

Towards an Integrative Component Framework for Business Models: Identifying the Common Elements Between the Current Business Model Views.

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Abstract. The business model literature has surged since the beginning of this millennium, but is currently characterized by a lack of shared understanding of the concept. This lack of consensus inhibits the effective use of business models for achieving business-IT alignment, which includes both formulating the appropriate information system (IS) requirements and using information systems as strategic resources to differentiate business models. To overcome this, the paper proposes an integrative framework, which builds on existing integration efforts in the field. This will allow the initiation of a convergent thinking phase about the business model concept. The research will make use of the Systematic Literature Review (SLR) methodology to rigorously select the relevant research papers.

Keywords: Business Model Concept, Integrative Framework, Systematic Literature Review, Business Model Components

1 Introduction

The business model concept became popular in the late 1990s with the emergence of internet-based enterprises, who used business models as instruments to convince investors of the vast potential of electronic business [1]. Despite of the burst of the internet bubble, the business model concept is still relevant as its underlying economic concepts are not restricted to e-business, but date back to the early conduct of economic trade [2]. Indeed business models reflect the way in which a company implements its strategy, which aims at value co-creation for both the enterprise and its customers. This broad applicability proves that academic study of this concept is still relevant.

The articulation of a business model will determine the kind of information that is needed by the company for the implementation of its strategy. As such, the business model is a major determinant of the functional and non-functional requirements of an information system [3]. Furthermore, the correspondence between the goals of the information system and the business model is crucial to obtain business-IT alignment, which ensures that value is returned on investments in information technology (IT).

The development of the business model concept is a creative problem-solving process, which aims at improving the existing insights. Early thinkers have applied divergent thinking to produce distinct ideas about business models, which has led to an increase in the existing knowledge, but also to the coexistence of several literature streams [4]. Ideally this variety of new knowledge is used in a subsequent phase of

convergent thinking, which aims at developing more rigorous frameworks [5]. A convergent wave of academic research has not yet been initiated for the existing business model literature. Integration efforts were already made in the past (e.g. [1, 6-13]), but there is a lack of shared opinions between these efforts. Although the diversity in thinking can be partly explained by the multi-disciplinary nature of the business model concept [4], there is still no agreement on a common conceptual basis. Consequently, the current business model research is the result of a second wave of divergent thinking, based on the results of the first wave. The development of an integrative framework for business models is an important challenge, since the existing fragmented view often hinders the mutual understanding about the relation between the business and the IS domain [14]. As information systems facilitate the creation of a competitive advantage [9], this lack of mutual understanding inhibits the identification of both the right IS requirements and potential resulting business model opportunities.

The goal of our research is to create a common basis for the business model concept through an integrative framework. We aim at (1) defining the constituting elements of a business model and (2) defining the interrelationships between these elements, which provides a basis for the development of conceptual models. The development of the framework was informed by a literature review as specified by Kitchenham et al. [15, 16], which enabled us to discover and analyze the relevant business model research. In particular, we used papers of the second wave of divergent thinking to develop the integrative component framework for business models. This choice is important as our research aims at the real start of a convergent thinking phase, while not just providing another integration effort.

The structure of the paper is as follows. Section 2 gives an overview of related work within the IS field. Next the SLR will be discussed as the appropriate methodology for the research of this paper. The actual search and analysis of the second-generation business model literature and the resulting framework will be discussed in section 4. Section 5 discusses the conclusions of this paper and directions for future research.

2 Related Work

The IS Engineering discipline has investigated the business model concept in the context of the Value-Based Requirements Engineering approach [17], in which value models offer representations of business models in terms of elementary constructs (e.g., actors, objects, resources, etc.). For instance, e3-value models [17] show the flow of value objects through a business network of actors. Net cash flow analysis and sensitivity analysis within e3-value allow evaluating alternative designs for actor constellations, such that each actor derives utility or profit from its participation. The REA ontology [18] is another value model that provides concepts, relationships and axioms to model the exchange of valuable products and the effect of this exchange on the value of the involved parties. The Value Delivery Modeling Language (VDML) [19] is currently trying to integrate REA, e3-value, and some other value modeling approaches, which also include the organizational capabilities in the business model representation.

