A State-of-the-Art Literature Review of the Business Model Concept in the IS Discipline

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Abstract

Although the Business Model (BM) concept provides a convenient unit for analyzing business practices, BM research in the Information Systems (IS) field reveals that there is a lack of consensus about definitions of the BM concept, and divergences and blurriness about the structure of such models. The aim of this paper is to provide a comprehensive state of the art review of BM research in the IS domain, and so highlight important research avenues. We review the titles and abstracts of 115 papers, examine a subset of 54 significant papers, and code 28 separate definitions of the BM concept. Our work makes three main contributions. First, it up-dates previous literature analysis in BM in the IS discipline. Second, it helps alleviate the fuzziness associated with BM definitions, identifying BM essence, components, characteristics and functions as fundamental dimensions of the BM definition. Third it defines four main BM uses, so enriching research on BMs from different angles.

Keywords

Business Model; Literature Review; Information Systems.

1. Introduction

Business Models (BMs) depict the ways companies create and capture value (Burkhart, Krumeich, Werth, & Loos, 2011; Krumeich, Burkhart, Werth, & Loos, 2012; Osterwalder, Pigneur, & Tucci, 2005). The BM concept was established during the dot-com era, and interest in the concept in the Information Systems (IS) field has grown ever since.

Indeed, the BM concept and the IS field are closely linked (Osterwalder & Pigneur, 2013; Osterwalder et al., 2005). The BM concept facilitates the choice of the appropriate business architecture, as it serves as a high-level model of the company from which business processes are developed and IS are derived. The IS discipline contributes to business modelling: computer-aided design (CAD) assists the process of designing BMs (Osterwalder & Pigneur, 2013) and Business Modelling Engineering Tools (BMETs) are used to monitor key performance indicators (KPI) and support the company business activities in real time (Di Valentin, Burkhart, Vanderhaeghen, Werth, & Loos, 2012; Di Valentin, Emrich, Werth, & Loos, 2013). Moreover, advances in Information Technologies (IT) are drivers for BM innovation and new BM creation (Baden-Fuller & Haefliger, 2013; Teece, 2010).

At the same time, research on BMs has developed within other disciplines, and there are currently intense debates in both strategy and marketing research in their attempts to theorize the concept. For example, there have been extensive discussions in the strategy field about the difference between strategy and BMs (e.g. (Casadesus-Masanell & Ricart, 2010; DaSilva & Trkman, 2014; Magretta, 2002), about BMs as descriptions of firm activities (e.g. (C. Zott & Amit, 2010; Christoph Zott, Amit, & Massa, 2011a), and about BMs as cognitive devices (e.g. (Baden-Fuller & Mangematin, 2013; Baden-Fuller & Morgan, 2010a; Martins, Rindova, & Greenbaum, 2015).

Consequently, several definitions of BM exist across and even within disciplines. This variation stems from the multiple origins of the BM concept and the multiple research agendas in which it features (Pateli & Giaglis, 2004; Shafer, Smith, & Linder, 2005). Depending on their particular interests, researchers highlight particular BM characteristics and functions. The IS discipline displays a similar pattern. BM definitions vary from descriptions of the workings of a company and its processes (Burkhart et al., 2011), to graphical representations of its value generating components (Osterwalder & Pigneur, 2010). These factors contribute to the "fuzziness" of the BM definition, its boundaries and

compositional facets.

A first attempt to reduce this blurriness was made in 2010 by Al-debei & Avison (2010). Their in-depth literature review came to the same conclusion as other studies had (Osterwalder & Pigneur, 2013; Teece, 2010), and called for deeper investigations into the essence of the BM concept, the elements that make up BMs' components, its characteristics and its practical functions. Further, the richness of BM studies in the IS field suggests the value of undertaking a mono-disciplinary analysis of the BM concept, something that is still missing in the IS literature, despite the fact that discussion of the concept is often found in journals and conferences' proceedings. We believe that a comprehensive literature review that examines the use of the BM concept in the IS field can help provide a more complete perspective.

So this paper aims not only to follow up Al-debei & Avison's (2010) first research effort with an up-to-date literature analysis, but to advance and clarify the definition and concept of the BM by providing a useful account of BM in the IS domain. Our analysis identifies four structural dimensions of the BM definition and suggests new perspectives for future research.

