



CHANGING BUSINESS MODELS: IMPLICATIONS FOR CONSTRUCTION

TRANSFORMING CONSTRUCTION NETWORK PLUS
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**INDUSTRIAL
STRATEGY**

UK Research
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**TRANSFORMING
CONSTRUCTION
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RESEARCH PROGRAMME

TRANSFORMING CONSTRUCTION NETWORK PLUS

The Transforming Construction Network Plus (N+) mobilises a new movement in the construction community, bringing together experts from a range of disciplines to tackle the most pressing problems across the digital, energy, construction, and manufacturing space.

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The N+ research team is working to contribute to the body of knowledge that informs future construction practice and policy. As well as the digest series, the team will be developing academic papers and case studies exploring business model and industry change. We hope you find this digest useful, and welcome any questions or feedback you may have. You can reach the team at enquiries.tcnetworkplus@ucl.ac.uk.

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INTRODUCTION

WHY BUSINESS MODELS?

The UK Government's Transforming Construction Agenda is encouraging firms in the industry to re-think how they create and deliver whole life value through the application of digital technologies and new manufacturing techniques. Firms in the construction industry should be considering how their current business model can help them address the risks and opportunities arising from this transformation, and whether they need to change their business model to deliver on construction client expectations sustainably. In practice, we see quite a bit of confusion about what a business model *actually* is.

We have created this digest for businesses wanting to understand more about business models, and to provide

a structure for exploring how their business models can be changed. To do so, the digest summarises influential ideas about business models from industry and academia. It begins by clarifying what business models are, goes on to describe a framework for thinking about analysing business models, and ends by exploring how organisations can change their business models.

As we describe below, changing business models in construction can be challenging. We hope that businesses use this digest as a starting point to think about their own business models, because this could help them take the first step towards transformational change.



WHAT IS A BUSINESS MODEL?

The use of the term ‘business model’ became common during the dotcom boom in the late 20th century, when digital entrepreneurs needed a simple way to explain how their business would make money¹. Since then, firms have applied the idea as a way to think about, and communicate, how they operate. While there is no single, agreed definition, a business model can be seen as describing the way a firm creates value, and captures a portion of the value for itself².

A firm’s **value proposition** is the customer need, or demand, that the firm has decided to address to deliver value. The more precisely the firm meets that need, the better³. For example, an architect’s marketing positioning as a sustainable design practice demonstrates clearly their specific value proposition. Organisations can have multiple value propositions at any one time, enabling them to meet multiple market demands.

The **strategy** describes how the firm will approach the market. This includes identifying target market segments and associated price points, a suitable revenue model – be it leasing, licensing, selling, or franchising – and describing how the firm aims to establish itself as the provider of choice to its target customers.

The business model describes the **capabilities and assets** a firm needs to deliver value to the customer. Capabilities are the skills, knowledge and experience that firms develop to gain competitive advantage, such as technical engineering or programme management skills. Together with the firm’s physical assets, these capabilities influence a firm’s opportunities for value capture and determine the costs that they will need to incur to enable them to create value.