An alternative to value modeling is goal modeling (e.g., i* [20], GRL [21], Business Motivation Model (BMM) [22]), which results in representations that facilitate the elicitation, specification, and analysis/validation of business requirements, from which to derive IS requirements. As goal models are expressed in terms of which objectives a

company wants to achieve (i.e. a formulation of the intended strategy), they operate at a higher level of abstraction than business models. Indeed business models are meant to implement the intended strategy and are more expressive with respect to the overall value chain of business activities. Consequently, it is important for companies to align goal models and business models, as this alignment determines whether a company can successfully implement its strategy according to the goals it wants to achieve.

Our review of related work indicates that the research on business model representations is also divergent, as approaches focus on different aspects of the intended strategy (i.e. value, capabilities, and goals). Overall, there is little grounding of the *business model representation* research on the *business model concept* research as found in the management literature. As a result, it is hard to evaluate whether representations really capture the business model concept, as its elements often remain explicit. The proposed integrative framework is based on the business model concept research in management, which bridges the different representations of the strategy of a firm. Consequently it can help to further develop visualizations of business models in order to align them with the conceptual models of business processes and information systems.

3 Methodology

The purpose of the SLR methodology is the integration of the existing body of knowledge of a certain research topic [15]. The main advantage of using SLR for literature study is the use of a systematic approach that employs an a priori defined review protocol to select papers when searching the literature. This review protocol consists of three elements: the identification of research questions, the definition of the study selection criteria, and the definition of the study quality assessment criteria.

3.1 Identification of Research Questions

The following research question, which is driven by the research problem and research objectives, needed to be answered to deliver the content of an integrative framework for the business model concept: ‘What are the common business model components (i.e. model elements and their relationships) which underlie the integrative second-generation papers on the business model concept?’

3.2 Study Selection Criteria

As the business model concept is originating from the research fields of e-business, strategic management, and IS [1], the search process was not restricted to certain e-libraries, but Google Scholar was chosen as the electronic source to search the scientific literature. Indeed it is better not to exclude certain publication sources (i.e. journal, book, or conference proceedings) upfront, but to perform an ex-post evaluation of the publication data to exclude outliers. This evaluation was executed by analyzing the number of citations and the impact factors of the journals of the selected papers. Papers were excluded if their total number of citations is significantly lower (i.e. lower than 5%) than the citation count of the most-cited article and the current impact factor (i.e. 5-year impact factor 2011) of the publication source is lower than 2 or is not applicable.

The second decision to be taken in the selection of studies is the definition of the search terms, which is informed by the formulation of the research question. Since the ever-growing use of the term *business model*, both inside and outside the academic literature since the beginning of the millennium, we decided not to expand the search terms to any other alternatives of both *business* AND *model*. This allows for a broad search on the existing literature of the business model concept.

Three inclusion criteria are imposed to further refine the set of relevant research. A first criterion (i.e. the *business model components criterion*) is that only literature about the definition of the business model concept is included. Literature that adopts an existing definition, but in which other aspects related to the business model concept are the object of study (e.g., business model evaluation models, business model change methodologies, business model adoption factors) is excluded from the analysis. The second criterion (i.e. the *normative research criterion*) is that only papers that develop a normative view [23] on the constituting elements of a business model are included. Many papers take a descriptive view by discussing the business model concept as it is applied by a particular enterprise (e.g. the business model of McDonalds) or by a group of similar enterprises (e.g. the McDonalds business model for fast-food companies). If such papers do not analyze the constituting elements in terms of which business model information is expressed, they are excluded from the analysis. However, purely defining the constituting elements is also not sufficient as the aim of this research is the review of the second-generation papers on business models. Hence the last criterion (i.e. the *integration effort criterion*) imposes relevant papers to build on existing views in the literature. This criterion was operationalized by investigating the research motive of the selected papers and only including those articles that explicitly claimed to provide an integration effort of the existing business model literature. The selection criteria were assessed following the two-stage process suggested by Brereton et al. [16]. In a first step the title, abstract, introduction, and conclusion were analyzed by two researchers. If they both concluded that a paper was irrelevant, this paper was definitively rejected. For the other papers, the full version was revised and a final unanimous decision (i.e. disagreements were discussed and resolved) on the selection criteria was taken.

