

LEAN AS A BUSINESS MODEL

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ABSTRACT

This theoretical study explores the role of business models in lean transformation with the aim of explaining why seeing lean as a business model can be beneficial and how managing it as such could lead to more comprehensive transformations and greater lean implementation success. Three elements – the value creation system, the value proposition, and the revenue model – constitute a business model, the main function of which is to describe how pieces of business fit together as a system, thus enabling managers to understand, study and develop a company as a whole. The study uses Toyota's business model to illustrate the overwhelming influence of adopting lean with regard to a whole business model. It argues that lean must be adopted as a new business model to make transformation successful. If lean is implemented without the intention of changing an entire business model, the objective of accomplishing a comprehensive transformation is likely to fail due to clashes between new ideas and the logic of old business models. Thus, it is necessary for managers to understand their existing business models thoroughly and to comprehend lean as a system that, if implemented, is likely to influence all of the elements of the old business models, thus requiring transformational change.

KEYWORDS

Business model, lean implementation, change, transformation, strategy

INTRODUCTION

Womack and Jones (2003) describe lean as an endless journey towards perfection, but the reality is that many lean journeys *end* before they even start. Company-wide lean transformation is a process through which old habits must be replaced with new ones that are based on totally different beliefs and theories. It is a paradigm change within the organisation that requires massive commitment from management. Previous studies have described management commitment as 'leading by example' and 'giving time and resources' to do lean (e.g., Pekuri et al. 2012), but this paper argues that the commitment must also be considered at a more strategic level. Without being incorporated into strategic concepts such as the business model, lean is limited to being an improvement tool rather than a vehicle for organisation-wide transformation.

In construction, it seems that there are no significant differences between companies' business models; in fact, it seems that business models do not play any major role in the management of a construction company (Pekuri et al. 2013). This

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argument is supported by the fact that, from some of the most established journals in the broad field of construction research (*Building Information & Research*, *Construction Innovation*, *Construction Management and Economics*, *Journal of Construction Engineering and Management*, and *Journal of Management in Engineering*), only two papers (Brege et al. 2014; Mokhlesian and Holmen 2012) discuss business models in construction using specific terms and perspectives based on existing business model literature. The term ‘business model’ appears in a dozen other articles, but the majority of these papers refer to the concept at an abstract and very generic level, without making any reference to existing literature on business models.

In this theoretical study, the authors argue 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 (i.e., as a system). The paper depicts lean as a system by examining its most complete practical application, Toyota, from the viewpoint of a business model. Then, it describes the two prevailing business models in the construction industry described before elaborating on the systemic changes needed in a comprehensive lean transformation. The overall aim is to explain why seeing lean as a business model would be beneficial and how managing it as such could lead to more comprehensive transformations and greater lean implementation success.

BUSINESS MODELS

The concept of a business model is receiving increasing attention from scholars and business strategists interested in explaining firms’ value creation, performance, and competitive advantage (Zott et al. 2011). Drawing on ideas and theories from several fields of research such as e-commerce, information systems, strategy and technology and innovation management, the business model concept is integrative in nature. As a result of this versatility, there is still no commonly accepted definition for the concept, although the majority of scholars relate it to the key functions of creating and capturing value (Shafer et al. 2005). An example of such a definition is the one presented by Osterwalder and Pigneur (2009, p.14):

“A business model describes the rationale of how an organization creates, delivers, and captures value.”

Business models are sometimes confused with strategy, breeding discussion about the relationship between the two concepts. According to Seddon et al. (2004) a business models is an abstract representation of some aspects of a firm’s strategy while Casadesus-Masanell and Ricart (2010) see a business model as a reflection of a firm’s realised strategy. Zott and Amit (2008) explain that firms can address the same customer needs and pursue similar product market strategies with very different business models. Thus, business models and product market strategies are complements, not substitutes. Many authors think that business models provide a critical link between strategy and operations (Figure 1) by explaining how the activities of the firm work together to execute strategy (Osterwalder 2004; Richardson 2008; Wikström et al. 2010).

