

# Business Models

## An Information Systems Research Agenda

In the context of the wide-spread digitization of businesses and society at large, the logic inherent in a business model has become critical for business success and, hence, a focus for academic inquiry. The business model concept is identified as the missing link between business strategy, processes, and Information Technology (IT). The BISE community offers distinct and unique competencies that can be harnessed for significant research contributions to this field. Three distinct streams are delineated, namely, business models in IT industries, IT enabled or digital business models, and IT support for developing and managing business models.

DOI 10.1007/s12599-013-0308-y

### The Authors

**Prof. Dr. Daniel Veit** (✉)  
University of Augsburg  
Universitätsstraße 16  
86135 Augsburg  
Germany  
[veit@wiwi.uni-augsburg.de](mailto:veit@wiwi.uni-augsburg.de)

**Prof. Eric Clemons, PhD**  
University of Pennsylvania  
Philadelphia  
USA

**Prof. Dr. Alexander Benlian**  
**Prof. Dr. Peter Buxmann**  
TU Darmstadt  
Darmstadt  
Germany

**Prof. Dr. Thomas Hess**  
**Prof. Dr. Martin Spann**  
LMU München  
München  
Germany

**Prof. Dr. Dennis Kundisch**  
Universität Paderborn  
Paderborn  
Germany

**Prof. Dr. Jan Marco Leimeister**  
Universität Kassel  
Kassel  
Germany  
and  
Universität St. Gallen  
St. Gallen  
Switzerland

**Prof. Dr. Peter Loos**  
Saarland University and DFKI  
Saarbrücken  
Germany

Received: 2013-05-09  
Accepted: 2013-09-24  
Accepted after two revisions by the editors of the special focus.  
Published online: 2014-01-21

This article is also available in German in print and via <http://www.wirtschaftsinformatik.de>: Veit D, Clemons E, Benlian A, Buxmann P, Hess T, Kundisch D, Leimeister JM, Loos P, Spann M (2013) Geschäftsmodelle. Eine Forschungsagenda für die Wirtschaftsinformatik. WIRTSCHAFTSINFORMATIK. doi: 10.1007/s11576-013-0400-4.

© Springer Fachmedien Wiesbaden 2014

### 1 Introduction

With the digitization wave breaking, fundamental changes in almost all industries have been unleashed. Therein enterprises face severe challenges when shaping concrete digital business models for commercialization (BMW 2012). The growth of the internet has undoubtedly created greater opportunities for digitized business transactions but this has been accompanied by an intensified competition and an accelerated pace of technological change. On the global scale,

these developments have disrupted market forces in a novel way. Such changes are putting pressure on existing firms which, in order to maintain competitiveness, have to adapt their business logic and processes to this fast-moving environment. Hence, the business model concept seems particularly apt to providing an overarching framework with which novel approaches in the digital era can be strategically structured, analyzed and designed (Osterwalder and Pigneur 2013).

Addressing the business model concept as an anchor for the identification of the impact of IT is a fairly novel endeavor. It has garnered attention in several related disciplines, e.g., strategic management, entrepreneurship and marketing, but – today – it remains largely under-researched in the information systems (IS) field. In light of the comprehensive digitization of enterprises and society at large this seems all the more surprising. The young research field of business and information systems engineering (BISE) was established with the aim of combining a range of scientific perspectives, traditions and methodological backgrounds. In this sense it represents the missing link between business and information technology, which other disciplines do not cover in research (Bharadwaj et al. 2013). Questions regarding the impact of IT and its transformative power on individuals, society, business and organizations are therefore of central interest to the discipline.

The objective of this article is to promote the use of the business model concept by identifying its state of the art, discussing three research perspectives which

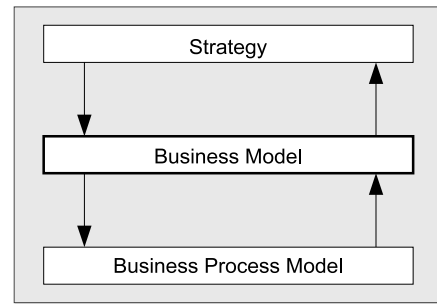
serve as umbrella terms for most parts of this topic area, and to develop a research agenda for IS and BISE researchers.

## 2 Foundations of the Business Model Concept and State of the Art

The business model is seen as a tool for depicting, innovating and evaluating business logics in startups and in existing organizations, especially in IT-enabled or digital industries. In IS research it is also used as a tool, as a unit of analysis and as a framework (European Commission 2012). According to Al-Debei and Avison (2010, p. 372) the business model is “an abstract representation of an organization, be it conceptual, textual, and/or graphical, of all core interrelated architectural, co-operational, and financial arrangements designed and developed by an organization presently and in the future, as well all core products and/or services the organization offers, or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives”. The importance of the concept is also highlighted by a number of other authors who have underlined its descriptive and structuring power in relation to information and communication technologies (ICT). It has been applied to, for example, the simulation and patenting of designed business logic, and to improvements in the decision-making processes of a firm’s strategic alignment or success (Osterwalder 2004). To date, research on the topic has emerged from its infancy by offering core definitions and components to the classification, evaluation, and innovation of business models (Pateli and Giaglis 2004; Zott et al. 2011). Scientists began to study the reasons why some enterprises had been successful while many others had failed (Amit and Zott 2001; Dubosson-Torbay et al. 2002; McGrath 2010).

An effective realization of the business model concept can foster the development of enterprise applications (Gordijn et al. 2000) and consequently the communication between business and IT (Osterwalder et al. 2005). Hence, the increasing utility of the concept of business models is, in practice, contingent on it becoming more formalized (Becker et al. 2011). Additionally, the business model

**Fig. 1** Business Model as intermediary between strategy and business processes (adapted from: Al-Debei et al. 2008)



concept has proven to be a very helpful and distinct unit of analysis when it is conceptualized as an activity system that determines the content, governance and structure of a firm’s boundary-spanning interactions (Zott and Amit 2007). This conceptualization is inherently attractive since it acknowledges not only the relevance of social interactions for business but also the mutual interdependence between a firm and its business environment. Extending this view to more generic level allows to integrate the business model concept into economic considerations about the role of the enterprise in society and its effect on the well-being of whole nations (Audretsch et al. 2006).

