely without references to the main body of business model literature. Yet, it is the other concept, integrated solutions, which appears to be worth elaboration.

The integrated solutions concept is practiced among the leading suppliers of complex products and systems in other project-based business sectors such as trains and telecom networks. These suppliers have changed their strategic focus from individual products or services to high-value ‘integrated solutions’ that are tailored to each customer’s needs (Brady et al. 2005b, Davies & Brady 2000). Brady et al. (2005a) state that such change may require firms not only to take over activities previously conducted by their customers, but also to undertake completely new service activities such as consultancy and finance. Occasionally, a supplier needs to go beyond the customer’s expressed needs to find the best solution for the customer and also to guarantee itself the best performance from the solution (Kujala et al. 2010). The key issues in moving towards an integrated solutions business model are the development of new approaches to creating customer value, building up new competences – particularly in systems integration – and harnessing the learning capability of project-based organisations to enable them to exploit economies of project repetition (Brady et al. 2005a, Davies & Brady 2000). In construction, such a repetition has not yet emerged (Gann & Salter 2000), and Brady et al. (2005) conclude that the development of an integrated solutions business model in built environment is still at an early stage.

The common feature of the aforementioned studies on construction business models and adoption of integrated solutions in construction as well as Articles I and IV of this study is that they all suggest that implementing a change in the
business model requires a holistic understanding of the business and its development. Yet, according to this study, there appears to be only a partial understanding among construction business managers in this regard. Höök and Stehn (2014) support this finding by stating that construction practice is insufficiently aware of business models and consequences in them that are unintentionally triggered by strategic decisions. Further, unawareness of business models, and the importance of balancing business model portfolios, may reduce management effectiveness and hinder performance (Höök and Stehn 2014).

In addition to the importance of understanding business horizontally – that is, the boundary of a business model of a construction company – this study also emphasized the idea of better vertical alignment among different levels of business (strategy, business models and processes) in Articles III and IV. In addition to selecting appropriate technologies to add value to customers and business, these also must be incorporated into business strategy (Pan & Goodier 2012). In generic management literature, this is not a new idea; for example, the popular consultancy book *Improving performance: how to manage the white space on the organizational chart* by Rummler and Brache (2013) embraces this concept. To provide consistency to construction business management, Article III suggests that project selection and the decision-making process and factors related to it should be more closely tied to construction companies’ existing business models. It is evident in this study that increasing consistency in construction business management would make it possible to move from delivering single projects to a project-to-project phase and, as described by Brady & Davies (2004), ‘from exploratory toward exploitative learning’.

The other stream of research, which has contributed to construction business management, is that of relationship management or relationship marketing applied in construction (e.g. Smyth & Edkins 2007, Smyth & Fitch 2009, Smyth 2013). The aims of relationship management are not that distinctive to those described in the literature on integrated solutions. According to Smyth and Fitch (2009), relationship management aims to increase customer satisfaction through service improvement in general and specific areas of added value service that match customer needs and desires to increase repeat business, referral opportunities and profitability. It presents a shift from project management per se to a greater emphasis on customer management (Smyth & Fitch 2009) and front-end management of projects (Morris 1994, Walker 2002). Traditionally, business development is limited to the beginning of the front-end of projects (Pinto & Covin 1992); however, under relationship marketing it begins prior to a project
being identifiable (Cova et al. 2002). Similar distinction is made in this study; the function of business development is clearly separated from project delivery in Article III.

In this study, Article III also makes a distinction between the responsibilities of the business manager and those of the project manager; the task of a business manager is to provide operational consistency so that a project manager is in a position to deliver a project successfully. This is in contrast to the traditional practice, where the business manager occasionally hands over projects that neither the project manager nor the organization in general has competence and experience of delivering. However, sometimes, this can be intentional if a company aims to improve their competitive position by developing new capabilities by learning from the initial project, as departing from traditional business represents the beginning of the learning curve (Davies & Brady 2000).

According to Smyth (2013) international contractors are in early stages of transition from transactional marketing management towards relationship management. In relationship management, the aggregated behavior (norms or organizational culture) as well as behavioural codes of conduct (prescribed procedures) need to be in place to provide consistency in projects and continuity of service across projects (Smyth & Fitch 2009). Yet, contractors tend to leave appropriate behaviour and duties to the responsibility of individuals rather than practice proactive management that would go beyond the staff selection process themselves (Smyth & Edkins 2007).