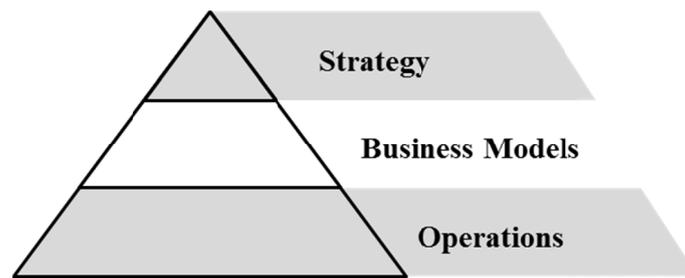


Figure 1: A business model – a link between strategy and operations

In order to understand business models better, several authors have tried to determine and classify the elements that constitute a business model. One of the most comprehensive and frequently used classifications is the “business model canvas” created by Osterwalder and Pigneur (2009). It is a visual representation of a business model, containing nine elements: value propositions, key partners, key activities, key resources, customer relationships, channels, customer segments, cost structure and revenue streams. For the purposes of this study, we have adopted a simplified version with three main elements (Figure 2).

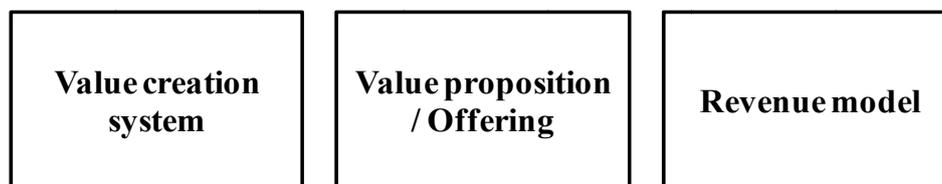


Figure 2: The main elements of a business model

- *Value proposition* is the heart of the business model, describing the way in which a firm differentiates itself from its competitors. It is the reason customers turn to one company over another (Osterwalder 2004).
- *Value creation system* consists of the most important assets, competences, suppliers and partners and of the things that a firm must do in order to make a business model function (Hamel 2000; Osterwalder and Pigneur 2009).
- *Revenue model* describes how a company finances its operations – that is, how and from which customers the revenue is generated. It is a blueprint that defines how a company creates value for itself while providing value to customers (Johnson et al. 2008).

The elements of a business model are understood to be interdependent; that is, changes in one component influence the other components (Burkhart et al. 2011; Zott and Amit 2010). In a good business model, there is a fit between the elements, and they have a reinforcing effect on each other (Magretta 2002; Morris et al. 2005). Thus, one of the main functions of a business model is that to describe ‘as a system, how pieces of business fit together’ (Magretta 2002), thus enabling managers to understand, study and develop a company as a whole. Note that it is essential here that the term ‘system’ is perceived in its literal, rather than in its colloquial, sense; a system is something that is planned, linked, resourced and managed as a whole (Chekland 2012), rather than a whole created by chance. If a business model is sufficiently differentiated to meet particular customer needs and is difficult to

replicate, it can become a source of competitive advantage (Morris et al. 2005; Teece 2010).

In addition to the practical functionalities of business models as a management tool, the business model also represents a new subject of innovation (Zott et al. 2011) that has become even more important to success than traditional product or service innovations (Johnson et al. 2008). According to Hamel (2000), a business model is a business concept put into practice. He argues that business model innovation is the only way to avoid competition, even temporarily, since it is business models – not products or companies – that compete against each other. Renewing business concepts is the key to developing new possibilities for value creation, but innovation requires the ability to imagine new business concepts and new ways of differentiating existing business models (Hamel 2000).

TOYOTA’S LEAN BUSINESS MODEL

Toyota is widely acknowledged as the company that is closest to “the lean ideal” (Liker 2004). By describing Toyota’s business model, the authors aim to crystallise the systemic nature of lean as well as to illustrate the influence that comprehensive adoption of lean has on all business model elements (Figure 3). The authors argue that lean must be adopted as a business model in order to make transformation successful.