With this paper, we seek to answer to three research questions. First, we aim to analyze the dimensions of the BM concept as it is used in the IS field, highlighting similarities and divergences; hence the first research question is *"What are the definitions of the BM in the IS domain?"*. Second, we aim to respond to previous studies' calls for clarification, introducing an effective definition of the components of BMs by identifying and describing their contributory elements; hence the second research question is *"Which are the elements of the BM components?"*. Third, we aim to build on prior BM research to inform our understanding of the BM concept in the IS field, to clarify gaps in the literature, and to provide directions for future research; hence the third research question is *"How does the BM concept inform the IS domain?"*

The rest of the paper is structured as follows. In the next section we highlight the significance of the BM concept in the IS field. We then describe the research methods we employed to select and analyze the literature. Next, we analyze semantically the different definitions of the BM concept proposed by authors from the IS field, and then present and discuss our literature review by categorizing authors' contributions into concept-matrices. Finally, we discuss the contributions our work makes and suggest

some future research directions, before offering some concluding remarks.

2. The Importance of BM Research in IS Discipline

The IS discipline recognizes the importance of three fundamental aspects of the BM concept (Al-debei & Avison, 2010; Burkhart et al., 2011; Osterwalder et al., 2005)(Al-debei & Avison, 2010; Burkhart et al., 2011; Osterwalder et al., 2005)(Al-debei & Avison, 2010; Burkhart et al., 2011; Osterwalder et al., 2005). First, the BM concept supports the strategic alignment of a firm's information systems to its strategy. Second, IS is significantly involved in business modeling and business performance measurement processes. Third, advances in IT are major drivers of BM innovation.

Concerning the strategic alignment, the BM serves as a high-level representation of a company's business logic, from which its business processes and IS engineering requirements are derived. IS infrastructures support process activities that promote the development of particular products or services, as well as the company's architectural structures and its relationships. Therefore, understanding a company's BM facilitates its IS infrastructure choices. To succeed, a company's strategy and business processes, along with its IS, have to be aligned to ensure the achievement of its goals and objectives. In this sense, the BM concept helps increase mutual understanding and integration between a firm's strategy and its IS (Al-debei & Avison, 2010; Burkhart et al., 2011; Osterwalder & Pigneur, 2010, 2013; Osterwalder et al., 2005). Recent strategy literature has also analyzed the co-existence of multiple BMs within the same company (Brea-Solís, Casadesus-Masanell, & Grifell-Tatjé, 2015; Markides & Charitou, 2004; Øiestad & Bugge, 2014; Sabatier, Mangematin, & Rousselle, 2010), and these studies reinforce the role of BMs in facilitating IS strategic alignment.

Concerning business modeling, IS positively contributes to strategic objectives' design, decision support system implementation, and processes validation (Beath, Berente, Gallivan, & Lyytinen, 2013; Osterwalder & Pigneur, 2013). More specifically, computer-aided design (CAD) assists the BM design processes by supporting visualizations to assist thinking activities, and BM prototyping, enabling deep comprehensive analysis, remote collaboration and quick simulations (Burkhart et al., 2011; Osterwalder & Pigneur, 2010, 2013; Osterwalder et al., 2005). In addition to CAD assistance, BMETs monitor the performances of existing BMs via the real-time measurements of indicators. By using these tools, firms can modify their existing BMs based on defined industry-specific KPIs. BMTEs help companies to monitor their BMs to reveal strengths, weaknesses, opportunities and threats, and to predict sales and profit levels in different market scenarios (Di Valentin et al., 2013). While other disciplines provide representations of BMs (e.g. (Demil & Lecocq, 2010), their operationalization is studied in deeper and more sophisticated ways in the IS field.

Concerning BM innovation, the increasing appearance of the BM concept in literature since the early 2000's, that has been noted by researchers (Burkhart et al., 2011; Lambert, 2008; Osterwalder et al., 2005), has mainly been caused by the growing use of internet based IT infrastructures in business activities. As result, technology has been able to create and shape digital BMs (Al-debei & Avison, 2010; Oestreicher-Singer & Zalmanson, 2013). In recent years, IT advances have also been primary drivers of BM innovation, which refers to innovating the fundamental logics of how organizations create, deliver and capture value (Fichman, Dos Santos, & Zheng, 2014; John, 2014). As a result, considering BM has become vital for IS managers and practitioners, who must be able to understand how to exploit the technology to develop innovative BMs to better satisfy customers' demands and needs.

