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Business modeling for services: Current state and research perspectives

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ABSTRACT

This paper reviews business model literature from the perspective of extant business modeling approaches in order to discover research gaps and to outline perspectives which show the possible development of business model modeling. Due to the growing importance of services for many companies and the resulting transformation of product based business models to service based business models, the paper focuses on the link between business models and services. Thus the paper identifies how the business model construct can provide support for the analysis and design of service business models. The contribution ends with a brief discussion of missing service-related aspects.

Keywords

Business model, literature review, modeling.

INTRODUCTION

Services are a key driver of growth and profitability for many companies (Chesborough and Spohrer 2006). Particularly firms in technology industries, such as IT, aerospace, medical technology, and automotive capture an increasing share of their income and profits with services (Neely 2008). For these enterprises, services thus have become an essential part of their business models. This leads the companies to transform their product based business models more and more to service based business models.

Business modeling allows analyzing, developing and comparing different value creation approaches (Osterwalder, Pigneur and Tucci 2005). As a consequence, business modeling could help companies to develop novel approaches to creating and capturing value with services. This paper therefore examines current approaches to business modeling with regard to the support these approaches provide for the analysis and design of services. The special focus on business modeling and service business models distinguishes this paper from existing literature reviews like Pateli (2002) or Conte (2008).

The paper is structured as follows: we first introduce criteria for comparing different business model approaches, followed by a brief exposition of the compared approaches¹. Then, we discuss a detailed comparison of business modeling approaches according to the criteria introduced in the first section. For each criterion we discuss how business modeling could support the analysis and design of service business models. Finally, we derive conclusions for future research on service business models based on the discussion.

COMPARISON CRITERIA AND EXAMINED APPROACHES

Comparison Criteria

The following section introduces comparison criteria to examine the current state of the business model discussion as well as to determine the support of extant approaches for service-specific aspects. They derive from the main research views on business models, enumerated by Pateli (2002), and should consider in particular the modeling aspects of business models.

The chosen criteria are the objectives of business modeling, the structure of the business model, the modeling process, and the representation of the business model. These criteria are not specific to services. For each criterion, however, we

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highlight aspects that are critical for analyzing or developing service business models in the detailed discussion of the criteria in the subsequent review of the extant approaches.

The first criterion is intended to capture the **objective** of the considered literature and to discover the overall targets of each approach. Based on this criterion it should be examined for what purpose the respective authors described, analyzed and compared business models. At the same time it should be reviewed, how and what for the business model is used.

The second criterion describes the **structure** and the elements of a business model as well as the relationships between those elements. The structure should be considered exclusively, because there is no general accepted definition of the business model construct so far and it is possible to discover differences between each of the sources. The identified expression for this criterion is also called a business model element.

The third criterion of this study analyses the possible **modeling processes** in the development process of business models. This is a specific definition of a procedure or process, which is used to structure the design of a business model.

The type of **representation** is the fourth criterion of this analysis. At this point it should be examined whether there are approaches for a structure for the representation of business models. A standardized representation of business model elements can be used in particular in the modeling of business models.

The detailed topics of the four criteria iteratively derive from reviewing the papers.

Examined Approaches

The following section presents briefly the considered approaches we reviewed. The first approaches were selected pragmatically during a general search. Building on this foundation, we analyzed reference lists and selected other approaches. All of the selected approaches give a definition of the term business model. Moreover the business model construct is used as a main part of the contribution.

Table 1 gives a short summary of the selected contributions.

Sources	Summary
Timmers, 1998	In the early stage of business model theory development, Timmers (1998) develops a framework for classification of Internet electronic commerce business models. He considers in particular which emerging business models exist and which strategic marketing approaches can be used.
Ethiraj, Guler and Singh, 2000	Ethiraj et al. (2000) investigate the influences of “[...] Internet and electronic technologies [...]” (Ethiraj et al., 2000), in terms of general market movement and changes in the value chain in order to present possible opportunities for the creation of new businesses.
Zimmermann and Alt, 2001	Zimmermann et al. (2001) deal with the different perspectives on the construct of the business model. They examine different definitions of business models and establish a structure to identify their critical elements.
Gordijn and Akkermans, 2001	Gordijn et al. (2001) introduce a conceptual methodology for modeling business models called e ³ -value™. This should lead to a better understanding and better communication of business models.
Chesbrough and Rosenbloom, 2002	Chesbrough et al. (2002) investigate the role of business models in the capturing of technology based value. In particular, the origins of selected subsidiary of XEROX PARC are considered.
Slywotzky and Morrison, 2002	Slywotzky et al. (2002) analyze the experiences of successful business ideas and business models in order to derive ideas for future business models.
Hedman and Kalling, 2003	Hedman et al. (2003) define a business model concept to explain the relationship between information systems and business strategy.
Amit and Zott, 2004	Amit et al. (2004) consider the design of organizations and analyze the impact of the design of business models on the company's success. Therefore, they made an empirical study on 190 young and growing companies.
Osterwalder, 2004	Osterwalder (2004) examines how business models can be described and illustrated. He aims to develop a basis for generating new concepts and tools. The results of his work should be implemented in computer-based tools.

