

SERVITIZED BUSINESS MODELS IN PROJECT-BASED FIRMS: THE CASE OF ENERGY EFFICIENT ARCHITECTURE

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ABSTRACT

Business models of project-based firms have traditionally been based on delivering value through the product. In the building sector, the customer perceives value only when it receives the finished building, at which point it terminates its relationship with the firm. New research strands on value in use and the employment of new business models lead us to propose the creation of new solutions that can include services as part of the firm's offering for the consumer. This proposal involves increasing both the value perceived by the customer and the benefits to be obtained by integrating all phases of the business, thereby achieving a lasting relationship with the customer. In the context of energy-efficient buildings, technological innovation and the particularities of design, installations, maintenance and use are presented as an ideal framework for studying the introduction of the phenomenon of servitization into the business models of project-based firms (PBFs). In this article, we attempt to evaluate how servitization gains a leading role in existing business models in this area. We will propose a structure for new business models in this sector and, through case study, examine what kinds of models are emerging. We will then analyse these models and propose improvements for integrating services into all phases of the business.

KEYWORDS: Servitization, Project-based firms, Case study

1 INTRODUCTION

It is becoming increasingly clear that today's companies are undergoing a change in their supply chains (Wise and Baumgartner 1999; Bustinza, Parry, Vendrell-Herrero 2013). This transformation occurs with the transition from a business model grounded only in the sale of products to a new model based on offering integrated solutions in a combination of products and services (Neely 2008). The creation of value by adding services to the product has been termed "servitization" (Vandermerwe and Rada 1988).

To date, the literature on servitization has focused primarily on the manufacturing sector (Baines *et al.* 2009). Clear differences exist, however, between manufacturing firms and PBFs. These include discontinuity of demand, complexity of offers, and individuality of the content and structure of each project (Cova *et al.* 2002). As a result, the role that the different elements in the business models of PBFs play differs from that of the manufacturing industry and remains unresolved in the general literature on servitization (Arto *et al.* 2008).

A gap exists in the literature on servitization in PBFs, and this research will attempt to contribute new knowledge of this area. The scholarly goal of this paper is to develop a framework to describe servitization in PBFs. Specifically we attempt to study how servitization affects business models that emerge in construction firms that build energy-efficient buildings.

We justify our focus on the growing implementation of the process of servitization in PBFs, as well as on the need to redefine the business model in the construction sector (Barrett 2005). These two

tendencies are altering the way firms obtain benefits, leading PBFs to face new challenges in business design and organizational structure (Brady and Davies 2004).

We also detect the presence of two factors in favour of servitization in the sector of energy-efficient buildings: consumers' increasing interest in the behaviour of investments during the life cycle of products (Stremersch *et al.* 2001) and the complexity stemming from technological innovation (Crespin-Mazet and Ghauri 2007).

This article attempts to respond to the following two research questions: How is servitization affecting the business models of PBFs in the area of energy-efficient buildings? And, what new business models are emerging in this sector?

2 LITERATURE REVIEW

2.1 Servitization

Servitization may be conceptualized as the transformation of a firm from a focus on selling products to selling complete solutions (Baines *et al.* 2007). Servitization is based on the emergence of bundles that combine services, products and knowledge to add value to the traditional firm offerings (Vandermerwe and Rada 1988). One of the main premises is customer orientation, rendered necessary by the inclusion of services in those bundles, and thus changing the widely used paradigms of value (Vargo and Lusch 2004).

As explained above, servitization is primarily customer oriented. The creation of value is understood through the eyes of the customer (Brady *et al.* 2005), changing the traditional view of value creation (Slywotsky and Morrison 1998). Service Dominant Logic also focuses on value generation, establishing that the customer acts as a co-creator of value and viewing goods as merely instruments for the delivery of services (Vargo and Lusch 2004). In this context, service operations must focus on strategies to match customer expectations with customer perceptions (Armistead and Clark 1993). The integration of services is a strategic tool that has been recognized as a source of sustainable competitive advantage (Cohen *et al.* 2006).