Despite the fact that the IS field recognizes the relevance of BM research, the significance of the concept and its growing central role in IS discussions have not led to a convergence. The BM definition and concept in IS literature are still fuzzy, and little consensus exists regarding BM components.

3. Research Methodology

We follow (Webster & Watson, 2002) methodology to select relevant papers from the IS literature for analysis. We start by looking for relevant papers in leading IS journals according to the ranking proposed by (Lowry et al., 2013), which includes MIS Quarterly, Information Systems Research, Journal of MIS, European Journal of Information Systems, Information Systems Journal, Journal of the Association of the Information Systems, and Journal of Strategic Information Systems. We use four databases for our research: ProQuest, EBSCO, ScienceDirect, and JSTOR archive. Following a previous study (Merali, Papadopoulos, & Nadkarni, 2012), we search for the keyword "BM(s)" in the titles or abstracts of papers from these journals within our specific time range (from 2009 to 2014), updating (Al-debei & Avison, 2010) study, which reviewed the literature published until 2008.

Following these criteria, we identify a total of 20 papers from selected journals (see Table 1). To broaden our search beyond this original set of journals, we also examine works of potential interest published in IS conference proceedings (Webster & Watson, 2002), reviewing the proceedings of the ICIS, AMCIS, and HICSS conferences (Hock Chuan Chan, Hee-Woong Kim, & Weai Chee Tan, 2006; Walstrom & Hardgrave, 2001). This led us to identify a total of 95 additional conference papers, giving us an overall total of 115 papers.

To evaluate whether papers warranted inclusion in our literature review, at least one the following criteria had to be satisfied: 1) The paper concerns, or is relevant to, the BM definition and concept in IS; 2) The paper describes or identifies BM components (Al-debei, El-Haddadeh, & Avison, 2008); 3) Even if primarily concerned with other research questions and topics, the paper discusses the BM concept, directly or indirectly.

Following the above criteria, we select 54 papers from the 115 initially identified papers for deeper analysis in our literature review (see Table 1).

Table 1 Selected Literature in IS: papers from Journals and Conference Proceedings analyzed (from 2009 to 2014)

		(1)		(2)	
Journals	MIS Quarterly	4		3	
	Information Systems Research	2		2	
	Journal of MIS	5		5	
	European Journal of Information Systems	2	**20**	2	**16**
	Information Systems Journal	0		0	
	Journal of the Association for Information Systems	2		1	
	Journal of Strategic Information Systems	5		3	
Conference Proceedings	ICIS	16		4	
	AMCIS	25	**95**	16	**38**
	HICSS	54		18	
Total		**115**		**54**	

(1) Numbers of papers containing the keyword "BM(s)" in title or abstract;

(2) Number of papers selected for deeper analysis.

We first perform a semantic analysis of the BM definitions the selected papers adopted to identify the main facets of the BM concept. Secondly, we categorize the literature in concept-matrices to understand the constituent elements of the BM components and the BM uses in the IS field.

To semantically analyze the BM definitions we code them (Miles, Huberman, & Saldaña, 2014) as encountered in the papers, performing two cycles of coding. Following the in Vivo coding methodology, we performed a first cycle coding extracting single words or short phrases from each definition, a method that is appropriate for studies that recognize and prioritize different authors' contributions (Miles et al., 2014). We then performed the second cycle coding to group the first cycle codes into categories that are more meaningful and parsimonious units of analysis, to identify emerging

configurations or themes. Second cycle coding helps to find recurring phrases (i.e. in Vivo codes), revealing commonalities and divergences (Miles et al., 2014). To discover thematic patterns, codes are clustered into the same class only if they are thematically similar to each other, that is, they communicate the same or very similar semantic ideas about the concepts.