3.3 Study Quality Assessment Criteria

The quality of the papers that satisfy the three selection criteria was assessed by using two further criteria, which are specified in the quality assessment questions: (QA1) '*Did the paper develop an own integrative framework, either textual or graphical, which extends the review of previous research?*', and (QA2) '*Did the paper perform a thorough search for the available literature at that point of time?*'. QA1 can be assessed on an ordinal scale including: *Y(es)* '*An own integrative framework, either textual or graphical, is presented in the paper*', and *N(o)* '*The integration is limited to a review of previous research*'. QA2 can be scored depending on the references (i.e. *Y(es)* at least 50%, *P(artly)* between 25% and 50%, and *N(o)* less than 25%) to the aggregated first-generation articles at the moment the paper was written. An article was considered as being of the first generation if at least two papers of the set, which results from applying the study selection criteria, referred to it. Papers, which are written by the same authors and dealing with the same research topic, were aggregated. Also here, any differences in opinion were discussed and resolved to reach consensus. As the purpose of this

assessment is the further refinement of the criteria that were already imposed on the selected literature, only those papers that score at least Y for QA1 and P for QA2 will be used for the final integrative framework.

4 Results

4.1 Selection Results

The execution of the search process resulted in the identification of 55 papers, which met the business model components criterion. By applying the normative research criterion, 6 papers were excluded from the analysis. The integration effort criterion was used as a last selection mechanism and resulted in the identification of 15 papers, which were considered to be relevant for our research.

The publication data of the 15 selected papers were evaluated afterwards (table 1), based on the last available impact factors of the journals (i.e. 5-year impact factor 2011) and the total number of citations of the individual paper (according to the data given by Google Scholar). This resulted in the exclusion of two conference papers, as the respective number of citations (i.e. 0.8% [24] and 3.2% [25]) were less than 5% of the citations of the most-cited research [8] and the impact factor was not applicable.

Table 1. Ex-post evaluation of the publication data

Reference	Publication source	5-year impact factor 2011	Number of citations
Al-Debei and Avison 2010 [6]	Journal	2.218	49
Hedman and Kalling 2003 [9]	Journal	2.218	331
Morris et al. 2005 [12]	Journal	2.473	536
Osterwalder 2004 [8]	PhD dissertation	-	594
Pateli and Giaglis 2003 [4]	Conference proceedings	-	127
Pateli and Giaglis 2004 [13]	Journal	2.218	160
Shafer et al. 2005 [1]	Journal	0.900	420
Teece 2010 [26]	Journal	2.372	330
Tikkanen et al. 2005 [10]	Journal	1.302	142
Verstraete and Jouison 2007 [24]	Conference proceedings	-	5
Warnier et al. 2004 [25]	Conference proceedings	-	19
Lecocq et al. 2006 [27]	Journal	-	36
Demil and Lecocq 2010 [7]	Journal	2.372	97
Zott and Amit 2008 [28]	Journal	3.783	257
Zott and Amit 2010 [11]	Journal	2.372	159

4.2 Study Quality Assessment

The last step in the execution of the search protocol was the assessment of the quality of the 13 remaining papers. The conclusion of the first quality assessment question is that all these articles provide an integrative framework in their research, which results in a score of Y for these articles. The assessment of QA2 was based on the identification of 24 aggregated first-generation articles (i.e. articles to which the resulting set of articles referred at least twice). By calculating the ratio between the number of references to these first-generation papers (by papers of the resulting set) and the total set of 24 articles, the following scores are obtained: Osterwalder [8] – Y ($20/24 = 83.3\%$), Pateli and Giaglis 2003 [4, 13] - Y ($16/24 = 66.7\%$), Morris et al. [12] - Y ($13/24 = 54.2\%$), Shafer et al. [1] - P ($10/24 = 41.7\%$), Al-Debei and Avison [6] - P ($9/24 = 37.5\%$),

Hedman and Kalling [9] - P (9/24 = 37.5%), Lecocq et al. [27] and Demil and Lecocq [7] - P (8/24 = 33.3%), Tikkanen et al. [10] - P (7/24 = 29.2%), Zott and Amit [11, 28] - P (6/24 = 25.0%), Teece 2010 [26] - N (3/24 = 12.5%). Consequently the work of Teece [26] will not be further used for the development of the integrative framework.

4.3 Integrative business model framework

To identify the common business model components, an extensive analysis of the final set of papers was performed. Although a component can be considered as common if it is proposed by at least two papers, only those elements that appeared in the majority of frameworks were included in the integrative framework (figure 1). The definition of these elements can be found in table 2, in which the definitions of customer segment, supplier, competitor and partner are aggregated by the definition of value network. Furthermore, figure 1 also shows the relationships that exist between the elements, which are justified by the relevant references in the following description.