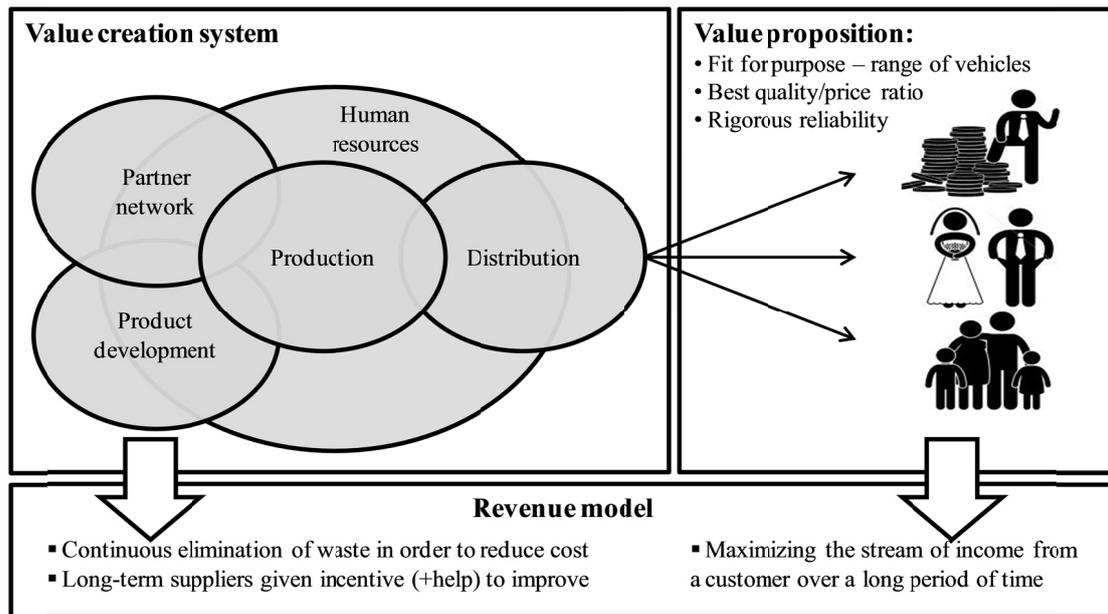


Figure 3: Toyota’s business model

Value proposition: Toyota aims to offer the market’s best quality/price ratio on all car types as well as to be rigorous in reliability. In addition, Toyota offers numerous types of cars in order to ensure the optimal fit between the product and the product’s proposed use within the defined customer segment. The following quote demonstrates the deep roots that segmentation has at Toyota, since a customer-orientation was the only way to succeed in the market after World War II. Back then, “the domestic market was tiny and demanded a wide range of vehicles – luxury cars for government

officials, large trucks to carry goods to market, small trucks for Japan's small farmers, and small cars suitable for Japan's crowded cities and high energy prices" (Womack et al. 2007, p.48-49).

Value creation system: Toyota aims to achieve an uncompromised outcome, which can be seen from the objectives set for its production system: best quality, lowest cost, shortest lead time, best safety and high morale (Liker 2004). To pursue these objectives, Toyota uses its renowned product development (Morgan and Liker 2006), production (Ohno 1988) and distribution systems (Reichhart and Holweg 2007). Toyota also recognises suppliers as extended resources and, thus, seeks to develop its partner network, whose contribution is integral with regard to achieving the company's ambitious objectives (Dyer and Nobeoka 2000). Several interdependent and reinforcing concepts such as just-in-time, jidoka, production-levelling, co-location, cross-functional teams and set-based design are used to create smooth production flows with minimum waste. In addition, Toyota's human resource system (Liker and Hoseus 2010) has a key role in growing leaders (Liker 2004; Spear 2004), developing problem awareness among employees (Balle et al. 2006; Spear and Bowen 1999) and maintaining the company's continuous improvement culture. Most importantly, every sub-system fits together and supports the system as a whole.

