Kujala, Jaakko; Artto, Karlos; Parhankangas, Annaleena

Factors influencing design and performance of the business model of a project-based firm

Published in: Project Perspectives

Published: 01/01/2008

Document Version
Publisher's PDF, also known as Version of record

Please cite the original version:
Factors influencing design and performance of the business model of a project-based firm

In this paper we analyze factors influencing design and performance of the business model of a project-based firm. We adopt a perspective of a project supplier firm that has constantly multiple simultaneous delivery projects in its 'project production line'. The business model explains the underlying economic logic of how the project supplier delivers value for its customers at appropriate costs. The design and selection of a business model is mainly influenced by several contextual factors in the firm’s business environment. In addition, when analyzing the rationales behind the selection of specific business models, we must take account that knowledge held by managers about their business environment is limited, and the choices of various business models are biased by earlier experiences of the firm. The contextual factors affecting the design and performance of the business model include factors both at the level of the firm’s business and environment and at the level of individual projects. The contextual factors include, among others, project complexity, interdependence between projects, customers’ strategies, industry-specific standard practices, generally accepted methods of doing business in the market segment, and the competitive situation in the market. Understanding of contextual factors affecting the selection and performance of the business model enables managers to design business models that consistently provide balanced long-term and short-term business benefits for both the project supplier firm and its customers.

Introduction

The increasing importance of project-based modes for controlling and organizing work in different industries has been recognized by several researchers (Gann & Salter 2000, Arenius et al. 2002) and it has even been said to represent a new logic of organizing in market based economics (Whitley 2006). Also project research is expanding in scope to analyze challenges related to achieving business targets through projects. Project business is an emerging research field, which takes a business oriented perspective to study project, project-based firms and industries (Artto 2008). Project business can be defined as “the part of business that relates directly or indirectly to projects, with the purpose of achieving objectives of a firm or several firms” (Artto & Wikström 2005). While this definition covers both internal development projects and customer delivery projects, our focus in this paper is a business of a project supplier firms that has several project in its production line (Artto et al. 1998).

The business of a project-based firm can be addressed through a concept of business model, which is a statement of how company makes money (Stewart et Zhao, 2000) or how technological inputs are transformed into economic outputs (Chesbrough, 2003). Project-based organizations have different types of business models. However, the existing literature is scarce that would explain what the contents of such various business models are. Furthermore, there is no existing theory that explains selection, design and performance of the business model of project-based organizations. In this paper we adopt a contingency approach to research which contextual factors should be taken account in the selection and design of a business model a project supplier firm.

As there are many interpretations of the content of the business model concept, we first introduce what we consider as key elements in a business model a project supplier firm.

Business model

Business model defines the underlying economic logic that explains how a firm can deliver value to the customer at an appropriate cost (Magretta 2002). Based on their comprehensive review of business model literature, Morris et al. (2005) identified three general categories of business model definitions, including economic, operational, and strategic, with each comprised of a unique set of decision variables. The economic level of a business model identifies revenue sources, pricing methodologies, cost structures, margins, and expected volumes. At the operational level, the business model focuses on the internal processes that enable the firm to create value, such as production or service delivery methods, administrative processes, resource flows, knowledge management, and logistical streams. Definitions at the strategic level deal with the overall direction of the firm and cover issues related to the firm’s market position-
ing, interactions across organizational boundaries, and growth opportunities.

For this paper we adopt a definition of business model modified from Chesbrough and and Rosenboom (2002), who identified six key features that must be addressed by a business model:

- How will the firm create value (value proposition)?
- For whom will the firm create value (potential market segments)?
- How will the firm position itself in the marketplace (position within the value network)?
- How will the firm make money (cost structure and profit potential)?
- What is the firm’s source of competitive advantage?

The starting point for creating a business model is to define a value proposition to the customer. At its most simplest form, it may be a technical solution to meet a customer specification, but in most businesses suppliers are increasingly claiming to be solutions providers, which provide value for the customer by improving their business processes (Galbraith 2002). At the same time, a firm must define an innovative product and/or a service offering that can be are tailored to potential customer in different market segment (Davies 2004). The increasing complexity of projects makes it difficult for any single firm to own all capabilities and resources. Thus, a firm must decide which resources to subcontract and how design appropriate governance arrangements between independent firms in the supply chain. The options range from purely competitive tendering, long term relationships, to a hierarchical mode of governance (Winch 2006). The positioning in the marketplace also includes a role and delivery scope, which project supplier takes for different project deliveries. The economic focus in the business model forces to consider cost structure and profit potential that are related to a value proposition for different market segments. The profitability is closely related to competition and firm’s competitive advantage in the markets, which according resource based view can be based on the value of the product/solution, and the rareness and imperfect substitutability of this solution. (Barney 1991). On a more strategic level, a project supplier may consider whether it will focus on becoming low cost supplier or select a differentiation strategy.