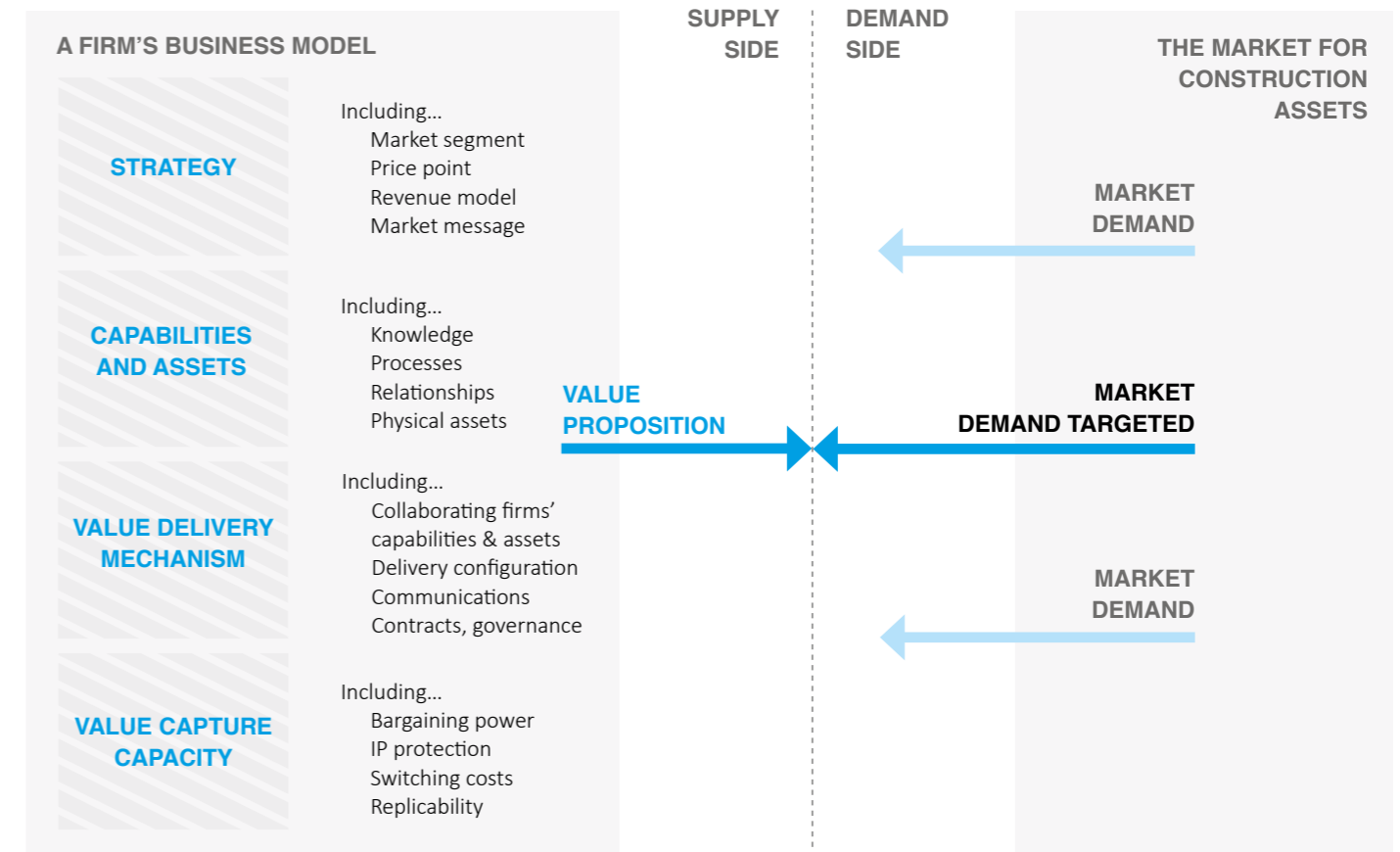
There are five interlinked elements to business models (Figure 1):

- + Value proposition
- + Strategy
- + Capabilities and assets
- + Value delivery mechanism
- + Value capture capacity

The **value delivery mechanism** defines whether, and how, the firm will work and communicate with others to deliver value by combining or integrating complementary assets and capabilities. This could range from vertical integration of capabilities into one firm, through to an arm’s-length licensing model¹⁸. Value chains and networks are examples of these value delivery mechanisms¹⁹. A value delivery model should set out the contractual links, communication and governance needed to deliver value to the customer.

A firm’s **value capture capacity** explains how it will seek to retain some of the value created in the face of competing claims from other firms involved in value delivery. The ability of a firm to capture value depends on a range of factors²⁰ including bargaining power, replicability of its assets and capabilities, the cost involved in moving to another supplier, and the ability to protect intellectual property and control flows of information.