2.2 Business models

The business model can be described simply as the way that a firm sets its business strategy in motion (Chesbrough and Rosenbloom 2002). The literature provides many general definitions of the business model, many of which assume that this model represents the logical foundations of how the firm generates and captures value (Amit and Zott 2001)

The concept of the business model draws on various theories (Morris *et al.* 2005). Starting from the idea of value chain (Porter 1985) and strategic positioning (Porter 1996), business models comprise the architectural configuration at an operational level, and vision, value creation, network and alliances at the strategic level. Since business models seek competitive advantage based on configuration of resources, the RBV of the firm (Penrose 1959), the Knowledge-Based View (Grant 1996) and the Theory of Dynamic Capabilities of the firm (Teece and Pisano 1994) are applicable in this framework.

2.3 Project based firms

Project-based firms are firms structured around the projects they carry out (Gann and Salter 2000). This kind of business is developed in temporary organizations established to achieve a specific objective rather than through continuous manufacturing or service activities (Packendorff 1995). PBFs provide a unique solution for the customer (Hobday 2000).

Business performed through a project differs from other kinds of business, due mainly to the specific relationship to the context surrounding the project itself, time constraints, characteristics of value creation, complexity, the degree of uncertainty, and the minimal possibility of normalization of processes (Hellström 2005). Management of projects is performed independently (Hobday 2000), limited primarily by the contractual agreement with the customer (Turner 1999).

The importance of PBFs is more than justified; they contribute considerably to the GDP of the most advanced economies (Knight Wendling Consulting 2000).

2.4 Energy efficient buildings

The rapid growth in world-wide consumption is a problem that worries governments and citizens, due to the difficulties of supplying energy, the exhaustion of energy resources, and the strong impact of energy production on the environment (Pérez-Lombardet *et al.* 2007).

The concept of energy efficiency in buildings is related to the reduction of energy consumption to the minimum needed to achieve desirable environmental conditions (Omer 2008).

Based on construction standards, the goal of these constructions is to achieve perfect climatization. These standards thus require a degree of supervision and feedback that are very interesting for considering the inclusion of specific services after execution of the building. It is worth pointing out that the conceptual phase of the design of a building is the best time at which to integrate all of the strategies geared to reducing energy consumption (Wang, Rivard and Zmeureanu 2006). This procedure indicates the value of attempting to obtain a business model that attributes great importance to the study and design stages.

Design of buildings based on energy-saving criteria reduces economic costs throughout the useful life of the construction, recovering the initial investment in a short period of time.

3 FRAMEWORK DEVELOPMENT

In what follows, we will draw on the relevant existing literature to propose a structure to ground servitized business models for firms in the sector of energy efficiency building. We will then analyse the importance of servitization in the model proposed through a series of factors that measure the impact of services in the development of the business.

It is important to note that developing business models based on services within PBFs requires abandoning the idea that value centres exclusively on the project-delivery phase (Davies *et al.* 2006). The project should be understood as a process that includes phases before and after the construction process and the customer's receipt of the building. It should find ways to add services to each of these phases, ensuring that the customer perceives value in each phase. Thus, a firm that supplies projects should study carefully what services to include during the different phases of the life cycle of the solution it provides (Artto *et al.* 2008).

Figure 1 illustrates our proposal for the business structure assimilable to PBFs in the sector studied here. In the figure, we can see three different phases in the development of the project over time. Each phase proposes the basic associated services that can be provided.

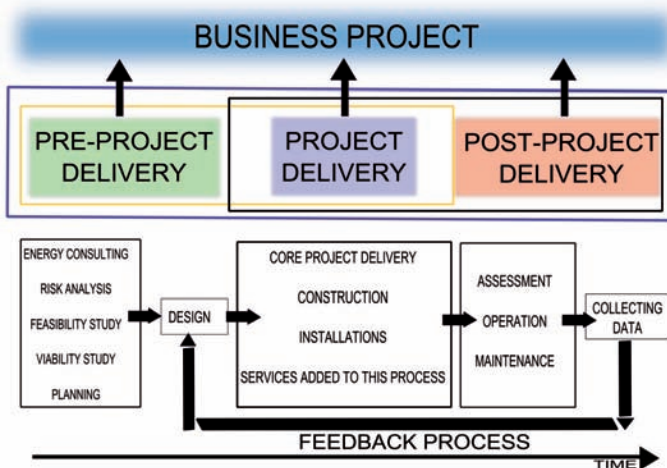


Figure 1: Framework for servitized business models in energy-efficient architecture

Pre-project-delivery phase: this is the first phase, in which the services involving the technical, commercial and economic viability of the project are developed (Ernst 2002). A good technical and economic study of the project will contribute decisively to the project's success (Blindenbach-Driessen and Van den Ende 2006), as it will enable the definition of more realistic goals and provide a better determination of the behaviour of the investment (Cooper 2001). We propose that this first phase include the services for planning and risk analysis, which will also contribute to establishing more precise deadlines.