Business models are often seen as an intermediary between a company’s strategy and its business processes (Morris et al. 2005; Di Valentin et al. 2012) as depicted in Fig. 1. Thus, while strategy focuses on how to prevail over competitors, the business model depicts the logic of value creation and the effective coordination of business resources (Osterwalder et al. 2005). In contrast, a business process describes the production of a specific output through the use of several input factors (Hammer and Champy 1994; Gordijn et al. 2000; Andresen et al. 2011). If, for example, a company changes its business model from in-house production to external production, this will also have an influence on the required resources and related business processes. The literature features approaches whereby the reverse is also considered, describing the way business processes have an influence on a company’s business model (Bonakdar et al. 2013). IS research sees its role in focusing particularly on the interplay between business models and business processes and the resulting requirements for ICT (Hess

et al. 2012). By considering all the factors that correlate with the activities of a business process, its scope can be utilized as a meaningful unit of analysis in the course of planning business models. Thus, relevant information for the design of business models can be obtained based on the underlying business processes. Hence, a business model conveys the meaning of the underlying business processes by explaining why they are being carried out in the way they are (vom Brocke et al. 2011; Di Valentin et al. 2012).

We adopt the view of Teece (2010), Zott and Amit (2007), and others who define business models and strategy as distinct concepts that are linked to each other.

The concept of business models is often used in management as a method to help analyze and understand a company’s current business logic. Used in this way the concept also supports the planning of strategic decision-making (Osterwalder et al. 2005; Seppänen and Maekinen 2005; Kijl and Boersma 2010). The continuously rising number of publications dealing with the concept have marked the beginning of an academic era in which business models form the central unit of analysis (Burkhart et al. 2012; Veit and Steininger 2012). So far, however, most business model concepts consider generic aspects but fail to take into consideration industry-specific aspects. Accordingly, the following three main pillars of importance to BISE research were identified in three workshops:<sup>1</sup> (1) *Business models in IT industries* (e.g., ICT providers, software industry), which are facing challenges and opportunities such as shortening life cycles or low production costs (Buxmann et al. 2012). (2) *IT enabled or digital business models* (e.g., media industry, iPad/iPhone ecosystem,

<sup>1</sup>MKWI Workshop on Business Models as a BISE research topic, 2012-03-01, Braunschweig (Hess 2012) and Workshop with presentations of business model research projects of the group, 2012-10-02, Mannheim, Pre-ECIS Workshop on the Digitization in Business Models and Entrepreneurship, Utrecht.

on demand services) which are transforming consumer behavior and society (Tiwana et al. 2010). (3) *IT support for developing and managing business models* (e.g., modeling languages or simulation) through the development of tools for visualization, simulation, or decision support (Kundisch et al. 2012).

Business model studies are uniting BISE, entrepreneurship and strategic management research with a strong accumulation in BISE outlets, mirroring the interdisciplinary nature of the topic and the discipline (DeSanctis 2003). Examples are comprehensive classifications of literature (Burkhart et al. 2011); the definition of business models for the software industry (Buxmann et al. 2012; Schief and Buxmann 2012) and their performance (Schief et al. 2012); the changes and impacts through IT-enabled business models in the music industry (Steininger et al. 2012; Wagner et al. 2013) or internet business models (Leimeister and Krcmar 2004); and tools for representing business models (Kundisch et al. 2012; Kundisch and John 2012).

A review of the literature undertaken by Pateli and Giaglis (2004) has summarized the following key definitions in business model research:

**Definitions:** Important contributions were made by Timmers (1998), who understands a business model as “an architecture for the product, service and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various actors; and description of the sources of revenue” (p. 4) or Magretta (2002, p. 4) who describes a business model as a “story that explains how an enterprise works”. Further authors dealing with the definition of business models are Tapscott et al. (2000), Linder and Cantrell (2000), Gordijn et al. (2000) and Petrovic et al. (2001).

**Components:** Morris et al. (2005) focus in their literature review on the constituent elements of a business model by deriving a generic business model framework consisting of six key decision areas. Burkhart et al. (2011) present a holistic view on the business model concept by structuring the research field of business models. They derive a classification framework consisting of 17 evaluation criteria and corresponding attributes. Further representatives dealing with business model components are Osterwalder and Pigneur’s (2010) Business Model Canvas and Hamel (2002).

**Representations:** Gordijn and Akkermans (2001) present an e-business ontology (e3-value ontology) consisting of core concepts that are interrelated by using so-called ‘Use Case Maps’ (a scenario technique). Tapscott’s B-Webs describe a network consisting of distributors, suppliers, and commercial service providers as well as customers that are connected to each other via the Web and other electronic media (Tapscott et al. 2000). Burkhart et al. (2012) present an ontology for business models in the software industry.

**Taxonomies:** Rappa (2004) proposes a classification scheme of nine e-business models, consisting of brokerage, advertising, information intermediary, merchant, manufacturer direct, affiliate, community, subscription, and utility. He also introduces the utility business model emphasizing the future of computer services, Osterwalder and Pigneur (2002) derived the e-business model ontology with the aim of designing a business model.

From a BISE perspective, several articles have laid down the foundations for research. Hedman and Kalling (2003) structure the components of a business model within a firm with regards to IT and propose theoretical perspectives such as the resource-based view (RBV) for the different levels. Al-Debei and Avison (2010) are building on some of these ideas and develop a unified business model framework encompassing a definition, dimensions, functions, reach, and modeling principles of the concept through a content analysis of existing literature.