Revenue model: Instead of making the most out of a one-off transaction, Toyota aims to maximize the stream of income from a customer over a long period of time (Womack et al. 2007). The same applies to the way in which Toyota treats its suppliers. It favours long-term supplier relationships, which allow it to demand continuous cost reductions. In turn, Toyota sends its own engineers to solve suppliers' problems and to help them improve their overall business performance. As an incentive, though a portion of the improvements is used to reduce Toyota's prices, suppliers get to keep the rest to increase their own profit margins (Liker and Choi 2004). Toyota also practices target costing, in which the markets, rather than design and production costs, determine the price of the end product (Cooper and Slagmulder 1999). With these kinds of practices in place, waste elimination and subsequent cost reduction play integral roles in Toyota's profit formula. Of course, in the modern world, Toyota exploits multiple revenue streams, such as all-in-services, insurances, spare parts and maintenance to generate profits, but these are not essential to enhancing the understanding of lean as a business model.

The above brief description of Toyota's business model shows the overwhelming influence of lean on all business model elements. Replace one part of the model with an equivalent sub-system from a traditional business system (e.g., from mass production), and the whole system will become immediately handicapped. It is essential to understand that, above all, lean is a system. Thus, before implementing lean, managers should know what their current business model is and how it operates, then ponder the influence that lean would have on each element and on the whole business model. Yet, most managers struggle to describe their current business models in general (Linder and Cantrell 2000; Johnson et al. 2008) and in construction in particular (Pekuri et al. 2013).

Baden-Fuller and Morgan (2010) suggest that business models may have multiple roles, depending on their function and usage. In their terms, it could be said that Toyota's business model is an exemplar 'role model' and that it has the theoretical potential to be copied like any other business model. In practice, however, despite

numerous attempts, companies have not been able to do so. It is contemplated here that this might be due to the emergent properties created by the interaction between the different elements of the system, which is so crucial to Toyota's business model working as successfully as it does and, at the same time, being so hard to replicate in another company or environment. In other words, there is no cookbook capable of explaining exactly how lean can be applied in a way that maintains the fit among the elements of an existing business model while developing it as a system.

Business models also function as 'scientific models' through which reality can be depicted with appropriate precision to aid the understanding and facilitate the study and development of a company as a system (Baden-Fuller and Morgan 2010). This is what was done with Toyota in this section, and also what will be done in the next section with two prevailing business models in construction.

BUSINESS MODELS IN CONSTRUCTION

When describing a business model, one must bear in mind which details are necessary to make the model work, and which are irrelevant, creating no distinction between one firm and another (Baden-Fuller and Morgan 2010). Seddon et al. (2004) propose viewing business models as abstract representations of some aspects of a firm's strategy while Baden-Fuller and Morgan (2010) describe them as 'models' – small, simplified, and describing only limited aspects of the real object. In other words, business models pick out the details that seem most important to represent the object being modelled (i.e. details that help to understand why and how a certain business model works) (Casadesus-Masanell and Ricart 2010).

TRADITIONAL BUSINESS MODELS IN CONSTRUCTION

Based on the authors' observation of construction at the industry level, it seems that there are only two business models that are commonly used within the industry. The most common is the contracting model, in which top management's main (and only) concerns are to acquire new projects in order to keep resources utilized and to find a competent construction manager to supervise the project on-site. In this model, it is the most primitive factors – low cost, past references, and financial solidity – that constitute a firm's value proposition. The actual offering – construction services – aims and promises to execute the project according to plan with no defects. Thus, almost anything fits into a firm's strategic profile, since the planning horizon is focused on short-term survival. Two activities – construction/project management and tender preparation – and two resources – financial and human, especially supervisors' qualifications – seem to be the key pieces in the value creation system of a traditional contracting company. They largely determine the project's success, which rests heavily on the shoulders of supervisors, and define how valuable projects a company can engage in, since more valuable projects require more financial resources (to demonstrate a company's ability to carry risk). The revenue model can comprise different methods for payment (unit price, hourly, fixed lump sum), which are stated in the contractual agreement. In addition to agreed fees, there are two different "games" that complement the revenue model of a traditional contracting company. First, some companies may exploit uncertainties and generate extra revenue due to change orders and additional work. Second, the main contractors finance their operations with clients' money by negotiating longer payment cycles with

subcontractors while holding the money paid by the client on their account at the same time.