To deepen our understanding about the different elements of the BM components, and to understand how the BM concept informs the IS field, we *categorize* these thematic interpretations into concept-matrices (Webster & Watson, 2002), which classify objects that share common characteristics into conceptually meaningful groups. Concept-matrices are mechanisms that map different concepts, yielding structured groupings of similar data, and are thus effective means of communicating major findings and insights (Webster & Watson, 2002). Our concept-matrices allow for greater understanding of the elements of the BM components and of the different uses of the BM concept in the selected literature. On the basis of our semantic analysis, we build a first concept-matrix to deepen our understanding of the BM components. The second concept-matrix highlights the uses of BMs, which emerge as clusters from deductive abstractions of the similarities in the selected literature.

4.   Literature Review

### 4.1 Results of the Semantic Analysis of the BM Definitions

We identified a total of 28 different definitions of BM from the papers we analyzed. Appendix A shows the definitions we extracted from the first and second cycles coding of our selected literature. The first cycle coding identifies in Vivo Codes, segments or single words of the BM definitions. By aggregating the first cycle codes, four dimensions of the BM definition – essence, components, characteristics and functions - emerged in our second cycle coding.

The first dimension includes codes that define the BM in terms of what it is, and so characterize the *BM essence* (see Figure 1). The semantic analysis highlights two alternative BM essences: (1) the majority (18 of the 24) definitions define the BM as a *representation* - as an abstraction of current or future business reality, where the BM is a description or a depiction of the business, framing its business logic; and (2) the other 6 definitions see the BM as a *template,* used to structure business operations - and, by extension, the whole organization - for value creation and capture.

The focal point of the BM definition is the *business logic* that it represents or models. The term
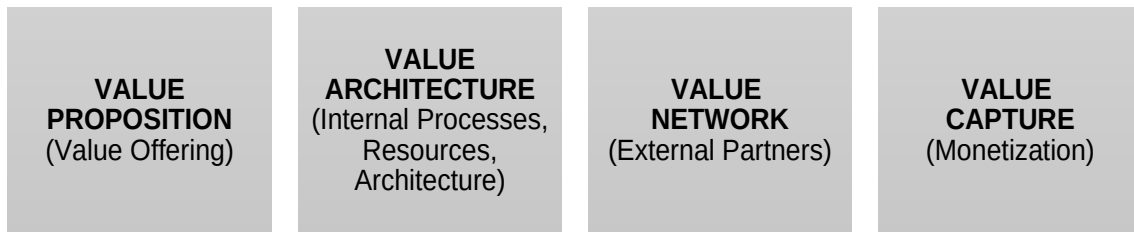
business logic - synonymous with organization rationale - denotes all the architectural, co-operational, and financial arrangements and the interrelated organizational practices that a company runs to create, deliver, and capture value.
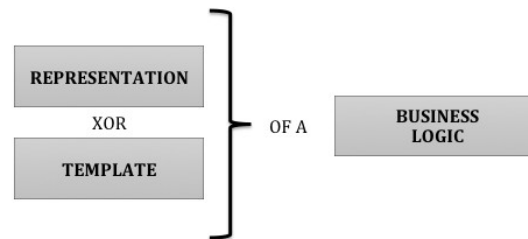

Figure 1 BM Essence

The second dimension concerns the *BM components* (see Figure 2). The codes in this dimension describe the main BM components that must be examined when designing, analyzing, and evaluating company business logics. BM components are value-based and aim to provide stakeholders (such as the organization itself, its customers and its partners) with the advantages they desire (i.e. economic values for stockholders; the products or services offered for customers). We can identify four BM components from the pattern coding. First, the *value proposition* which defines how value is created and delivered to the target customers through the offer of products and services. Second, the *value architecture* that deals with the key processes and resources necessary for the value proposition to be fulfilled. The key processes are all firm transactions, mainly input and output transformations, and product or service distribution, while the key resources include the company's people, assets and all the knowledge and competencies it has acquired during its business history. Technologies are part of the business resources and enable the firm's transactions with external business constituents and product markets (Rai & Tang, 2014). In the BM definitions considered in our analysis, the technological architecture comprises the service platforms and the devices and applications a business uses to create value (Björn Kijl & Boersma, 2010; Rai & Tang, 2014). Third, the *value network* which includes the external network of partners that the company mobilizes to deliver the value proposition to its customers. Forth, the *value capture* component that concerns how organizations manage monetization issues, and relates to the financial value the company generates in its transactions.