In addition to more generic definitions of business models, a number of definitions focus on e-business and e-commerce. Timmers (1998) was one of the first to propose eleven types of e-commerce business models. Besides the research work on the foundations of the concept there are articles looking at the innovation of business models and their performance. An example of such an article on innovation shows how Xerox captured value from innovations through moving to a new business model (Chesbrough and Rosenbloom 2002). First quantitative articles on performance implications are looking at the configuration of business models (Zott and Amit 2007, 2008) and are finding implications that go beyond factors that can be explained through strategy alone.

### 3 BISE Research Perspectives on the Business Model Concept

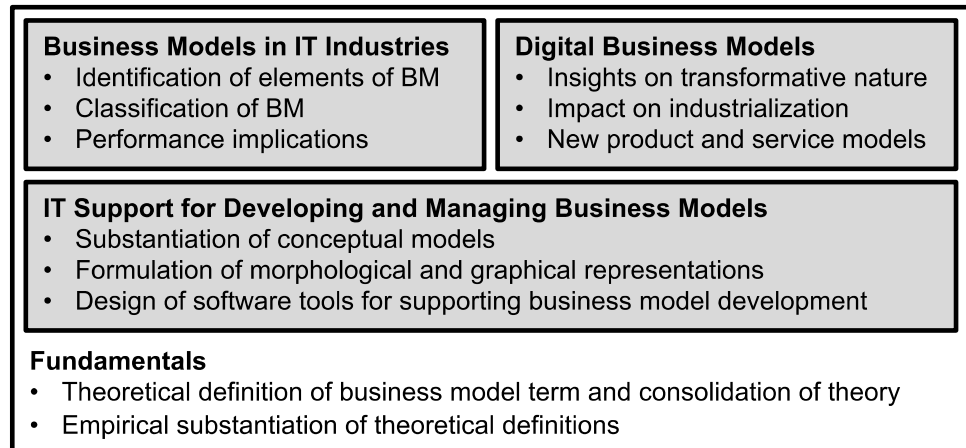
The three major pillars of business model research in the BISE field, which have been identified in Sect. 2 based on the literature and the initial workshops of the research group can be utilized to structure the perspectives for the business model concept (Fig. 2).

#### 3.1 Business Models in IT Industries

Among the different IT sub-industries (e.g., hardware, software, telecommunications), the software industry stands out because of the specific features that distinguish it from other industries (Buxmann et al. 2012). Software *products* can be reproduced at low marginal costs and hence, the variable costs are close to zero. Moreover, software can be copied without any loss of quality and software products can be easily changed. Software *markets* have special characteristics, too. One feature is its strong internationalization. Another are network effects which might lead to winner-takes-it-all markets. Furthermore, software markets are continuously affected by and shaped through disruptive technological trends such as in-memory database management (Loos et al. 2011) or software-as-a-service (Benlian et al. 2009; Benlian and Hess 2011). From the vendor’s perspective, a number of strategies and business models can be derived from these characteristics of software products and markets. The multi-faceted nature of the business model concept can help to explain how these characteristics impact on value creation and capture by firms.

More recent research on business models has attracted scholarly attention (Steininger et al. 2011; Burkhart et al. 2011). While most research focused on generic business models, the perspective of software firms is of particular interest to the field of IS (Hess et al. 2012). The distinguishing characteristics of software products and markets have resulted in a focus on business models in the software industry. However, similar characteristics such as network effects can be found in the telecommunication business (Zarnekow et al. 2007). In contrast, we think that business models in the hardware business are more comparable to those in traditional, physical industries. We broadly categorize the research questions raised in the previous literature on software business models into three interconnected areas. In the

**Fig. 2** Expected research results and objectives



first we raise the question of identifying the constitutive elements of a software business model (Rajala et al. 2003; Kontio et al. 2005; Rajala 2009; Schief and Buxmann 2012). Secondly, we intend to identify the most prevalent classes of software business models (Kontio et al. 2005; Valtakoski and Rönkkö 2010; Popp 2011; Schief et al. 2012). Thirdly, we aim to identify the performance implications of software business models (Rajala and Westerlund 2012; Schief et al. 2012; Schief and Pussep 2013).

Further research should not only build upon these foundations and continue to accumulate empirical evidence but also transfer findings to other IT sub-industries such as hardware, networking and telecommunication businesses. Using object-oriented terminology, we see a need for the derivation of specific subclasses for *business models for IT firms* from the generic class of *business models in general*. The subclass would inherit the elements of generic business models and extend them to specific areas of the respective IT industry (e.g., software industry). The research question of how particular business model instantiations impact on the performance of firms should also be of continuing interest for researchers and practitioners. Answering these questions requires a deep understanding of the industry. As such, the IS field is particularly suitable to providing answers related to IT industries.

### 3.2 Digital Business Models

A business model is digital if changes in digital technologies trigger fundamental changes in the way business is carried out and revenues are generated. Venkatraman (1994) refers to this as the fourth and fifth level of IT-enabled business

transformation. The majority of business models are digital in the media industry, the retail industry, the financial services industry, and in logistics. This is of course also the case for online-only (i.e. pure play) companies. Researchers from the BISE community are able to identify new technologies early, understand the technologies in depth and bring new artifacts into the world (following the design science approach). BISE researchers, therefore, offer distinct competitive advantages over researchers from business studies or economics (Osterwalder and Pigneur 2013).