Although main contractors have become less responsible for production on site and, thus, become systems integrators in a sense, the required internal integration is absent. Marketing and business development are organizationally isolated due to a poor understanding of the functions amongst senior management. The contractors may be selling systems integration (cf. Davies et al. 2007), but their deliveries fall short of solutions that go beyond requirements compliance (Smyth 2013). Thus, in practice, contractors settle for structural solutions to marketing issues, thereby resulting in undifferentiated service offerings organized by the procurement route and building types in divisional silos (Smyth 2006). Further, in this research, specifically in Articles II and III, it was noted that business models currently in use in construction are very similar in terms of the fundamental logics that define how construction companies are run. Brady et al. (2005a) found that there is ‘insufficient understanding of value’ within the construction industry; there is no consensus regarding what value is and how to measure it. This may explain why construction companies find it so difficult to
differentiate themselves. In this study, with regard to managers’ understanding of business models in Article II, it was found that the viewpoint of customer value creation is neglected altogether, thereby supporting the aforementioned finding made by Brady et al. (2005a).

Finally, Article III found that project selection in construction companies appears to be governed by short-term objectives rather than any particular business models. In a recent paper, Smyth and Lecoeuvre (2015) assess marketing-specific investments in terms of justification criteria and the dialogue applied in decision-making, thereby showing evidence that short-term financial criteria dominate and are misaligned with long-term performance of project businesses and business units. Despite the different focuses in this research and that of Smyth and Lecoeuvre (2015), they both highlight a short-term timeframe and a dominating role of financial criteria in the running of construction companies and project-based firms in general.

Based on the findings of this study and the lack of academic research interest in business models in the construction industry, it can be argued that there is a gap between generic literature and literature relating to strategic management practice in construction that is at least as large as the business model construct is. A better understanding of business models in general may bring these two worlds closer to each other in the future.

4.3 Managerial implications

The request for the construction industry to change and become more customer-oriented is meaningful from the viewpoint of customers and society regardless of the financial success and complacency of individual companies. Due to its size, the construction industry has a substantial influence on national economies worldwide. This makes concerns regarding the lack of productivity development within the industry valid and justified. In addition, most of us live in a built environment using infrastructure and other constructed facilities that are, or at least should be, durable. For many individuals, the decision to invest in a permanent home is one of the most important and far-reaching made in life. Thus, it is only reasonable to expect that construction professionals place greater emphasis on understanding their customers, which range from financial institutions to individuals, and what they value. Both the empirical findings and the subsequent theoretical argumentation in this thesis emphasise that business management influences customer value creation through the managerial actions
that shape and determine the business model of a company. Most importantly, a large amount of research from the fields of business and management demonstrates that operating for the customers’ best interest and in a customer-oriented manner is beneficial for business too.

To influence customer value creation positively, it is important for business managers to understand customers as an integral part of their business models. Becoming familiar with the business model concept could enable managers to obtain a more complete outlook on construction business, as the concept provides a systemic view on it. In this study, a three-element framework was used to illustrate the scope of a business model; however, more detailed frameworks exist that break down the basic elements. For example, the framework created by Osterwalder & Pigneur (2009) appears to be popular among academics, entrepreneurship educators and business practitioners.

In well-run companies, all business model elements and their interdependencies are acknowledged and managed as a whole, which provides these companies the systemic strength to be competitive. Thus, creating customer value does not imply that companies transform themselves into charities; rather, it is about managing a business from a viewpoint that emphasizes doing things that are valued by customers and less of everything else. This may require making difficult decisions on what and what not to do to reduce opportunistic behaviour and provide consistency and focus for business. Without a clear sense of purpose, long-term strategy and more focused business models it is difficult to establish the kind of environment that supports learning. In other words, without these aspects, it is difficult to capitalize on project experiences and utilise them well in future projects, because the constant change in operational conditions force project managers to deliver projects with ad-hoc practices. This, for sure, also hinders productivity development as organizational routines cannot be standardized.

In addition, understanding of current business models and the business model concept itself is essential if a company wants to follow the current trend in management, where the focus has shifted from goods and production to services and customers. In other words, the roles should not be split to producer and consumer anymore; instead, customers should be understood and treated as co-creators of value in the construction industry. This may require changes in current thinking and business models that too often appear to exclude the customer. To provoke thought, a generic model is outlined in Figure 11 to instruct managers how they could use business models in a manner that provides focus and consistency to their construction businesses.
Fig. 11. A generic model for using business models in construction business management.