Providing services in the pre-project phase will be important for the customer's conception of value. The more complete the initial studies, the more attractive the building will be to the customer. The capacities that firms show in this pre-sale phase take on significant importance in the case of PBFs as compared to other firms. They can become decisive factors in obtaining the success of the project (Blindenbach-Driessen and Van den Ende 2006).

Project-delivery phase: This is the phase that includes the essential activities of the development of the project: acquisition of materials, execution of construction, installations and some services added to the construction process itself, such as the preparation of reports on the evolution of the work and expenses incurred during its execution. This stage ends with delivery of the project to the customer.

Post-project-delivery phase: PBFs currently should tend to provide services beyond the project-delivery phase (Artto *et al.* 2008). The post-project-delivery phase thus includes all services that can be provided to the customer once the building is delivered. Services of evaluation, operation and maintenance will be especially important, since they are services that provide the firm with an incoming flow of capital that will fluctuate less and be more sustainable over time (Windahl 2004). The same services will also make it possible to collect basic data on the functioning of the building. Through management of the building, it will be possible to correct and improve designs and planning, increasing the efficiency of the final product and the general process.

Another issue to stress in business models of PBFs is that they are usually developed at the level that the customer requests for each project (Tikkanen *et al.* 2005). Generally, firms must offer different business models for the different consumers and markets (Chesbrough and Rosenbloom 2002). PBFs must therefore adapt their business model to the customer's requirements in each project, combining or individualizing the different phases when necessary.

Through the bibliographical review of services and empirical research with PBFs, Artto *et al.* (2008) identify six kinds of different types of impact that describe how services influence the business of a PBF. Since these issues were proposed in the context of PBFs, we consider them useful for analysing the degree of servitization of the model developed.

The following table (Table1) analyses these factors, showing the impact associated with each factor on the business model and proposing the associated services corresponding to each factor for firms in the energy-efficient building sector.

Table 1: Impact of services on business project for energy-efficient buildings.

Impact Type	Impact on the business model	Services Proposed
Customer Entry	Services to encourage customer to enter into the business transaction, thereby also becoming a potential customer for other services and projects in the future.	<ul style="list-style-type: none"> - Energy consulting - Free pre-designs - Risk analysis - Planning studies
Customer's Perception of Value	Associated services that increase the consumer's perception of value, making the product in itself more attractive, profitable and easy to manage.	<ul style="list-style-type: none"> - Energy consulting - Economic studies of profitability - Full management of the project
Delivery efficiency	Services suited as closely as possible to the customer's expectation for the final product, in this case, the building	<ul style="list-style-type: none"> - Design in collaboration with the customer - Technical and economic planning suited to the interests of both parties
Competitive advantage	Competitive advantages with the proposed model can be obtained from any of the phases by offering services that increase the attractiveness of the main product. The greater the quantity and exclusiveness of the services offered, the more difficulty the competition will have in imitating them and the greater the possible competitive advantage.	<ul style="list-style-type: none"> - Integration of all phases of the project. - Use of information from the post-project phase to improve the design and exploitation phases.
Services Business	Services as a source of own income. Services that have greater continuity over time and thus permit constant and predictable income.	<ul style="list-style-type: none"> - Consulting - Maintenance - Operations - Physical execution
Innovation and learning	Services associated with the building that permit increase in technical and operations knowledge, permitting the development of a process of continuous improvement in the business model.	<ul style="list-style-type: none"> - Evaluation - Operation of systems - Maintenance - Physical execution - Integration of phases

4 RESEARCH METHODOLOGY AND FINDINGS

The research adopted a single-case study approach to analyse the characteristics of the business models used and the organizational adaptation of the firm to the servitization process. This analysis will give us closer, more realistic knowledge of the current development of servitization in business models of companies from this sector.