Alongside the above-described contracting model is the developer model, in which a company acquires a plot and develops the best (most profitable) concept to build on it. In this model, there is a greater emphasis on solution development, marketing and negotiating prices when it comes to key business model elements, but management's main concern is still on company's internal resources and assets (e.g., where to find the next plot and what to do with it) rather than on the customer. Thus, neither of the current business models used in construction is customer-focused. They do not rely on segmentation to identify customers with specific needs, nor do they offer anything distinctive to the market. Hence, these models exemplify the "anything to anyone" label that is used later (Table 1) to describe the nature of the traditional business model in construction.

LEAN-DRIVEN BUSINESS MODEL FOR CONSTRUCTION

Whereas lean construction, by definition, is a methodology to improve project delivery practices in order to achieve better project outcomes (Howell et al. 2011), lean, as a comprehensive management philosophy, must be utilized across the entire organization in order to achieve its full benefits (i.e., sustainable competitive advantage) (Emiliani and Stec 2005; Liker 2004; Spear and Bowen 1999; Womack and Jones 2003). In many construction companies, the implementation of lean starts with a few individuals. They may manage to implement some lean tools and practices, sometimes even lean mind-sets, and the results can be quite impressive, but often, these improvement efforts seem isolated within the bigger picture. Why?

The authors believe that the problem lies in understanding lean as a system and implementing it as such within the limits set by existing business models. Neither of the prevailing business models in construction is customer-focused, which is one of the main reasons companies want to go lean. This is reasonable, since being market-oriented is both a theoretically justified and practically demonstrated approach that is beneficial for business (Jaworski and Kohli 1993; Morgan et al. 2009). However, through just the implementation of lean by tools here and there by a few individuals, it is difficult to induce the systemic change that is needed for lean transformation. Indeed, the mission of initiating a comprehensive lean transformation is impossible if the company is not willing to change its old business model or if its managers do not even acknowledge what the business model is or how it operates.

In the best case, the above-described 'piece meal' implementation will make the old model a bit more efficient. But, since most things in lean (including its tools and methods) are based on very different theories and beliefs than what is traditionally internalized, conflicts are more than likely to emerge if lean is only partially adopted. Thus, it is argued that 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". The authors also argue that it is also necessary to understand lean as a system that, if implemented, is likely to influence all of the elements of the old business model, thus requiring a transformational change.

Table 1 summarises the key aspects of the traditional model while portraying some of the characteristics that a lean-driven business model might have.

Table 1: Main characteristics of a traditional business model and portrayed elements of a lean-driven business model for construction

	Value creation system	Value proposition	Revenue model
Traditional “anything to anyone” business model	<ul style="list-style-type: none"> • Construction management • Tender preparation • Financial resources • Human resources and qualifications 	<ul style="list-style-type: none"> • Lowest cost • According to plan • No defects • References 	<ul style="list-style-type: none"> • Payments according to contract and progress • Change orders • Additional work • Financing from client
Lean-driven business model	<ul style="list-style-type: none"> • Overall business development • Marketing • BIM and other modern technologies • Partners and SCM 	<ul style="list-style-type: none"> • Optimised outcomes • Predictability • Competitive investment • IPD capability offering 	<ul style="list-style-type: none"> • Elimination of waste • Performance or value-based • Transparency • Gain/pain share

CONCLUSION

This paper has first summarised the essentials of business models, a concept that is yet to be fully exploited in construction, and then elaborated the role of business models in lean transformation. In generic terms, business models define the operating logic of a company: that is, how it creates value for its customers while making a profit. Three elements – the value creation system, the value proposition, and the revenue model – constitute a business model in this study, although the literature also proposes more detailed frameworks. One of the key functions of a business model is to describe, as a system, how pieces of a business fit together, thus enabling managers to understand, study and develop a company as a whole.

Through a description of Toyota’s business model, the authors have illustrated the overwhelming influence that adopting lean has on all business model elements, arguing that lean must be adopted as a business model in order to make transformation successful. In addition, the authors argue that if lean is implemented 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. Therefore, it is necessary for managers to understand their existing business models thoroughly and to comprehend lean as a system that, if implemented, is likely to influence all of the elements of the old business model, thus requiring a transformational change.

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