Amit and Zott, 2006	Amit et al. (2006) analyze the compatibility between the marketing strategy of a product and its business model. The paper is based on an empirical study of 170 randomly selected companies.
Harreld, O Reilly and Tushman, 2007	Harreld et al. (2007) describe the transformation of IBM and its management in a time of crisis, to have a successful new start and how dynamic skills helped in this situation.
Ballon, 2007	Ballon (2007) develops a theoretically framework for the development and analysis of business models for systems and services in the (mobile) information and communication technology.
Candrasekra, 2008	Candrasekra (2008) studies how to adapt existing business models of mobile operators to prepare them for future mobile technologies and other trends.
Bask, Tinnilä and Rajahonka, 2010	Bask et al. (2010) analyze service strategies, service-related business models and business processes in logistics services.

Table 1. Examined Approaches

RESULTS OF THE ANALYSIS

Table 2 shows the results of the comparison with regard to objective, structure, modeling process and representation. The criteria described in Chapter 2 are shown in the columns whereas the approaches are listed in the lines.

	Objective						Structure									Modeling process		Representation	
	Classification and analysis	Innovation	Performance Measurement	Business Model Theory	Modeling Theory	Reconfiguration of the value chain	Value proposition	Value appropriation	Funding and costs	Customers	Networks and activities	Technologies, resources and skills	Strategy, scope, sustainability and leadership	Value flow	Legal	Questions	Graphical structuring	Data model	Graphical
Timmers (1998)	√	-	-	√	-	√	√	√	-	-	√	-	√	-	-	-	-	-	-
Ethiraj et al., 2000	-	√	-	-	-	√	√	√	-	-	-	√	-	-	-	-	-	-	-
Zimmermann et al., 2001	-	-	-	√	-	-	√	√	-	√	√	√	-	√	√	√	-	-	-
Gordijn et al., 2001	-	-	-	-	√	-	√	-	-	√	√	-	√	√	-	-	√	-	√
Chesbrough et al., 2002	-	√	√	-	-	-	√	√	√	-	√	-	√	-	-	√	-	-	-
Slywotzky et al., 2002	√	-	-	-	-	-	√	√	-	√	(√)	-	√	-	-	√	-	-	√
Hedman et al., 2003	-	-	-	√	-	-	√	-	-	√	√	√	√	-	-	√	-	-	-
Amit et al., 2004	-	√	√	-	-	-	√	-	-	-	-	-	√	-	-	-	-	-	-
Osterwalder, 2004	-	-	-	√	√	-	√	√	√	√	√	√	-	-	-	√	√	√	√
Osterwalder et al., 2010	-	-	-	√	√	-	√	√	√	√	√	√	-	-	-	√	√	√	√
Amit et al., 2006	-	√	√	-	-	-	√	-	-	-	√	-	√	-	-	√	-	-	-
Harreld et al., 2007	-	√	-	-	-	-	√	√	-	√	-	-	√	-	-	√	-	-	-
Ballon, 2007	-	-	-	√	-	-	√	√	√	√	√	√	√	-	-	-	-	-	-
Candrasekara, 2008	-	√	-	-	-	-	√	√	√	√	√	√	-	-	-	√	-	-	-
Bask et al., 2010	√	-	-	-	-	-	√	√	√	√	√	√	-	-	-	-	-	-	-

Table 2. Objective, structure, modeling process and representation

Objective

In the extant literature, we identify a total of six different objectives for using the business model construct. The first objective is **analysis and classification**. One way of using business models is to analyze existing businesses and to identify classes of business models that have emerged in an industry or a market. A second objective is the use of business models as part of the **innovation** process within organizations to stimulate the improvement or design of business models as well as to evaluate ideas for new products and services. A third objective is the investigation of the relationship between business models and business performance. Through the identification of critical success factors the business model construct can be used for **performance measurement**.

A fourth objective focuses on **business model theory** itself. This discussion seeks to create a universally accepted definition of business models and structures which can systematize the modeling process of business models. The fifth objective covers the **modeling theory**. This should create structures that can be used to generate a business model.

Finally, business models are used to examine the impact of significant changes in industry. One of these impacts is the **reconfiguration of the value chain** through new business models, e.g. through disintermediation or re-intermediation.

The first topic uses the business model construct for classification and analysis of existing structures and businesses. Timmers (1998) first defines the essential elements (dimensions) of a business model and examines with these dimensions electronic markets for possible classes of business models. As a result he receives classes of business models such as e-shop, e-procurement, e-auction and many more. Slywotzky et al. (2002) examine the structure of existing companies in order to derive their business model. Bask et al. (2010) examined the relationship between service strategies, service business models and business processes in enterprises.