Figure 1: The five interlinked elements of business models



These five elements will be present in all businesses, but they are rarely stated so clearly. For example, an architect is unlikely to describe their business model as *using their design capabilities with the complementary assets of a software provider to co-create and deliver value to a private individual client, attracted through the development of an on-line reputation*. Yet this is an accurate description of what they do when they design using computer-based modelling tools and present their project portfolio on a web-site.

Business models therefore help to clarify how an individual business creates and captures value by describing these five business model elements, and exploring their interplay. Firms with a business model that is clearly understood are likely to be better positioned to respond in times of change.

Firms should develop a detailed understanding of how their key capabilities, asset base³, and processes create and capture value. While physical assets are quite easy

to understand, capabilities⁴ include less tangible things, such as knowledge, processes, routines, technologies, skills, and relationships with suppliers and customers. These capabilities may have developed over many years, and can be seen as potential competitive advantages. A network of contacts, for example, can provide a good opportunity to win more work, but can be hard to replicate. Firms gain competitive advantage by innovating, moving out of some activities and investing in new assets and developing capabilities, allowing them to deliver value to *new customers*, or *additional value to existing customers*, in a *more efficient way*. However, the development of radically different capabilities might be considered to be ‘competence destroying’⁵, or rather, investing in something that undermines the firm’s current business model. Because of this, incremental innovation is more commonly adopted in construction. The fragmented nature of the market in construction makes this problem worse, as innovation happens at the product or process level, rather than at a system level⁶. As a result, the scope for disruptive innovation shrinks.

WHY IS IT SO HARD TO CHANGE BUSINESS MODELS?

Over time, a firm develops what is called a 'dominant logic'. This is a set of understandings and beliefs that shape decision-making in accordance with an existing business model. For example, in listed companies, shareholders' expectations of returns are a key aspect of this logic. The dominant logic operates, coordinates and regulates the firm's operations, somewhat like the immune system in a human body. In the presence of this dominant logic, decision-making tends to support the adoption of incremental innovation. Disruptive ideas and behaviours that don't conform to this logic are usually rejected, unless it is clear that the organisation needs to change.

Even a dominant logic that has served a firm well can restrict its ability to change when trying to introduce or amend business models⁷⁻⁹. Decision makers assess novel, risky proposals using existing logics, proposals are typically found wanting and so are discarded, say, because the return on investment does not meet the required internal rates, uncertainty is too high, and payback is too slow.

The major challenge for large, established construction firms is how to move towards business models that can create and cope with disruptive innovation. Start-up firms, on the other hand, are much less constrained in the design of their business models as they lack a pre-existing, embedded, dominant logic¹⁰.

A strong business model can provide firms with a competitive advantage which, depending on the intellectual property (IP) regime and its ease of replication, can last for some time¹¹. However, in times of technological or demand change, firms should consider revising or refreshing their business models, and their understanding of the market, to ensure that they can continue to deliver value to customers and stakeholders competitively.

There are five main reasons why firms might want to change their business models³:

- + An unmet or changed demand in the market¹¹;
- + A new solution opens the market to new customers previously excluded from the market;
- + The emergence of new technologies that reshapes value delivery (e.g. the internet);
- + To fend off competition, often from low-cost producers; or
- + To respond to a rapidly changing competitive environment, for example, from a focus on cost, to one on lifecycle carbon impacts.

The first two represent value opportunities available to firms. The remaining reasons for change create both risk and opportunity, depending on a firm's market position and ability to respond. The implicit value opportunities could attract new competitors to the market, and this can present risks to existing firms that fail to 'sense and seize' an opportunity for themselves.

For example, in the UK there is a demand for the rapid and cost-effective development of new homes. This represents a value opportunity. Some firms have sensed this opportunity and invested in their capabilities and asset base to deliver volumetric housing (where room-sized modules are made off site in a factory environment), thereby seizing that opportunity. This investment also enables these firms to fend off low-cost competition from new market entrants.