**Contextual factors in project business**

Contingency theory suggests that there is no optimal strategy for managing organizations (Donaldson, 1996) and choice of a most desirable business model depends on several contingency factors (Zott & Amit 2008). In project research there has been much effort to create a project theory that would explain how projects should be managed in their environments by taking into account various contingency factors, such as complexity, uncertainty, scope and size (Shenhar & Dvir 1995; Shenhar 2001; Andersen 2006). These contingency factors need to be taken into account when defining a business model of a project-based firm. For example, Wikström et al. (2008) proposes that project complexity impacts how services can be integrated into a project business. Additionally, the cost of the total project lifecycle is a significant contextual factor, because it relates business volume and profit potential of maintenance and other after sales services. It is also an important element to be taken into account in the customer investment decision and thus relates to the value proposition of a project supplier.

The discourse of project marketing identifies the uniqueness of individual projects, technical and organizational complexity of the project offering, the discontinuity of demand and business relationships between projects as central features of the business of a project-based firm (Mandjak & Veres, 1998). In addition, large projects often involve considerable extent of financial commitment and risk carrying capacity of the parties, which makes project size as an important contextual factor to consider (Cova, Ghauri, & Salle, 2002). The interrelationship between projects has also been recognized as an important factor that has to be taken into account. Verma and Sinha (2002) identified three types of interdependencies, namely the resource, technology and market interdependencies and they are applicable also in customer delivery project context. Information links between projects are also important for learning and the transfer of knowledge between projects. In addition, the success of any business model is also influenced external factors such as competition and customer preferences. In Table 1, we introduce the most relevant contextual factors that define the performance of a business model.

We claim that these contextual factors explain the differences between businesses of project supplier firms. Thus firms cannot directly copy successful business models from other companies in different market, but they need to be tailored to fit specific businesses. Also, when comparing successful business models applied by their competitors, project supplier firm has to evaluate, whether it can more effectively implement similar business

<table>
<thead>
<tr>
<th>Business environment related factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Customers’ strategies and preferences</td>
</tr>
<tr>
<td>- Accepted methods of doing business in the market segment</td>
</tr>
<tr>
<td>- Industry dominant logic</td>
</tr>
<tr>
<td>- Competitive situation</td>
</tr>
<tr>
<td>- The distribution of capabilities and resources in the value chain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project-based firm related factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Market and technological uncertainty</td>
</tr>
<tr>
<td>- Resource, market and technological interdependence between projects</td>
</tr>
<tr>
<td>- Discontinuity between delivered projects to a customer or market segment</td>
</tr>
<tr>
<td>- Relative size and frequency of project deliveries</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project related factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Project novelty – newness of the technical solution to the market</td>
</tr>
<tr>
<td>- Project uniqueness – similarity of a project compared to previously delivered projects</td>
</tr>
<tr>
<td>- Technical and organizational complexity of a project</td>
</tr>
<tr>
<td>- Uncertainty related to project goals, technology or implementation process</td>
</tr>
<tr>
<td>- Distribution and total cost in project lifecycle</td>
</tr>
</tbody>
</table>

Table 1. Contextual factors in project business
model. For example, competitors may have competences or resources that are not available in the supply chain, which makes their business model difficult to imitate. Traditionally technical product has been considered as the most important element in ensuring competitive advantage, but especially in mature markets it is difficult to differentiate with products and project suppliers are combining their product with services (Artoo, Wikström, Helstöm & Kujala, 2008). System integration, the capability to integrate complex systems including product and services, has become one of the key competences for project supplier firms (Hobday, Davies & Prencipe, 2005). It is also difficult to create and imitate, which makes it possible for a project supplier to gain sustainable competitive advantage with a superior system integration capability.

The impact of contextual factors on the design and performance of the business model

External business environment related factors are the primary drivers for selecting a specific business model. Customer strategies, competition and industry dominant logic constraint the choices available in the markets, but innovative project supplier firm may take a lead in proposing new ways of doing business and expand their scope of delivery. For example they may provide support for feasibility study and investment decision process or after the delivery to responsibility to operate the system. However, the adaptation of new types of business models is influenced by whether they are accepted by customer and they provide competitive advantage. Supplier can extend its role only when the customer’s strategy is compatible with the aimed role (Helander & Möller, 2007). In some cases applying new business models may require “educating” the customers on new ways of doing business or involving them more closely in the design of new types of products or services.

The distribution of capabilities and competences in the value chain impacts the project supplier firm’s role in the value chain. From a project supplier point of view, the challenge is that the implementation of new business models often requires different competences and capabilities, which have to be taken into account when positioning the company in the value chain. All firms’ in the value chain are looking for most profitable position and have their own strategies and related business models. The project supplier firm must select a role that fits its strategic objectives and provides competitive advantage. For example, for a small supplier with superior technical stand-alone product, the most profitable position is to stay in the role of subcontractor as compared to become a system integrator with large responsibility for overall system delivery.