The first stream of literature on digital business models was established in the 1990s. This research has started on the impact of new technologies such as EDI on the division of labor between companies, an important aspect of the outside perspective on a business model. Also business models of intermediaries were discussed at the time. A major result of these efforts is the ‘move-to-the-middle’ hypothesis (Clemons et al. 1993). Another research stream looks into value creation and value capture enabled through digital business models. Amit and Zott (2001), for example, examined 59 e-business models for exploring the theoretical foundations of value creation. They regard value creation as a prerequisite for value capture. In this context, (Teece 2010) notes that business models in the information and internet industries are particularly challenging with respect to value capture. A third stream of literature deals with the role of ICT as the driver of a new wave of industrialization (Barua et al. 2004). A fourth stream focuses on ICT-enabled changes in product and service models, especially in retailing and in the media industry. One typical field of research is the

analysis of the interdependences between different channels (Forman et al. 2009). A fifth stream deals with the emergence of entirely new business models (Österle 2007; Steininger et al. 2013) of which the discussion of the business model of providers of social media platforms is a prominent example (Liang and Turban 2011).

The first direction of research is still very active with new technologies consistently being introduced into the market. The current focus is on ecosystems (Burkard et al. 2012) and the changing role of the customer (Reichwald et al. 2009; Leimeister 2012). Another topic here centers on the discussion of the economies of intermediation, especially from a customer perspective (Matt and Hess 2012). Dealing not only with customers but with all of a firm’s stakeholders, the business model literature on value creation and capture is currently attending to a range of issues including how to create value in times of change (e.g., Zott and Amit 2012), additional value dimensions such as normative and cognitive requirements (e.g., Sach 2013), or how to synchronize societal and economic value creation (e.g., Seelos and Mair 2007). In the fourth stream of research on business models one focus is currently on revenue models, for example on the analysis of the premium model’s potential to increase consumer willingness to pay for content (Wagner et al. 2013) or the potential and acceptance of dynamic pricing in electronic commerce (Hinz et al. 2011). Other studies are dealing with the impact that mobile devices have on retailers (Molitor et al. 2012). Smartphones possess sensors that can digitize information on a consumer’s situational context (e.g., geographical location, product EAN code) and use this



information to provide consumers with context-specific information (e.g., prices for this product in other stores in a consumer's vicinity, recommendations from friends for restaurants nearby). There is also an ongoing discussion on emerging business models such as location-based advertising using the technological possibilities of smart mobile devices or (mobile) technologies and enabling customers to become 'prosumers', i.e. producers and consumers of information services (Resatsch et al. 2008). One question is whether there will be a market for companies offering large amounts of consumer data that combine (anonymous) online profiles (e.g., clickstream data) with consumers' offline behavior and the current user context (e.g., geographical location, content of website active in browser etc.) for every customer point of contact.

A new field of research on digital business models is currently developing around the enrichment of established products or production systems. In Germany this is being discussed under the term 'Industry 4.0'. Questions related to this topic are very broad. One interesting field is concerned with the pricing of hybrid bundles. For example, product service systems (PSS) are a specific form of hybrid products which apply a service dominant logic to products (Vargo and Lusch 2008), usually consisting of a bundle of IT services and human services (Berkovich et al. 2011). Interesting examples are, e.g., printing solutions or manufacturing solutions in the B2B area, where some former hardware manufacturers have now turned into equipment operators, offering pay-per-use pricing models. Key research challenges are around different ways of creating and capturing value with PSS. These specific examples also underline the ambiguity of the term as well as the necessity to foster terminological homogenization.

### 3.3 IT Support for Developing and Managing Business Models

Even today the business model concept still defies easy conceptualization. Without a proper, theory-based conceptualization and formalization, however, adequate IT support for developing and managing business models can hardly be

provided (Teece 2010). The following approaches have been employed for representing business model knowledge: *Informal text* (e.g., Kshetri 2007), *structured text* (e.g., Sosna et al. 2010), *morphological representation* (Kley et al. 2011), *ad hoc graphical representation* (e.g., Kinder 2002), *conceptual models* with defined semantics and dedicated graphical representations (e.g., Gordijn and Akkermans 2003), also called business model representations (BMRs) (Zott et al. 2011).

Morphological and dedicated graphical representations allow for a consistent and traceable representation of business models and have been characterized as one major theme in digital business model research (Zott et al. 2011). A number of diverse approaches have been proposed (Kundisch et al. 2012) to which several advantages have been attributed, including facilitating tasks such as *understanding* and *communicating* about a business model (Osterwalder et al. 2005), *innovating* a business model (Chesbrough 2010), and *deducting requirements for the IS* that support the business model (Penker and Eriksson 2000). However, existing BMRs greatly differ and to some extent contradict each other. Hence, synthesizing and further developing BMRs could lead to business model research becoming more cumulative in nature, and to effect a more efficient transfer of research results into practice, as a result of more successful business models in general.

Furthermore, morphological representations and BMRs are needed to enable computer-aided business design tools (Osterwalder et al. 2005). The tools currently available are still in their infancy and largely restricted to facilitating the visualization of a business model and at most provide rudimentary support for financial calculations (e.g., e3-value editor,<sup>2</sup> Business Model Toolbox<sup>3</sup>). A notable exception is the Business Model Wizard,<sup>4</sup> which is intended to comprise functionality for integrating market data to evaluate a business model and deducing process models from a developed business model (Di Valentin et al. 2012).

Results to be expected in this stream of research include the validation of conceptual models comprising graphical representations (generic as well as domain-specific ones) that help industry practitioners to capture and innovate their

business models. In the long run, the corresponding business modeling tools should clearly go beyond simple design tools (see above) and evolve into an own class of high-level decision support tools (also called "Design Support Systems", Osterwalder and Pigneur 2013) that draw upon empirical results to improve the business model design process. Moreover, using these ontologies and notations it is not unreasonable to expect that one of the outcomes could be the automatic translation of designed business models into consistent processes, services and enterprise models.

## 4 A Research Agenda for BISE Based on the Three Pillars

We propose the following agenda for business model research in BISE (Table 1). For each of the three perspectives identified above, we outline (a) relevant and open research questions, (b) theoretical foundations and (c) possible methodological approaches for solving these research questions. Furthermore, we outline opportunities for interdisciplinary research.