The most commonly discovered topic in the literature review is the design of business models as part of the innovation process. Ethiraj et al. (2000) primarily consider the value chain and the opportunities that arise through an innovative business model. Chesbrough et al. (2002) describe by the example of the Xerox PARC, the introduction of innovation by setting up new businesses. Based on the history of IBM, Harreld et al. (2007) introduce the need for change in a company and the use for that business model construct. Candrasekara (2008) creates a framework for the successful integration of new technologies in the business models of mobile phone companies. Amit et al. (2004, 2006) follow the implementation of innovations with the aim of developing something new or improving current efficiency. Overall the use of the business model construct for the design of innovation is a central part of the business model discussion. Through modeling alternative business models, the development of innovation can be particularly supported.

Another topic of the considered approaches is the relationship between business models and performance. In particular, the investigations of Amit et al. (2004, 2006) should be mentioned which analyze the effects of different business models on firm performance.

Another large group studies and discusses the business model theory itself. The theory discussion adds the basis for the further use of the business model construct. The main reason for the theoretical discourse is the lack of a general accepted definition of the term. Osterwalder (2004) provides a comprehensive literature review on the term business model and develops a wide definition. In an earlier paper Ballon (2007) discusses an extended form of the business model construct where it is expanded by the new business network dimension. The e³-value™ approach of Gordijn et al. (2001) and the BM²L approach of Osterwalder (2004) discuss two different approaches of the presentation and modeling of business models. To assist its design each author presents a different notation of the business model.

The last objective focuses on value chain reconfiguration. Timmers (1998) and Ethiraj et al. (2000) show how new business models can be established by disintermediation, re-intermediation or reconstruction of parts of the value chain.

Structure

Overall, the structure of a business model construct can be summarized by nine elements. The first and most prevalent element of the structure is the **value proposition**. This element is intended to describe how value is created for the customer. The second element is **value capture**, defining the revenue model. The third element can be summed up under **funding and costs**. This element considers the financing and cost aspects of a business model. The fourth element identifies the target **customers**. The elements **networks and activities** examine the activities within a company or a network of different companies required to implement the business model. **Technology, resources and skills** are the fifth element and define the prerequisites for implementing the business model. The sixth element describes **strategy, scope, sustainability and leadership** and therefore the strategic aspects of a business model. Some add the **value flow** meta model Gordijn et al. (2001) as a seventh element, specifying the exchange relationships between different business actors. Finally the eighth element considers the **legal** aspects of the business model.

The value proposition is the central element of any business model and is established by all authors. Value capture is another important element of the business model even though it is not defined by all authors. Those who address value capture also add other financial aspects such as funding and costs.

Two other very prevalent elements are customers as well as networks and activities. The identification of target customers is widely seen as an essential aspect of business models. This also pertains to key activities for implementing a business models as well as the network of partners needed for this implementation. However, it should be noted that Slywotzky et al. (2002) do not consider this element directly. Less frequently used are elements related to technologies, resources and skills as well as to strategy, scope, sustainability and leadership as a further part of the business model.

The final business model elements contain items that were mentioned only once. This means that these items usually correspond to a very specific view of the author. The elements of the business model by Gordijn et al. (2001) are defined by a strong value-driven vision that is summarized in a value flow meta model. The meta model distinguishes itself with its individual elements, like the value interface, value exchange, value port and value object. All other elements by Gordijn et al. (2001) could be associated with the previously mentioned elements. Finally, Zimmerman et al. (2001) introduce the legal element which is, however, not mentioned by other authors.

Researchers and practitioners use the business model construct in a wide range of industries, e.g. IT, telecommunication and media. This demonstrates the wide applicability of the business model construct, irrespective of the focus on products or services. However, the structural elements of the extant approaches provide different levels of support for capturing the business logic of services.

Modeling Process

In a narrow sense no dedicated modeling processes for the creation of business models can be found. All approaches are based on a free creative process. In a wider sense, however, two different approaches are found that can contribute towards generating a business model. The first approach uses **questions** and thus supports the generation of a business model using a questionnaire or a simple categorial system, such as the business model canvas by Osterwalder and Pigneur (2010). This approach works as a guide and should help to structure the answers, to enable the widest possible view of the business model. The second approach attempts to structure the modeling process by a **graphical structure** thus providing a concept to create the business model by using a previously defined structure.

The most often used modeling process is characterized by simple questions and the discussion of the content of the business model dimensions. This means that the modeling of business models must be carried out without previously defined methods or structures. The only help comes from the questionnaire, which should support the modeling of the business model. The second modeling process is based on a graphical presentation form. These approaches are offered by Gordijn et al. (2001) and Osterwalder (2004). A closer examination of these notations will be carried out in the next section of the analysis.