Firstly, the illustrated model makes a clear distinction between the responsibilities of business management and project management. The responsibility of business managers is business development, which goes beyond acquiring projects to defining a company’s business purpose and strategy as well as establishment of business models that are capable of creating specific value to recognized customers or market segments. Consequently, project management is responsible for delivering a project ‘according to plan’, but it is unreasonable to expect success if the project does not fit with the organization and its capabilities and if there are no suitable delivery processes that have been specified. Secondly, when managers become aware of the business models according to which their companies operate or intend to operate, they should consciously use these models to guide their decision-making regarding what projects their company should engage in. This would provide the direction and focus that is needed for customer-oriented value creation, where a company develops an understanding of the customers’ needs and requirements and responds to them with specific offerings. Depending on the scope of a company’s operations and the manner in which managers creatively discern their offerings, companies may have one or several business models, each of which may require a different kind of delivery process to manage value creation at the project level.

Only a deliberate change and management of current business models will have a sustained effect on the construction industry’s performance. In changing and developing business models, it is essential to understand a company’s current
business model (or models), how it works and why it is successful (or is not), because change almost always has systemic effects. For example, when a company engages in development driven by lean thinking, a company may just decide to use some specific lean tools – such as value stream mapping or last planner system – merely as a means for operational effectiveness. However, to create enhanced value for customers in a sustainable manner, a company must link lean-driven operational development with overall business development. In other words, managers must know how to use lean as a strategic means to achieve a sustainable competitive advantage. One option, as is suggested in this study, is to understand and adopt lean as a new business model, the development of which begins by canvassing what is valuable for customers. Thereafter, lean thinking and its tricks are used to identify activities that create no value and to embrace those that do.

4.4 Evaluation of the study

This thesis presented the argument that poor performance, which the construction industry sustains, is the outcome of the prevailing practice of construction business management focusing almost solely on companies’ internal needs rather than those of its customers. Of course, other influencing factors (e.g. fragmentation of the industry, procurement based on low-cost tendering and obsolescent project management practices) exist too, but the current practice of business management has resulted in business models that are undifferentiated, short-term in nature and operate on the basis of aspects other than customer value creation. This conclusion is founded upon the findings obtained mainly in Articles II and III, while Articles I and IV aimed at demonstrating the importance and usefulness of the business models concept in construction business development.

Evaluation of research usually boils down to the evaluation of validity and reliability. These constructs arise from the quantitative research tradition; therefore, validity is often defined as the question of whether the study measures what it is supposed to measure (Golafshani 2004). This is what validity essentially means, although many researchers – particularly in qualitative research – have given their own meanings to the term (Pekuri 2013). Nevertheless, it is this definition that is believed to capture the essence of validity in this qualitative research. However, it is acknowledged, that while valid measurement provides a solid ground for deductive studies and their conclusions, it is the problem of induction that is faced when evaluating the validity of this research. As Nickerson
(2010) points out, it is only deductive arguments that can be determined to be valid or invalid, and the most that can be said about inductive arguments is that they are more or less convincing.

In this research, inductive reasoning has been deployed on two occasions. Firstly, interpretation of meaning – that is, working out structures and relations of meanings from what is not directly said and, thus, not immediately apparent in the interview text (Kvale & Brinkmann 2009) – was required in data analysis. This was necessary because the interview set-up was constructed so that the interviewees’ understanding of the business model concept, the actual business models and the decision-making practice related to project selection could be revealed. The other occasion when inductive reasoning has been deployed within this research is when the inference regarding the role of business models in construction business management has been made based on the articles.

As is typical for inductive studies, the findings within the Articles II and III contain more than the premises, that is, what was actually said in the interviews. For this particular reason, confirmability is an often used measure of the quality of qualitative research stressing that findings and interpretations must be supported by the data and not imagined by the researcher (Guba & Lincoln 1994, Eriksson & Kovalainen 2008). In this research, confirmability issues were addressed by triangulation, which was used both in data collection and analysis. Firstly, the evidence was combined from multiple sources, that is, from interviews and from various secondary sources such as company websites and procures. Secondly, multiple researchers investigated the empirical material to provide complementary insights, cross-check interpretations and enhance confidence of findings. As all the four articles have been peer-reviewed and issued as scientific publications, at least the findings that they contain can be presumed fairly convincing.