IS IT POSSIBLE TO CHANGE BUSINESS MODELS IN THE CONSTRUCTION INDUSTRY?

The Transforming Construction Agenda is, in part, seeking to change the nature of demand, for example by promoting the presumption for offsite manufacture of buildings, which may change how value is effectively delivered. Reacting to these changes is challenging because construction is a mature, competitive, industry characterised by large, complex, and risky projects. Many construction firms have also been around for a long time and have well established dominant logics. In response, the market that delivers buildings and infrastructure is fragmented, containing many increasingly niche specialist firms.

By stimulating these changes, however, new value opportunities arise. This can lead to the emergence of challengers. The value opportunities identified by companies operating offsite manufacturing plants pose a real risk to existing construction firms whose value proposition is typically based on-site and on a lowest price proposition. For example, in the USA, Katerra are applying digital and manufacturing technologies to reshape value delivery to meet a need for speed and certainty in asset delivery. Google's recent entry into the construction sector, through Sidewalk Toronto^a and their Nest 'Helpful Home'^b, shows that bringing new capabilities to a market can yield new value opportunities. Similar scale investments have recently

been made in the UK housing market by Goldman Sachs, and Japan's biggest house builder, Sekisui House.

Firms hoping to meet the challenge of new market entrants can follow one of two routes. One is to continue to operate as before, relying on the firm's existing dominant logic, and adjusting their business model only slightly to allow them to continue for a while. However, Blockbuster's experience tells us that this may not always be the best approach¹³, with the associated risk of longer term failure.

The alternative option is to take a detailed look at the changing market and consider how the firm's business model should adapt in response. However, changing a business model is a challenging process, and requires a detailed knowledge of how a firm currently operates³. This needs to be recognised urgently by construction firms in particular, because they operate in a low-margin, litigious industry, so may struggle to access the key resources needed for business model transformation¹⁷.



^a www.sidewalklabs.com

^b www.blog.google/products/google-nest/helpful-home

WHAT IS NEEDED TO CHANGE BUSINESS MODELS?

Where business model change is incremental – extending existing capabilities, structures and assets of the firm to service an existing client base – the change will typically align with the firm’s dominant logic. Incremental change will remain unchallenged, or may even be welcomed in this scenario.

Introducing new competence-destroying technologies, creating new business lines, or a whole new business model to address a market change may, however, conflict with the firm’s existing dominant logic, and so require a more significant intervention. In these cases, there are four key capabilities that support business model change.

- + Leadership
- + Dynamic capabilities
- + Open innovation
- + Organisational Ambidexterity

Leadership

In most firms, any deviation from the existing dominant logic will require approval from the controllers of that dominant logic, i.e. the leadership group. Where empowered local leadership have this authority in decentralised firms, bottom up innovation can flourish. Changes to a firm’s dominant logic has implications for each of the five elements of its business model, including capabilities and the firms it chooses to work with. For example, a firm’s leadership group recognises that they need to better anticipate future market demand, so they commit to a ‘net zero’ carbon target, and thereby make an important change to the firm’s dominant logic.

Dynamic capabilities

These are a set of capabilities that support a firm’s ability to respond to market changes, enabling it to both *sense* and *seize* new value opportunities in the market¹¹.

Sensing relies on capabilities that help firms to identify opportunities in the market: e.g. market scanning, learning, and interpretation. While better resourced firms are often able to allocate resources to sensing, smaller, resource constrained firms may only appreciate the need for change when the market has already moved away from them. Seizing is the ability to act on new information and a new market context, and to reorient the firm and its business model to create and capture value. For construction firms, these dynamic capabilities are key in moving from component manufacture to the delivery of more integrated solutions¹².