The case study as research methodology can be defined as the empirical investigation of a phenomenon within its context (Yin 2003). This is a very effective tool when analysing complex processes that are ongoing and providing information for the development of new theories (Eisenhardt 1989).

Therefore, the research was qualitative and we gathered information through a structured interview with senior managers. The company studied is ASOMA, a Spanish architecture firm that bases its projects on criteria of sustainability and respect for the environment. The questionnaire, adapted from Mertens (2012), focused on analysing the organization of the firm and the characteristics of the business model used, with special focus to the inclusion of services in this model. In general, we can affirm that the firm studied is conscious of some of the advantages that the process of servitization can add to its business model. However, it is also clear that this firm has not yet developed fully the mechanisms and structures needed within the firm to achieve a fully servitized business model. The interviews confirmed a strategic step toward customer focus and customer satisfaction, seeking more fruitful and lasting relationships (Saxon 2002). Collaboration with the customer is sought, especially in the phase of definition of the project.

Another noteworthy aspect is that the firm includes added services especially in the pre-project-delivery phase, with the performance of studies of technical and economic viability, as well as studies that predict the return on investment due to energy savings. However, this procedure is not a matter of providing new services to the customer during the development of the project and the post-project-delivery phase.

The company is conscious of and confirms the advantages derived from providing a “full package” of goods, services, support and knowledge to the customer (Slack 2005). But at present, however, relinquishes the possibility of providing the construction and maintenance phases together (Lind and Borg 2010) and of obtaining competitive advantages through the feedback process defined in our structure, even though the firm recognizes and evaluates this process positively. We also see that the organizational structure should be redesigned to seek a greater focus on services.

Through the questions related to bids on projects, we recognize the current inadequacy of this process the phenomenon of servitization.

5 CONCLUSIONS

In this article, we have developed a study of the process of servitization in the business models of PBFs for energy-efficient buildings.

Has been observed a growing inclusion of services in all phases of the project, especially in the pre-project-delivery phase, in which additional services can be added in the areas of energy, technical and economic consulting that do not apply to sectors other than PBFs. Likewise, operations and maintenance services become more significant due to the special characteristics of this sector. In general, we can affirm that the process of servitization of business models of PBFs is beginning to be felt, although it is still in the development phase.

Through the case study, we observe how the business model currently most adopted by PBFs in this sector is one that provides services for the pre-project phase and ends with delivery of the building. However, based on support from the existing literature, we propose the advantages of managing the full cycle of the project (Slack 2005), including the post-project-delivery phase, which permits more stable income through more lasting services (Davies 2004) and the possibility of implementing improvements in future projects through the data obtained from the evaluation, operation and maintenance of this kind of building, what we call the feedback process.

6 MANAGERIAL IMPLICATIONS

We have proposed a structure adapted to PBFs, on which to ground the different business models that this kind of firm can adopt. During each of the phases, we propose the inclusion of the best services to encourage the development and exploitation of the project. We also recommend to establish a more direct and lasting relationship with the customer (Kujala *et al.*2010), achieving a win-win situation in which the customer not only obtains a project fully adapted to his/her needs and aspirations but also knows the project's future behaviour, in both energy savings and investment.

Further, we have studied the impact of services within the business model in PBFs, identifying services that can be added to correspond to each impact factor. Knowing these impact factors is important to becoming more aware of the influence of services on the business model of PBFs, which

enables managers to develop new offers that attempt to improve the process and that are more attractive to customers.

We propose management of the “full package” as the ideal servitized business model for this sector and the model that can provide the best competitive advantages (Windahl 2004). Full management permits studying the project, involving the customer from the initial stages, and developing solutions together (Ernst 2002). The construction process will clearly work better if it is performed by the same company that made the design and previous studies, a process that also enables better planning, avoids delays and provides technical and economic viability with less uncertainty (Blindenbach-Driessen and Van den Ende 2006; Cooper 2001). In addition, the services related to managing the building once it is delivered will be enhanced by all of the prior knowledge from study and construction that the firm itself possesses (Bennett and Iossa, 2006). This procedure enables greater profitability for the customer and less likelihood of problems stemming from lack of information about previous stages.