VALUE PROPOSITION (Value Offering)	**VALUE ARCHITECTURE** (Internal Processes, Resources, Architecture)	**VALUE NETWORK** (External Partners)	**VALUE CAPTURE** (Monetization)

Figure 2 BM Components

The third dimension gathers codes that describe the BM in terms of its *characteristics* (see Figure 3). From the analysis of the BM definitions, we can abstract six characteristics: 1) the BM is an *important* tool the company can use to depict its business logic (Buder & Felden, 2012); 2) the BM is not limited to a specific type of business, but the concept is *generally applicable* to any firm in any sector (Burkhart et al., 2011); 3) the property of *dynamism* reflects the fact that BM properties can change over time. A firm should both concentrate on its actual state (analyzing its BM at specific moments in time) and on its future evolution, considering possible different configurations the BM could assume as the firm business evolves over time (Burkhart et al., 2011); 4) the BM concept is *user-addressable*, and can be useful to address several intended audience types, both internal and external (Burkhart et al., 2011); 5) the BM has the characteristic of being concise, and so is able to provide a *highly aggregated* level view of the company (Burkhart et al., 2011; Lindman, Kinnari, & Rossi, 2014; Zolnowski & Bohmann, 2013); 6) the BM is *conceptual*, in that it offers a simplification of a current or future business reality (Al-debei & Avison, 2010; Feller, Finnegan, & Nilsson, 2011).

Important	**Generally Applicable**	**Dynamic**
User Addressable	**Highly Aggregated**	**Conceptual**
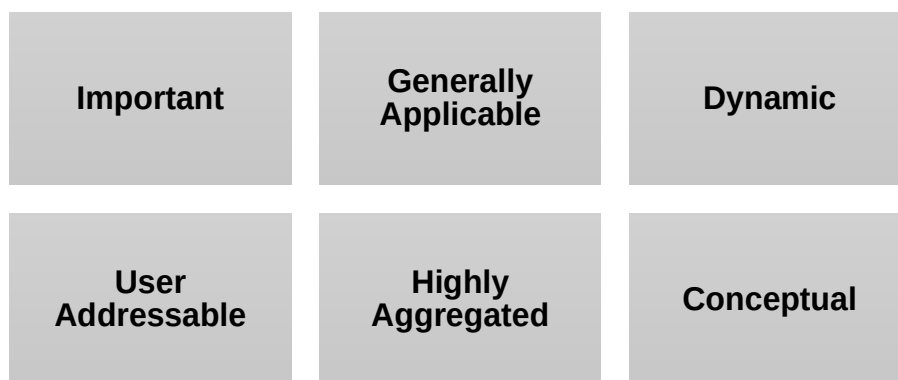
Figure 3 BM Characteristics

Codes indicating the roles BM play, and the benefits organizations can achieve by employing the concept appropriately suggest a fourth dimension - that of the *BM functions* (see Figure 4). Two can be identified: the BM *supports the execution* of business processes (Buder & Felden, 2012); and is an

enactment tool for *opportunity exploitation* (Sitoh, Pan, & Cui, 2014).

A Support for the Execution of the Business Processes	Opportunity Exploitation

Figure 4 BM Functions

Our analysis shows that all 28 definitions depict the BM through its *components*; and while 24 of the 28 definitions focus on the BM *essence,* the other two dimensions are much less covered in literature - 6 of the 28 highlight BM *characteristics* and only 2 refer to BM *functions*. Most definitions refer to more than one dimension. The majority of the definitions (21 out of 28) define the BM in terms of its *essence* and *components*; five definitions specify the BM *essence*, BM *components* and BM *characteristics* (Al-debei et al., 2008; Burkhart et al., 2011; Di Valentin, Werth, & Loos, 2014; Feller et al., 2011; Zolnowski & Bohmann, 2013); while one covers the dimensions of BM *essence*, BM *components* and BM *functions* (Sitoh et al., 2014). Only one definition (Buder & Felden, 2012) covers all the four dimensions defined in the second cycle coding.