In the selection and design of a business model it must be understood that the knowledge held by managers about the business environment is biased by earlier successes of the firm (Chesbrough and and Rosenboom, 2002). This process is also cognitively limited by dominant logic prevailing in the industry, which filters out new ideas and causes path dependent behavior. Differences in risk attitude may also have significantly influence on managerial decision making. Thus the choice of a business model is not only constraint by external business environment, but cognitive limitations in the rationality of managerial decision making process.

The success of the select business model is influenced by contextual factors on the project and project-based firm level. For example, if projects are delivered to a market segment or geographical region on a rather infrequent basis, the cost structure has to be tailored to take account into changes in demand by keeping the fixed cost under control and use of subcontracting for project deliveries. Another example would be after sales services provided to the customer. If technological solutions are mature and standardized in the industry, there might be a lot local competition from small service firms, which makes it difficult to maintain margin levels for a larger project supplier with higher overhead costs. In figure 1 we present a framework which explains how contextual factors influence selection, design, and performance of a business model.

Conclusion

In this paper we identify relevant contextual factors which have to be taken into account when defining the business model of a project supplier firm. Business level factors, such as customer strategy, dominant logic in the industry and competition can be considered as constraints to which type of technically effective business models can be implemented in practice and provide competitive advantage to create profitable business. Cognitive limitations in the rationality in of the managerial decision making process emphasize the role management in the design and selection of a business model. The contextual factors in project based-firm and in individual projects influence performance of selected business model.

From a managerial point of view, the purpose of this paper is to help managers to analyze their project business and to select the most profitable business model. The list of contextual factors can also be used to provide as a communication tool i.e., as a check list of factors to discuss about, when discussing factors that have influence on running business with customers and subcontractors. As such, the factors can be used to create a shared understanding of the business logic and to help designing the business model that provides benefits for all firms in the value chain, with balanced short-term and long-term benefits. Project supplier firms may also attempt to influence the contextual factors for their business advantage. For example, modular design has been introduced as a means to standardize project components and reduce interdependencies between them, which allow different types of business approaches in the design of a value chain (Hellstöm, 2005).

Our research expands the contingency approach in project research related to individual projects (cf. “one size does not fit for all projects”, see Shenhar 2001) to the business of a project-based firm. In accordance to Shenhar and Dvir (1996), who claim that the contingency approach could provide a basis for the

---

Figure 1. Contextual factors influence the selection, design and performance of the business model of a project based firm
theory of project management, we propose that contextual factors that explain the emergence and performance of different types of business models could provide a basis for a theory of project business.

References


Mandák T., & Veres Z. (1998) The D-U-C model and the stages of the project marketing process, In: Halinen K., Nummela. (Ed.) 14th IMP annual conference proceedings (pp. 471–490), Turku School of Economics and Business Administration, Turku, Finland


Prof. Jaakko Kujala
Dr. Jaakko Kujala is professor of project and quality management at Department of Industrial Engineering and Management at University of Oulu and adjunct professor at Helsinki University of Technology, where he is working with project business research group at BIT research centre. He has over ten year international work experience in automation system project business before joining the academia. His research interests include: 1) project sales and marketing process, 2) global project networks and project stakeholder management, and, 3) business models for project-based organizations.

E-mail: jaakko.kujala@oulu.fi

Karlos A. Arto
Dr. Karlos Arto is professor of project business at the Department of Industrial Engineering and Management at the Helsinki University of Technology (HUT), Finland. His current research interests include: 1) management of project-based organizations and strategic management of multiple projects, project portfolios, and programs; 2) management of innovation, technology, R&D, new product development and operational development projects in different organizational contexts; 3) project networks and project delivery chains, and; 4) risk management, with the emphasis on management of business opportunities in uncertain business environments. For more information, the Project Business research group’s site at HUT is: http://pb.hut.fi/

E-mail: karlos.artto@hut.fi

Annaleena Parhankangas
Dr. Annaleena Parhankangas is an associate professor at New Jersey Institute’s School of Management and the holder of the Henry J. Leir Professor Bio-Business. During the past years, she has also worked as professor at Helsinki University of Technology and as a visiting scholar at Rensselaer Polytechnic Institute, the Wharton School of Business, and Chalmers University of Technology, Sweden. Her research interests centers around the questions of how inter-organizational relationships of technology-based ventures affect the direction and speed of technology development and commercialization. She is also interested in comparing the nature and outcome of entrepreneurial and innovative activities in different countries.

E-mail: parhanka@amd.njit.edu