The information coming from evaluation, operation, maintenance and diagnostic services becomes crucial for developing a feedback process within the firm to allow preliminary studies, designs and construction methods that are increasingly better adapted to the problems that typically arise. From the case study performed, one can deduce that firms in this sector should take the step to adopt structures that permit them to achieve the integrated management of projects. It is necessary gradual changes in operations and management with a paradigm change in the entire way of working to achieve servitization (Barnett *et al.* 2013). The firm must promote the capturing of customers more actively through services (Brentani and Ragot, 1996).

REFERENCES

- Amit R, Zott C. 2001. Value creation in e-business. *Strategic Management Journal* **22**(6–7): 493–520.
- Armistead C, Clark G. 1993. Resource activity mapping: the value chain in service operations strategy. *Service Industries Journal* **13**(4): 221–239.
- Artto K, Wikström K, Hellström M, Kujala J. 2008. Impact of services on project business. *International Journal of Project Management* **26**(5): 497–508
- Baines T, Lightfoot H, Evans S, Neely A, Greenough R, Peppard J, Roy R, Shehab E, Braganza A, Tiwari A, Alcock J, Angus J, Bastl M, Cousens A, Irving P, Johnson M, Kingston J, Lockett H, Martinez V, Michele P. 2007. State-of-the-art in product-service systems. *Proceedings of the Institution of Mechanical Engineers -- Part B -- Engineering Manufacture* **221**(10): 1543–1552.
- Baines T.S., Lightfoot H.W., Benedettini O, Kay JM. 2009. The servitization of manufacturing. *Journal of Manufacturing Technology Management* **20**(5): 547–567.
- Barnett N, Parry G, Saad M, Newnes L, Goh Y. 2013. Servitization: is a paradigm shift in the business model and service enterprise required? *Strategic Change* **22**(3-4), 145-156
- Barrett P. 2005. Revaluing construction: a global CIB agenda. International Council for Research and Innovation in Building and Construction (CIB): Rotterdam.
- Bennett J, Iossa E. 2006. Building and managing facilities for public services. *Journal of Public Economics* **90**(10): 2143–2160.
- Blindenbach-Driessen, Van den Ende. 2006. Innovation in project-based firms: the context dependency of success factors. *Research Policy* **35**(4): 545–561.
- Brady T, Davies A. 2004. Building project capabilities: from exploratory to exploitative learning. *Organization Studies* **25**(9): 1601–1621.
- Brady T, Davies A, Gann D. 2005. Can integrated solutions business models work in construction? *Building Research and Information* **33**(6): 571–579.
- Bustinza, O.F.; Parry, G.; Vendrell-Herrero, F. 2013 “Supply and Demand Chain –Management: The effect of adding services to product offerings”. *Supply Chain Management: An International Journal*, **18**(6): 618 – 629.
- Chesbrough H, Rosenbloom RS. 2002. The role of the business model in capturing value from innovation: evidence from Xerox corporation’s technology spin-off companies. *Industrial and Corporate Change* **11**(3): 529–555.
- Cohen M, Argrawal N, Arawal V. 2006. Winning in the after market. *Harvard Business Review* **84**(5): 129–138.