In relation to business models in the IT industries the following research questions emerge as particularly promising: What do optimal and future revenue models and pricing strategies look like? What represents an optimal degree of vertical integration for IT vendors? How do business models change if we consider the transition from 'on premise' to 'on demand' usage? Which kind of cooperation as well as M&A strategies seem to be profitable in the IT industry? How can customer data be included into business models of IT vendors? These research questions could be addressed for example in the form of cases, laboratory and/or field experiments in order to test the relative importance of different characteristics or elements of/in business models such as pricing schemes, scalability, or customization.

In the area of digital business models, promising research questions could for example relate to the proactive role of consumers as providers of contents, ideas and social recommendations. How can

<sup>2</sup><http://www.e3value.com/>.

<sup>3</sup><http://www.businessmodelgeneration.com/toolbox/>.

<sup>4</sup><http://www.software-business-model.com/>.

**Table 1** Research agenda for business model research in BISE

	Business models in IT industries	Digital business models	IT support for business models
Research questions	<ul style="list-style-type: none"> <li>■ Elements and types/classes of IT business models</li> <li>■ Formation and adoption of IT business models</li> <li>■ Performance implications</li> </ul>	<ul style="list-style-type: none"> <li>■ Monetization of proactive (social) consumers</li> <li>■ Mobile business models</li> <li>■ New product and service models: hybrid bundles</li> <li>■ Industrialization of business models</li> </ul>	<ul style="list-style-type: none"> <li>■ Semantic foundation and appropriate syntax for business model representations</li> <li>■ Use of graphical representations in the business model development process</li> </ul>
Theories	<ul style="list-style-type: none"> <li>■ Adoption and diffusion theories</li> <li>■ Entrepreneurship/innovation theories</li> <li>■ Organizational behavior</li> <li>■ New institutional and behavioral economics</li> </ul>	<ul style="list-style-type: none"> <li>■ Consumer behavior</li> <li>■ Microeconomics</li> <li>■ Organizational behavior</li> </ul>	<ul style="list-style-type: none"> <li>■ Cognitive fit theory (for the syntax)</li> <li>■ Bunge-Wand-Weber ontology (for the semantics)</li> <li>■ Boundary object theory (for the pragmatics)</li> </ul>
Exemplary research methods	<ul style="list-style-type: none"> <li>■ Empirical (quant. and qual.)</li> <li>■ Experimental (field and lab) incl. prototype testing</li> <li>■ OR/simulation studies</li> <li>■ Hierarchical linear modeling (HLM)</li> </ul>	<ul style="list-style-type: none"> <li>■ Empirical (quant. and qual.)</li> <li>■ Experimental (field and lab) incl. prototype testing</li> </ul>	<ul style="list-style-type: none"> <li>■ Reference/meta modeling</li> <li>■ Experimental, field and case studies</li> <li>■ Design science</li> <li>■ Heuristic and mathematical programming methods</li> </ul>

the proactive role of consumers be monetized via business models? Which components of social media (e.g., supporting the social activities of consumers) should form the core of a successful social commerce business model? How can ICT enable value creation for all stakeholders along the lines of business model content, governance and structure? How could one best exploit the opportunities created by mobile internet access and location-based services in mobile business models? These questions could be addressed for example using theories of consumer behavior (from marketing, psychology and economics) as well as organizational behavior theories. To study such questions, researchers may draw on empirical research methods such as case studies and surveys, or they may undertake experimental evaluations of prototypes that test hypotheses on specific components of digital business models. The combination of these theories and methods provides promising opportunities for interdisciplinary research from an IT perspective.

In the field of IT support for business models, promising research questions concern the semantic foundation and appropriate syntax for BMRs as well as their effective pragmatic use in the business model development process. For instance, the syntax of a specific BMR could be evaluated with reference to the cognitive fit theory, using experimental studies as an appropriate research

method. Regarding morphological analysis there is a lack of established methods to identify relevant parameters and values and evaluate the resulting frameworks. Furthermore, one avenue for future research would be to develop software tools that can meaningfully support the use of graphical and morphological representations (e.g., for brainstorming, design, economic analysis, process model generation, simulation) and integrate research results regarding the performance of business models (e.g., knowledge of business model patterns or success factors). Finally, regarding the interface with adjacent disciplines such as process modeling or enterprise modeling, more work is needed to extend the preliminary contributions in this field (vom Brocke et al. 2011; Burkhart et al. 2012; Iacob et al. 2012).

The business model concept thus provides the missing link between strategy and business process implementation, and its relationship to IT is key to understanding, designing and leveraging the business models and organizations of the future. It provides a new field of research for the BISE community that can serve as a promising anchor term to cluster future research in the BISE field. Although other research disciplines such as strategic management, entrepreneurship and marketing have started to take up this topic, we believe that BISE researchers offer distinct and unique competencies for translating business models

into IT, for identifying potentials of IT in order to create new business models and for designing and operating IT-based business processes. Nevertheless, interdisciplinary cooperation with other research disciplines such as strategy, innovation management, entrepreneurship or marketing would be highly appreciated. Through joint workshops and tracks at national and international conferences (e.g., MKWI 2012, WI 2013, ECIS 2013, MKWI 2014, ECIS 2014) and special issues in journals, (e.g., ISJ Special Issue on Digitization in Business Models and Entrepreneurship, Clemons et al. 2013) the authors have in fact already started to foster cooperation beyond disciplines and across national borders (e.g., Adamantia Pateli, Jonas Hedman, Eric Clemons and Christoph Zott) as suggested in recent research (e.g., Osterwalder and Pigneur 2013). This prepares the path for significant theoretical contributions in understanding underlying mechanisms and phenomena of business model success and failure as well as the discovery of novel coherences between influencing factors on business model performance contingencies. Understanding, explaining, predicting and designing IT-based business models holds immense contributions to both research and the business community. The BISE community is predestined to accompany the all-encompassing digitization in enterprises and society and to disseminate their insights to an interested public.