The trustworthiness of this research depends on whether the statement about the role of business models actually depicts the reality of construction business. Instead of validity, qualitative researchers often refer to the measure of credibility when evaluating this aspect of research (Guba & Lincoln 1994, Eriksson & Kovalainen 2008). Although definitive account of the credibility is impossible to lay out, certain issues are thought to provide conviction to the statement regarding the credibility of this research. Firstly, literature was extensively reviewed to provide a strong theoretical foundation for interpreting the findings. Secondly, when answering the four research questions, the answers were drawn as transparently as possible from the findings of individual publications. Then the
inference regarding the role of business models was made based on the answers. In addition, the findings were elaborated and compared with regard to existing literature. Although business models as such have barely been in focus previously, other related studies regarding construction business management appear to be well aligned with the findings of this study. All these things should be taken into account when considering the trustworthiness of this research.

Another measurement-related term that is often used in the evaluation of research is reliability. Traditionally, it has meant the measurement error of the measurement instrument (Niiniluoto 1999). Many qualitative researchers have sought to establish qualitative equivalents for reliability, such as credibility and dependability, and others have abandoned the quest for fulfilling such requirement altogether (Miller 2008). However, to be consistent with the notion of validity accepted previously, despite the qualitative nature of this study, the question of reliability is treated here in its traditional sense: pondering ‘the extent to which a measurement procedure yields the same answer however and whenever it is carried out’ (Kirk & Miller 1986: 19). As it is believed that the interview questions were valid in relation to the aims of the research, it is unlikely that a retake now would yield different answers, unless there would be actual changes in the real world that would make the interviewees’ answers different. In fact, the probability for a change in answers increases as time goes by as the social world is in constant flux and permanent answers concerning its state are rare. The researcher’s confidence over the reliability of meaning condensation, for one, is on a reasonable level due to investigator triangulation (Rothbauer 2008), which always involved at least the main and second author of the articles.

Finally, what about the overall quality or rather the goodness of this research? It is often forgotten that research can be valid and reliable even if the research design was not optimal (Borsboom 2004). It is, for example, a fact to be admitted, that an optimal research design would have involved observation within the companies and included interviews with more people that participate in decision-making and other managerial practices in the targeted organizations. However, some kind of saturation point was already established with current interviews, as the answers began to be repetitive (Articles II and III). In addition, the final descriptions of business models that were derived from secondary data were sent to company managers for approval (Article I). However, caution is necessary when considering empirical generalization (in the similar sense as in quantitative studies) of the findings as it is possible that various factors affect the degree to which the results of this explorative research apply in other contexts.
4.5 Limitations and recommendations for future research

According to Morgan (1997: 5), ‘any theory or perspective that we bring to the study of organization and management, while capable of creating valuable insights, is also incomplete, biased, and potentially misleading’. With regard to this study, it is acknowledged that business management as a function contains much more than merely a business model, which has largely embodied the function during the research. Thus, many of the functional areas of management – such as finance and human resources as well as external factors such as local market conditions, industry recipe, and client’s role as project initiator – have largely been omitted from the analysis. This study has mainly elaborated the manner in which companies operate from the business model perspective, while assuming that it is managerial actions that determine these business models. Thus, one potential arena for future research lies in exploring the influence of external factors (e.g. latest downturn or alliance projects becoming more common) to companies’ business models.

Although it is considered that the findings of this study are a good reflection of the practices in typical companies within the Finnish construction industry (Articles II and III), it is acknowledged that the depth of inquiry could have been better when the standout cases were studied in Article I, where the results were descriptive in nature. More in-depth study of extreme cases is likely to provide a more comprehensive picture of how the business model concept is used in the management and development of a company. In particular, aspects such as the extent to which they use the business model as a bridge between strategy and strategy implementation, how their business processes align with the business model, and how the business model is taken into account when selecting a new project must be studied. Thus, it is suggested that in the future, the business model perspective must be used to study an industry’s standout cases in greater depth.

Another avenue for future research is to explore how all kinds of improvement efforts underway in the construction industry – ranging from supply chain development to lean implementation and integrated project deliveries – are taken into account at the level of companies’ business models. This would help to understand if they are considered strategic by nature or are they merely conducted at the process level within delivery projects – that is, are they one-off or short-term in nature. In addition, it would be interesting to analyse whether these improvements are made not only to increase internal productivity but also value as perceived by customers.
Finally, it is suggested that the generic model for using business models in construction business management that was presented in Figure 11 be developed further. For example, the peculiar characteristics of project business and volatility of construction markets that may limit its current applicability in practice should be considered and the interfaces between strategy and business models as well as business models and processes should be clarified. The model should also be tried and tested successfully in a case study so that others can follow the example. However, the important question in exploiting the potential of business models in construction is ‘Who dares to lead?’
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