- Cooper RG. 2001. *Winning at New Products, Accelerating the Process from Idea to Launch*. Perseus Publishing: Cambridge.
- Cova B, Ghauri P, Salle R. 2002. *Project Marketing: Beyond Competitive Bidding*. John Wiley and Sons Ltd.: West Sussex.
- Crespin-Mazet F, Ghauri P. 2007. Co-development as a marketing strategy in the construction industry. *Industrial Marketing Management* **36**(2): 158–172.
- Davies A. 2004. Moving base into high-value integrated solutions: a value stream approach. *Industrial and Corporate Change* **13**(5): 727–756.
- Davies A, Brady T, Hobday M. 2006. Charting a path toward integrated solutions. *MIT Sloan Management Review* **47**(3): 39–48.
- Eisenhardt KM. 1989. Making fast strategic decisions in high-velocity environments. *Academy of Management Journal* **32**(3): 543–576.
- Ernst H. 2002. Success factors of new product development: a review of the empirical literature. *International Journal of Management Reviews* **4**(1): 1–40.
- Gann D, Salter A. 2000. Innovation in project-based, service-enhanced firms: the construction of complex products and systems. *Research Policy* **29**(7–8): 955–972.
- Grant RM. 1996. Prospering in dynamically-competitive environments: organisational capability as knowledge integration. *Organization Science* **7**(4): 375–387.
- Gronroos C. 2004. The relationship marketing process: communication, interaction dialogue, value. *Journal of Business and Industrial Marketing* **19**(2): 99–113
- Hellström M., Wikström K. 2005. Project business concepts based on modularity – improved manoeuvrability through unstable structures. *International Journal of Project Management* **23** (5): 392–397
- Hobday M. 2000. The project-based organisation: an ideal form for managing complex products and systems? *Research Policy* **29**(7): 871–893.
- Knight Wendling Consulting. 2000. *Bedrijfstaktoets*. Ministerie van Economische Zaken: Nederland.
- Kujala S, Arto K, Aaltonen P, Turkulainen V. 2010. Business models in project-based firms: towards a typology of solution-specific business models. *International Journal of Project Management* **28**(2): 96–106.
- Lind H, Borg L. 2010. Service-led construction: is it really the future? *Construction management and Economics* **28**(11): 1145–1153.
- Mertens B. 2012. *Servitization of Project Business: A Case Study at Heijmans Non-Residential Building*. Master Thesis. Master of Science in Innovation Management: TUE.
- Morris M, Schindehutte M, Allen J. 2005. The entrepreneur's business model: toward a unified perspective. *Journal of Business Research* **58**(6): 726–735.
- Neely A. 2008. Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research* **1**(2): 103–118.
- Omer AM. 2008. Energy, environment and sustainable development. *Renewable and Sustainable Energy Reviews* **12**(9): 2265–2300.
- Packendorff J. 1995. Inquiring into the temporary organization: new directions for project management research. *Scandinavian Journal of Management* **11**(4): 319–333.
- Penrose E. 1959. *The Theory of the Growth of the Firm*. Wiley: New York.
- Pérez-Lombard L, Ortiz J, Pout C. 2007. A review on buildings energy consumption information. *Energy and Buildings* **40**(3): 394–398.
- Porter ME, Millar VA. 1985 How information gives you competitive advantage. *Harvard Business Review* **65**(3): 149–160.
- Porter M. 1996. What is strategy? *Harvard Business Review* **74**(6): 61–78.
- Saxon R. 2002. The industry 'formerly known as construction': and industry view of the Fairclough Review. *Building Research and Information* **30**(5): 334–337.
- Slywotzky, A., & Morrison, D. J. (1998). *The profit zone: How strategic business design will lead you to tomorrow's profits*. Chichester: John Wiley and Sons
- Slack N. 2005. Operations Strategy: will it ever realize its potential. *Gestao and Producao* **12** (3): 323–332.
- Stremersch S, Wuyts S, Frambach RT. 2001. The purchasing of full-service contracts: an exploratory study within the industrial maintenance market. *Industrial Marketing Management* **30**(1): 1–12.

- Teece DJ, Pisano G. 1994. The dynamic capabilities of firms: an introduction. *Industrial and Corporate Change* **3**(3): 537–556.
- Tikkanen H, Lamberg JA, Parvinen P, Kallunki JP. 2005. Managerial cognition, action and the business model of the firm. *Management Decision* **43**(6): 789–809
- Turner JR. 1999. *The Handbook of Project-based Management*. McGraw-Hill: Berkshire.
- Vargo SL, Lusch RF. 2004. Evolving to a new dominant logic for marketing. *Journal of Marketing* **68**(1): 1–17.
- Vandermerwe S, Rada J. 1988. Servitization of business: adding value by adding services. *European Management Journal* **6**(4): 314–324.
- Wang W, Rivard H, Zmeureanu R. 2006. Floor shape optimization for green building design. *Advanced Engineering Informatics* **20**(4): 363–378.
- Windahl C, Andersson P, Berggren C, Nehler C. 2004. Manufacturing firms and integrated solutions: characteristics and implications. *European Journal of Innovation Management* **7**(3): 218–228.
- Wise R, Baumgartner P. 1999. Go downstream: the new imperative in manufacturing. *Harvard Business Review* **77**(5): 133–141.
- Yin RK. 2003. *Case Study Research*. Sage: London.