## Acknowledgements

We send our sincere thanks out to the following persons who supported the development of this article: Miglena Amirpur (M.Sc.), Stephan Daurer (MBA, MBR), Tobias Goldbach (M.Sc.), Thomas John (Dipl.-Wirtsch.-Inf.), Anton Pussep (Dipl.-Wirtsch.-Inf.), Amelie Sach (M.Sc.), Dennis Steininger (Dipl.-Kfm.), Christina Di Valentin (Dipl.-Kffr.).

## References

- Al-Debei MM, Avison D (2010) Developing a unified framework of the business model concept. *European Journal of Information Systems* 19:359–376
- Al-Debei MM, El-Haddadeh RH, Avison D (2008) Defining the business model in the new world of digital business. In: *Proc AMCIS 2008*, pp 1–11
- Amit R, Zott C (2001) Value creation in e-business. *SMJ* 22:493–520. doi:10.1002/smj.187
- Andresen K, Brockmann C, Roztocki N (2011) Business models for enterprise system providers: towards the solution based procedure. In: *Proc AMCIS 2011*, pp 1–8
- Audretsch DB, Keilbach MC, Lehmann EE (2006) *Entrepreneurship and economic growth*. Oxford University Press, New York
- Barua A, Konana P, Whinston AB, Yin F (2004) An empirical investigation of net-enabled business value. *MIS Quarterly* 28:585–620
- Becker W, Ulrich B, Ebner R et al (2011) *Geschäftsmodelle im Mittelstand*. Deloitte, Mittelstandsinstitut, Bamberg
- Benlian A, Hess T (2011) Opportunities and risks of software-as-a-service: findings from a survey of IT executives. *Decision Support Systems* 52:232–246. doi:10.1016/j.dss.2011.07.007
- Benlian A, Hess T, Buxmann P (2009) Drivers of SaaS-adoption: an empirical study of different application types. *Bus Inf Syst Eng* 1(5):357–369. doi:10.1007/s12599-009-0068-x
- Berkovich M, Leimeister JM, Krcmar H (2011) Requirements engineering for product service systems. *Bus Inf Syst Eng* 3(6):369–380. doi:10.1007/s12599-011-0192-2
- Bharadwaj A, El Sawy OA, Pavlou PA, Venkatraman N (2013) Digital business strategy: toward a next generation of insights. *MIS Quarterly* 37:471–482
- BMW (2012) Rösler: IKT sind Treiber für Innovation und Wachstum. <http://www.bmw.de/DE/Presse/pressemitteilungen,did=505772.html>. Accessed 2012-11-02
- Bonakdar A, Weiblen T, Di Valentin C, Zeissner T, Pussep A, Schief M (2013) Transformative influence of business processes on the business model: classifying the state of the practice in the software industry. In: *Proc HICSS 2013*, pp 1–10
- Burkard C, Widjaja T, Buxmann P (2012) Software ecosystems. *Bus Inf Syst Eng* 4(1):41–44. doi:10.1007/s12599-011-0199-8
- Burkhart T, Krumeich J, Werth D, Loos P (2011) Analyzing the business model concept – a comprehensive classification of literature. In: *Proc ICIS 2011*, pp 1–19
- Burkhart T, Wolter S, Schief M et al (2012) A comprehensive approach towards the structural description of business models. In: *Proc international conference on management of emergent digital ecosystems*. ACM, New York, pp 88–102
- Buxmann P, Diefenbach H, Hess T (2012) The software industry. *Economic principles, strategies, perspectives*. Springer, Heidelberg
- Chesbrough H (2010) Business model innovation: opportunities and barriers. *Long Range Planning* 43:354–363. doi:10.1016/j.lrp.2009.07.010
- 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* 11:529–555. doi:10.1093/icc/11.3.529
- Clemons E, Reddi S, Row M (1993) The impact of information technology on the organization of economic activity: “the move to the middle hypothesis”. *Journal of Management Information Systems* 10(2):9–35
- Clemons E, Hedman J, Sarker S, Veit D (2013) Information Systems Journal special issue on the “Digitisation in business models and entrepreneurship”. *Information Systems Journal* 23:277–279. doi:10.1111/isj.12018
- DeSanctis G (2003) The social life of information systems research: a response to Benbasat and Zmud's call for returning to the IT artifact. *Journal AIS* 4:360–376
- Di Valentin C, Burkhart T, Vanderhaeghen D et al (2012) Towards a framework for transforming business models into business processes. In: *Proc AMCIS 2012*, pp 1–9
- Dubosson-Torbay M, Osterwalder A, Pigneur Y (2002) E-business model design, classification, and measurements. *Thunderbird International Business Review* 44:5–23
- European Commission (2012) Contracts & grants – connecting SMEs to the digital market. [http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item\\_id=6091&lang=en&title=Connecting-SMEs-to-the-digital-market](http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=6091&lang=en&title=Connecting-SMEs-to-the-digital-market). Accessed 2012-09-12
- Forman C, Ghose A, Goldfarb A (2009) Competition between local and electronic markets: how the benefit of buying online depends on where you live. *Management Science* 55:47–57. doi:10.1287/mnsc.1080.0932
- Gordijn J, Akkermans H (2001) Designing and evaluating e-business models. *IEEE Intelligent Systems* 16:11–17. doi:10.1109/5254.941353
- Gordijn J, Akkermans JM (2003) Value-based requirements engineering: exploring innovative e-commerce ideas. *Requirements Eng* 8:114–134. doi:10.1007/s00766-003-0169-x
- Gordijn J, Akkermans H, Vliet H (2000) Business modelling is not process modelling. In: Liddle SW, Mayr HC, Thalheim B (eds) *Conceptual modeling for e-business and the web*. Springer, Heidelberg, pp 40–51
- Hamel G (2002) *Leading the revolution, revised*. Plume, New York
- Hammer M, Champy J (1994) *Reengineering the corporation: a manifesto for business revolution*, reprint. HarperBusiness, New York
- Hedman J, Kalling T (2003) The business model concept: theoretical underpinnings and empirical illustrations. *EJIS* 12:49–59
- Hess T (2012) *Geschäftsmodelle als Thema der Wirtschaftsinformatik*. München