Open Innovation

Traditionally, firms have relied on ‘closed’ innovation models to design new business models, making use of in-house R&D, production and marketing processes to take new discoveries to market. More recently, however, many leading firms have established ‘open’ innovation models² in which they turn to the wider market – including their suppliers, customers, or competitors – to support their search for external ideas, market risks and opportunities, discoveries and technologies. Firms connect these external inputs with their internal capabilities, opening up opportunities to refresh business models. Open models are widely used in industries as diverse as design, hardware development, consumer products, documentation and mining. In recent years, open innovation models have been created by large construction firms (including Skanska, Costain and Murphy) and major infrastructure projects (e.g. Crossrail, Thames Tideway, and Hinkley Point C) to support rapid and systematic innovation in collaboration with external suppliers, universities, research organisations, funding bodies and other parties.

Organisational ambidexterity

To be successful during times of change, firms must be able to take advantage of the emergent value opportunities (*exploration*), while continuing to address the needs of their existing client base (*exploitation*). These two operating modes – exploration and exploitation – make use of different capabilities and assets, and require distinct strategies and value delivery mechanisms. Operating both modes together requires a degree of organisational ambidexterity¹⁴, rather like juggling, to allow the distinct logics of both exploration and exploitation to be in play at the same time. Ambidexterity is difficult to accomplish in well-established industries like construction, or others which are similarly dominated by a few firms, such as the aerospace and automotive sectors.

Firms operating as both main contractor and factory operator, or entering into delivery joint ventures, provide practical examples of ambidexterity in construction.

Firms typically achieve ambidexterity by separating their explorative units from their ‘business as usual’ exploitative units. Two broad shielding strategies can be deployed to protect explorative activity from the prevailing dominant logic, as outlined opposite. Deciding on which of the two strategies is appropriate for a firm requires a detailed understanding of the firm’s existing business model, how market demand is changing, and the operating landscape¹⁶.

Exploitative activities in the main structures of the firm may continue to evolve, regardless of which of the options is pursued.

- + *Active niches* are the first of the strategies that firms can use to protect explorative activity. Here, firms sense an opportunity, and set up or acquire a separate operating unit, inside or outside of the main firm – a new, active niche. The new unit is permitted to operate under a different logic, while drawing on the existing assets and capabilities of the main firm. These active niches are able to develop their own distinct business models to identify, create and deliver value to address market opportunities.
- + *Passive niches*¹⁵ emerge naturally as a response to market demand, with firms exploring new value opportunities on discrete projects, thereby shielding the activity from ‘business as usual’ activities. While this could be seen as a low-risk route to exploration, passive niches are reactive and so may not emerge readily. For instance, a building client would have to identify a new need, and be willing to appoint a firm that is willing to develop the necessary capabilities.

CONCLUSION

CHANGING BUSINESS MODELS: IMPLICATIONS FOR CONSTRUCTION

This digest has set out the components of a business model and explained how firms adapt their business models to changing circumstances. Yet the dominant logic underpinning firms' existing business models, their ability to create and capture value, may prove unsuitable in changing times. If a firm is to remain profitable, there may be a need to change the business model.

By exploring the changing nature of the market, and considering whether their value proposition and strategic approach remains valid, firms can consider whether their existing assets, capabilities and value delivery mechanisms will enable them to continue to create value. If not, they may need to add to them, or alter the way they work with others to deliver value. Changes to the value delivery mechanism will impact on firms' abilities to capture a proportion of the value created.

Implementing new business models requires leadership, ambidexterity and investment in the dynamic capabilities that enable change. Organisations can nurture these new business models in niches that operate under different logics from the main firm. This, again, requires an investment in change and the management of risk. Nevertheless, the changing market conditions in the UK and elsewhere should motivate construction firms to rediscover and perhaps reframe their business models.

We hope that this digest will enable more firms to participate in such discussions, with the ultimate aim of transforming the way the industry creates and delivers whole life value for its customers.

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