Our analysis also highlights that few authors (9 out of 28) propose their own BM definitions (see Appendix A), enriching this aspect of BM research: the majority (19) of the definitions they offer refer to previous BM definitions. The most cited BM definitions in the IS field are those of (Bouwman, Meng Zhengjia, van der Duin, & Limonard, 2008; Timmers, 1998), and the second most often cited are those of (Osterwalder et al., 2005). From our analysis, the majority (11 out of 19) of the definitions cited are from outside the IS field, most coming from the economics and strategy domains.

4.2 Results of the BM Literature Categorization

4.2.1   *The Elements of the BM Components*

In order to define the BM components in an effective way, we consider the 'elements' that are commonly used in the IS literature.

The use of the concept-matrix for the categorization of the selected BM studies facilitates our analysis of the elements of the BM components (see Figure 5). The first categorization of the selected studies is based on the BM components – value proposition, value architecture, value network, and value

capture – identified during the semantic analysis (as shown in Appendix B).

The *value proposition* is focused on customers' needs, and on the products or services offered to satisfy those needs. Value is created for *customers* and *users* by offering a desired *product* or *service* targeted towards particular market segment(s). The value proposition describes the products and services offered, and the customers with whom the company is engaged. The analyses by (Krumeich et al., 2012; Krumeich, Werth, & Loos, 2013) differ from others, linking the concept of *competitive advantage* to the value proposition, as a contribution to long-term business sustainability. The term competitive advantage formulates the extent to which a firm's BM differs from those of its competitors, and how it can be sustained for strategic business growth. (Di Valentin et al., 2013) argue that the selling proposition and the different products or services offered in a business value proposition define the *business strategy*.

Three internal company elements are identified within the *value architecture* component: *a*ctivities and processes*,* resources and competences. The *activities and processes* enable the development of the products or services offered and describe the most important things a company must do to make its BM work; the *resources*, tangible and intangible (including human assets), describe the most important requirements to make a BM work; while the *competences* include the expertise, abilities and skills necessary to execute the company's BM. It is important to note that activities and resources together make up the so-called *value configuration* (Feller et al., 2011; Malsbender, Beverungen, Voigt, & Becker, 2013; Rensmann, 2012). When not included in the *resources*, *technology* is identified as a separate element, and describes the technological architectures of the service platform, of devices and their applications, and of the development environment which a business needs to run (Di Valentin et al., 2013; Björn Kijl & Boersma, 2010; Labes, Erek, & Zarnekow, 2013; Malsbender et al., 2013; Zolnowski & Böhmann, 2011).

The *Value network* concerns what is external to the focal company, and has three different elements: infrastructure management, customer interface, and communication flow. The *infrastructure management* includes the partner network (Di Valentin et al., 2014) - the corporate agreements the firms has with other companies and the technological partners that are necessary to allow it to offer, distribute and commercialize the value it creates. The *customer interface* identifies the relationships

and the types of links a company establishes, specifically between itself and its different customer segments, while the *communication flow* (Krumeich et al., 2012; Osterwalder & Pigneur, 2010) identifies the ways in which a company reaches its stakeholders to deliver its value proposition(s).

Value capture represents the financial aspects of the BM concept: the most frequently noted elements in this component are the company's cost and revenue models. The *cost model* sums up the financial consequences of the means employed in the BM, while the *revenue model* describes how the company makes money through a variety of revenue flows. Others elements belonging to this component appear less often in the value finance definition. The *pricing model* covers the pricing of the product and the service offered (Di Valentin et al., 2013; Björn Kijl & Boersma, 2010; Krumeich et al., 2012, 2013; Malsbender et al., 2013), while the *distribution model* indicates how all the investments, cost and revenues are shared among value network participants to ensure the sustainable financing of value creation (Krumeich et al., 2012, 2013). *Investment and funding source models* indicate the sources of the capital used to operate the BM (Björn Kijl & Boersma, 2010; Krumeich et al., 2012), and the *profit model* defines the results of the pricing, revenue and cost models (Krumeich et al., 2012).