## Abstract

Daniel Veit, Eric Clemons, Alexander Benlian, Peter Buxmann, Thomas Hess, Dennis Kundisch, Jan Marco Leimeister, Peter Loos, Martin Spann

## Business Models

### An Information Systems Research Agenda

The business model concept, although a relatively new topic for research, has garnered growing attention over the past decade. Whilst it has been robustly defined, the concept has so far attracted very little substantive research. In the context of the wide-spread digitization of businesses and society at large, the logic inherent in a business model has become critical for business success and, hence, a focus for academic inquiry. The business model concept is identified as the missing link between business strategy, processes, and Information Technology (IT). The authors argue that the BISE community offers distinct and unique competencies (e.g., translating business strategies into IT systems, managing business and IT processes, etc.) that can be harnessed for significant research contributions to this field. Within this research gap three distinct streams are delineated, namely, business models in IT industries, IT enabled or digital business models, and IT support for developing and managing business models. For these streams, the current state of the art, suggest critical research questions, and suitable research methodologies are outlined.

**Keywords:** Business model, Research agenda, Information systems, Business process, Strategy



- Hess T, Loos P, Buxmann P et al (2012) ICT providers: a relevant topic for business and information systems engineering? *Bus Inf Syst Eng* 4(6):367–373. doi:10.1007/s12599-012-0235-3
- Hinz O, Hann I-H, Spann M (2011) Price discrimination in e-commerce? An examination of dynamic pricing in name-your-own price markets. *MIS Quarterly* 35:81–98
- Iacob ME, Meertens LO, Jonkers H et al (2012) From enterprise architecture to business models and back. *Softw Syst Model* December:1–25. doi:10.1007/s10270-012-0304-6
- Kijl B, Boersma D (2010) Developing a business model engineering & experimentation tool – the quest for scalable “lollapalooza confluence patterns”. In: *Proc AMCIS 2010*, pp 1–13
- Kinder T (2002) Emerging e-commerce business models: an analysis of case studies from West Lothian. *Scotland European Journal of Innovation Management* 5:130–151. doi:10.1108/14601060210436718
- Kley F, Lerch C, Dallinger D (2011) New business models for electric cars – a holistic approach. *Energy Policy* 39:3392–3403. doi:10.1016/j.enpol.2011.03.036
- Kontio J, Jokinen J-P, Mäkelä MM, Leino V (2005) Current practices and research opportunities in software business models. *SIGSOFT Softw Eng Notes* 30:1–4. doi:10.1145/1082983.1083103
- Kshetri N (2007) Barriers to e-commerce and competitive business models in developing countries: a case study. *Electronic Commerce Research and Applications* 6:443–452. doi:10.1016/j.elerap.2007.02.004
- Kundisch D, John T (2012) Business model representation incorporating real options: an extension of e3-value. In: *Proc 45th Hawaii international conference on system science (HICSS)*, pp 4456–4465
- Kundisch D, John T, Honnacker J, Meier C (2012) Approaches for business model representation: an overview. In: *Proc Multikonferenz Wirtschaftsinformatik (MKWI 2012)*, pp 1839–1850
- Leimeister JM (2012) Dienstleistungsengineering und -management. Springer, Heidelberg. doi:10.1007/978-3-642-27983-6
- Leimeister JM, Krcmar H (2004) Revisiting the virtual community business model. In: *Proc AMCIS 2004*, pp 2716–2726
- Liang T-P, Turban E (2011) Introduction to the special issue social commerce: a research framework for social commerce. *International Journal of Electronic Commerce* 16:5–14. doi:10.2753/JEC1086-4415160201
- Linder J, Cantrell S (2000) Changing business models: surveying the landscape. Working Paper from the Accenture Institute for Strategic Change 1:1–15
- Loos P, Lechtenböcker J, Vossen G et al (2011) In-memory databases in business information systems. *Bus Inf Syst Eng* 3(6):389–395. doi:10.1007/s12599-011-0188-y
- Magretta J (2002) Why business models matter. *HBR* 80:86–92
- Matt C, Hess T (2012) Competing against electronic intermediaries – the case of digital music. In: *Proc ECIS 2012*, pp 1–12
- McGrath RG (2010) Business models: a discovery driven approach. *Long Range Planning* 43:247–261. doi:10.1016/j.lrp.2009.07.005
- Molitor D, Reichhart P, Spann M (2012) Location-based advertising: what is the value of physical distance on the mobile internet? *Social Science Research Network*, Rochester
- Morris M, Schindehutte M, Allen J (2005) The entrepreneur's business model: towards a unified perspective. *Journal of Business Research* 58:726–735
- Österle H (2007) Business Engineering – Geschäftsmodelle transformieren. In: Loos P, Krcmar H (eds) *Architekturen und Prozesse*. Springer, Heidelberg, pp 71–84
- Osterwalder A (2004) The business model ontology – a proposition in a design science approach. University of Lausanne
- Osterwalder A, Pigneur Y (2002) An e-business model ontology for modeling e-business. In: *Proc BLED 2002*, pp 17–19
- Osterwalder A, Pigneur Y (2010) *Business model generation: a handbook for visionaries, game changers, and challengers*. Wiley, New York
- Osterwalder A, Pigneur Y (2013) Designing business models and similar strategic objects: the contribution of IS. *Journal AIS* 14:237–244
- Osterwalder A, Pigneur Y, Tucci CL (2005) Clarifying business models: origins, present, and future of the concept. *Comm AIS* 16:1–25. doi:10.1.1.83.7452
- Patel A, Giaglis G (2004) A research framework for analysing ebusiness models. *European Journal of Information Systems* 13:302–314