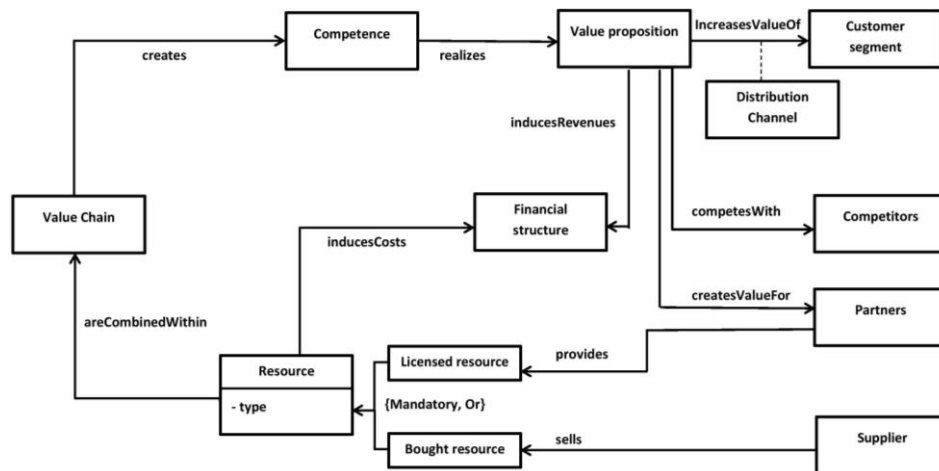


Fig. 1. Proposed integrative business model framework based on the existing literature

Companies can obtain their resources either by paying suppliers for the provision of resources (i.e. a bought resource: an employee who is paid for providing labor, financial institutions for providing capital, etc.) [1, 7-11] or by entering into a partnership with an outside actor (i.e.: a licensed resource: acquiring money from an investor for increasing the equity of the firm, acquiring governmental authorizations for performing certain activities, etc.) [1, 8-11]. Resources can appear as three different types: human skills [7-10], tangible resources (e.g. capital) [6-10], and intangible resources (e.g. goodwill) [6, 8, 10]. The acquisition of resources implies a cost that affects the financial structure of the firm [7, 8]. Within the internal value chain, which reflects the overall business process infrastructure, these resources are combined [6-10] to create competences [7, 9, 10, 12], which realize the value proposition [1, 9-12]. This value proposition is offered [7-10, 12] to the target customer segment through one or more distributions channels to create value for the client [1, 6, 8-12]. Furthermore the value proposition also creates revenues [1, 7, 8, 10, 11], which will influence the financial structure of the firm. As

companies operate within a value network of actors, the rivalry with the competitors [1, 6, 7, 9-11] and the value creation for other partners [1, 6, 7, 10, 11] are also included.

Table 2. Definitions of the constituting elements of the integrative business model framework

Concept	Definition
Resources	Human skills, tangible means, and intangible means under control of an organization by being bought or licensed, which are combined within the value chain of activities [8, 18].
Value chain	Overall business process architecture which describes the structured set of activities that combine resources to create the necessary competences [7, 10].
Competence	Ability to coordinate flows of resources through the value chain to realize the intended value proposition [29].
Distribution channel	The way in which the offering is made available to the customers [12].
Value proposition	Offered set of products and/or services that provides value to the customers and other partners and competes in the overall value network [6, 8, 10].
Value network	Web of relations created with external stakeholders, including suppliers, customers, competitors and partners [1, 7].
Financial structure	Representation of the costs resulting from acquiring resources and of the revenues in return for the offered value proposition [8].

4 Discussion

The research objective of this paper was the identification of the constituting elements of the business model concept and their relationships, as described in the current literature. By applying the SLR methodology, 10 components were identified that are common to the majority of the integrative frameworks, which resulted from the literature review. The relationships were derived from the existing component definitions, as most frameworks only implicitly incorporate them.

The proposed integrative framework is only a first step to achieve a convergent view on the business model concept, as it needs to be evaluated by future research. Furthermore it can inform existing value models to represent the business rationale of the firm. Future research includes the analysis to which extent value models are able to incorporate this rationale and which adaptations are needed to achieve this. The integrative framework can also be applied to integrate business models with goal models, which reflect the formulated strategy of the company. This will ensure that a company aligns its strategy with the goals it wants to achieve. These opportunities will enable a full integration between the representation of the formulated strategy and the IS requirements that can be derived from value models.

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