Representation

A possible expression of this criterion is the **data model**. A detailed elaboration of the different elements of a business model enables the development of tools for generation and analysis of business models. A variant is a **graphical** notation form. This form supports the modeling of business models using predefined objects and structures.

In the considered publications, only three authors treated the question of an appropriate representation of business models. Osterwalder (2004) proposes a comprehensive data model with BM²L. With the e³-value approachTM, Gordijn et al. (2001) pursue a graphical representation of business models. Using this approach, an improved communication for decision making in developing the business model, and a more complete understanding of the operations and requirements is made possible. In contrast to Gordijn et al. (2001), Slywotzky et al. (2002) use a simple graphical structure only to analyze the business logic of selected companies.

SUMMARY AND PERSPECTIVES

With the growing role of services, the contribution of services to business models and the transformation of business models become a key challenge for many companies. The wide range of current applications of the business model construct demonstrates that the business model construct is generally well-suited to support the analysis and design of the business logic of services in many contexts. One could even argue that a business model lens is particular helpful for companies in the transition from products to services. Taking the perspective of a business model helps companies to focus on value creation and value capture irrespective whether this involves products or services. Consequently, the thinking in business models prevents companies, which offer products and services, from a premature commitment to a

specific form of implementation. Essential for this is the focus on the underlying value proposition, which first abstracts from the concrete implementation. In addition, by the systematic analysis and the identification of alternative ways, the view will be guided to the revenue models. These alternative revenue models require almost an inevitably move away from pure product transactions, e.g. when moving to value- or usage-dependent pricing models.

Nevertheless, existing business model approaches have a lack in the focus on service-specific aspects. An *objective* currently missing, however, is research that explicitly addresses a changing role of services in business models through the lens of business model research. For example, there is growing interest in **servitization** of manufacturing. Servitization refers to the transition from products to services in manufacturing (Neely 2008). Like value chain reconfiguration, servitization creates opportunities for new business models in traditional manufacturing enterprises, e.g. through pricing based on the utilization or performance of products (Burianek, Bonnemeier and Reichwald 2008).

Other gaps can be found in the *structure* of a business mode. A key characteristic of services is **co-creation**. Co-creation indicates that value creation is often a joint activity of a customer and a provider of services (Vargo and Lusch 2004). A customer may, for example, provide technology and human resources for the implementation of the business model. Consequently, a customer may also be a business actor or partner for realizing the business model.

Related to co-creation is the **front-back logic** for organizing service delivery (Zomerdiak and deVries 2007). The front-back logic acknowledges a trade-off between service experience and efficiency. Every part of service delivery that involves customers influences how customers experience a service. In order to improve experience and customization of service delivery, the front-back logic advocate a separation of customer-facing activities (front-end) from customer-independent activities of service delivery (back-end). Front-end activities are then designed for service experience, while back-end activities are designed for efficient delivery.

In the consideration of the authors, the co-creation played a minor role. Mentioned by Osterwalder (2004) as well as Amit et al. (2004), the PC configurator of DELL is one example for the influence of the customer on the value creation. Ballon (2007) adds to this by stating that sometimes it is necessary to allow the customer an involvement in the construction of the value proposition. Bask et al. (2010) extends this through the possible involvement of the customer in development and evaluation of the services. Other elements of the co-creation are not mentioned. Likewise, none of the extant models explicitly provide support for the front-back logic.

Both approaches at the *modeling process*, questions and graphical structuring, do not provide specific links to product or service development. Therefore, the integration of business modeling with **new service development** (Froehle, Roth and Voss 2000) or service engineering (Bullinger, Fähnrich and Meiren 2003) remains wanting. In part, the generation of a business model raises the same or similar issues as the development of a new service does. Likewise, new service development may benefit from analyzing and generating business models.

In extension of the co-creation aspect, the *representation* of business models could support **actor association**, i.e. the link of customers and other actors to the elements of a business model. Such an association represents and visualizes the contribution of actors to a business model. In particular, this association helps to understand the co-creation aspect involved in a business model. So far, none of the approaches support actor association.

In sum, the current approaches to business modeling do not provide explicit support for service-related aspects that are key for understanding and designing a service-based business logic. More research on servitization with a business model lens could generate a richer view of types of service business models, particular in manufacturing and other technology industries. Moreover, adding elements and relationships to capture and represent co-creation and the front-back logic would provide better support for focusing on critical issues for service design and delivery. Finally, a better integration of business modeling with new service development and service engineering could improve the use of the business model constructs in these processes.

Overall, these calls for a broader application of the business model construct in service research and, simultaneously, for an extension of this construct to better reflect the pressing issues of service engineering and management. This makes this a fruitful field for service research.

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