- Penker M, Eriksson H-E (2000) *Business modeling with UML: business patterns at work*. Wiley, New York
- Petrovic O, Kittl C, Teksten RD (2001) Developing business models for ebusiness. In: *Proc ICEC 2001*, pp 1–6
- Popp KM (2011) Software industry business models. *IEEE Software* 28:26–30. doi:10.1109/MS.2011.52
- Rajala R (2009) Determinants of business model performance in software firms. *Helsinki School of Economics*
- Rajala R, Westerlund M (2012) The effects of service orientation, technology orientation and open innovation on the performance of software-intensive service businesses. In: *45th Hawaii international conference on system science (HICSS)*, pp 1532–1541
- Rajala R, Rossi M, Tuunainen VK (2003) A framework for analyzing software business models research questions and research method. *Helsinki*
- Rappa M (2004) The utility business model and the future of computing service. *IBM Journal* 43:32–42
- Reichwald R, Piller F, Ihl C, Seifert S (2009) *Interaktive Wertschöpfung: Open Innovation, Individualisierung und neue Formen der Arbeitsteilung*, 2nd edn. Gabler, Wiesbaden
- Resatsch F, Sandner U, Leimeister JM, Krcmar H (2008) Do point of sale RFID-based information services make a difference? Analyzing consumer perceptions for designing smart product information services in retail business. *Electronic Markets* 18:216–231. doi:10.1080/10196780802265728
- Sach A (2013) Towards a theory of comprehensive value creation: a framework linking business models and legitimacy. In: *Annual meeting of the academy of management*
- Schief M, Buxmann P (2012) Business models in the software industry. In: *45th Hawaii international conference on system science (HICSS)*, pp 3328–3337
- Schief M, Pussep A (2013) Software business model determinants of performance – insights from Germany. In: *Proc ECIS 2013*, pp 1–12
- Schief M, Pussep A, Buxmann P (2012) Performance of business models: empirical insights from the software industry. In: *Proc PACIS 2012*, pp 1–14
- Seelos C, Mair J (2007) Profitable business models and market creation in the context of deep poverty: a strategic view. *Academy of Management Perspectives* 21:49–63
- Seppänen M, Maekinen S (2005) Business model concepts: a review with case illustration. In: *International engineering management conference*, pp 376–380
- Sosna M, Treviño-Rodríguez RN, Velamuri SR (2010) Business model innovation through trial-and-error learning: the naturhouse case. *Long Range Planning* 43:383–407. doi:10.1016/j.lrp.2010.02.003
- Steininger DM, Huntgeburth JC, Veit D (2011) Conceptualizing business models for competitive advantage research by integrating the resource and market-based views. In: *Proc AMCIS 2011*, pp 1–12
- Steininger DM, Hölz J, Veit D (2012) Comparing traditional and electronic business models of the music industry: a content analytical approach. In: *Grove N, Sunyaev A (eds) Proc ConLife academic conference 2012*, pp 1–10
- Steininger DM, Wunderlich P, Pohl F (2013) Exploring competitive advantage of social networking sites: a business model perspective. In: *Proc ECIS 2013*, pp 1–12
- Tapscott D, Ticoll D, Lowy A (2000) *Digital capital: harnessing the power of business webs*. Harvard Business School Press, Boston
- Tece DJ (2010) Business models, business strategy and innovation. *Long Range Planning* 43:172–194. doi:10.1016/j.lrp.2009.07.003
- Timmers P (1998) Business models for electronic markets. *Electronic Markets* 8:3–8
- Tiwana A, Konsynski B, Bush AA (2010) Research commentary – platform evolution: coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research* 21:675–687
- Valtakoski A, Rönkkö M (2010) Diversity of business models in software industry. In: *Tyrväinen P, Jansen S, Cusumano MA (eds) Proc IC SOB 2010*. Springer, Heidelberg, pp 1–12
- Vargo SL, Lusch RF (2008) Service-dominant logic: continuing the evolution. *Journal of the Academy of Marketing Science* 36:1–10. doi:10.1007/s11747-007-0069-6
- Veit D, Steininger DM (2012) Geschäftsmodelle als Thema der WI: Grundlagen, Begriffswelten und terminologische Diffusion (in German). *Geschäftsmodelle als Thema der Wirtschaftsinformatik, Arbeitsbericht No. 1/12, Workshop at the Multikonferenz Wirtschaftsinformatik (MKWI)*
- Venkatraman N (1994) IT-enabled business transformation: from automation to business scope redefinition. *Sloan Management Review* 35:73–87
- vom Brocke J, Becker J, Braccini AM et al (2011) Current and future issues in BPM research: a European perspective from the ERCIS meeting 2010. *Comm AIS* 28:393–414



- Wagner C, Benlian A, Hess T (2013) The advertising effect of free – do free basic versions promote premium versions within the freemium business model of music services? In: Proc 46th Hawaii international conference on system sciences (HICSS 2013), pp 2928–2937
- Zarnekow R, Brenner W, Pilgram U (2007) Integriertes Informationsmanagement: Strategien und Lösungen für das Management von IT-Dienstleistungen. Springer, Heidelberg
- Zott C, Amit R (2007) Business model design and the performance of entrepreneurial firms. *Organization Science* 18:181–199. doi:[10.1287/orsc.1060.0232](https://doi.org/10.1287/orsc.1060.0232)
- Zott C, Amit R (2008) The fit between product market strategy and business model: implications for firm performance. *SMJ* 29:1–26. doi:[10.1002/smj.642](https://doi.org/10.1002/smj.642)
- Zott C, Amit R (2012) Creating value through business model innovation. *MIT Sloan Management Review* 53:41–49
- Zott C, Amit R, Massa L (2011) The business model: recent developments and future research. *Journal of Management* 37:1019–1042