VALUE PROPOSITION	VALUE ARCHITECTURE	VALUE NETWORK	VALUE CAPTURE
Customers Users Products Services	Activities Processes Resources Technology Competences	Infrastructure Management Customer Interface Communication Flow	Costs Revenues Pricing Distibution Investments & Funding Profits

Figure 5 Elements of BM Components

4.2.2   The uses of the BM concept

Our analysis reveals that the studies addressing BMs in the IS discipline have all been associated with four major uses of the BM concept (see Figure 6), as described in Appendix B .

First, BMs are used to *map specific business structures* and *build taxonomies* in 26 papers out of 54 papers, identifying types of BM and describing sets of businesses with common characteristics.

To build taxonomies, authors use the BM perspective to analyze exemplar cases in specific industries, conceptualized to different degrees and offering different BM representations. (Brockmann & Gronau,

2009) provide insights into the BMs of Enterprise Resource Planning (ERP) system providers, and (Giessmann, Fritz, Caton, & Legner, 2013; Giessmann, Kyas, Tyrvainen, & Stanoevska, 2014; Kuebel & Zarnekow, 2014) provide taxonomies for Platform as a Service (PaaS) industries. IS researchers' interests focus mainly on the software industry, where the value proposition includes the provision of systems, IT infrastructures and consultancy, to both public and private bodies, that facilitate better communication, enable business process improvements, and save time and money (Brockmann & Gronau, 2009; Chen, Chou, & Kauffman, 2009; Hochstein, Schwinn, & Brenner, 2009). Other industry fields are studied in contributions by (Lucas Jr. & Goh, 2009; Tay & Chelliah, 2011).

Second, BMs are used as *analytical lenses* to describe both the *interplay between strategy and operations* and the *configuration of value creating activities* (17 of 54 papers).

This use recognizes the BM as an intermediate layer (Burkhart et al., 2011; Di Valentin et al., 2012) and alignment instrument between strategy and business processes. The BM derives from the firm's strategy and therefore reflects it: it offers the basis for the design of company business processes and the related IS infrastructure that supports business activities. So the BM is a powerful tool to align business processes and IS with the company's strategic objectives. Within this context, the BM is used to evaluate the impacts of different strategies (Clemons, 2009; Demirkan, Cheng, & Bandyopadhyay, 2010; Deodhar, Saxena, Gupta, & Ruohonen, 2012; Tay & Chelliah, 2011) and technological trends (Feller et al., 2011; Loebbecke & Tuunainen, 2013; Morgan & Conboy, 2013; Oestreicher-Singer & Zalmanson, 2013) on business processes and on the industry's supply chain. The BM is a result of the company's strategic choices (Sitoh, Pan, Zheng, & Chen, 2013) and, through their execution, determines their success (Keen & Williams, 2013).

The BM is the basis for describing and defining operations (Bonakdar et al., 2013; Buder & Felden, 2012). This use requires the identification of the processes and activities of the value chain that shape the creation and exchange of value.

Within this context, the BM is seen as a static representation, a description via which to explore the impacts of different strategies on the company's strategic positioning and operations.

Third, BMs are used to *define* and *describe* the different *business components* and *their relationships* (in 8 of 54 papers). The authors focus their searches on the BM components, and on discovering and depicting their structural relations at an abstract level (Krumeich et al., 2013; Zolnowski & Bohmann, 2013). Without a thorough knowledge of the business components, and their relationships, it is difficult to optimize, transform or innovate the company's value creation and capture processes successfully.

The value capture component is analyzed deeply in the IS literature. Authors search for alternative revenue models to on-line advertising for Interned-based content distribution industries (Clemons, 2009; Kundisch & John, 2012; Lin, Ke, & Whinston, 2012; Susarla, Barua, & Whinston, 2009).

Filling a major gap in the BM concept highlighted by (Burkhart et al., 2011), (Krumeich et al., 2013) analyze the interdependencies between BM components, and show that almost every BM component is connected to the others, making all their inter-relations structural and indisputably important.

Fourth, BMs are used as tools for *BM design* and *business modeling*, to help understand and analyze strategic business issues (again, 8 papers of 54). Business modeling facilitates the development of different approaches to creating and capturing value. This use sees the BM as a tool for business design, implementation and performance evaluation. Literature offers algorithms to design BMs (Bjorn Kijl & Nieuwenhuis, 2010), both for newly developing businesses and for established companies undertaking BM innovation, and emphasizes the notion of BM design as part of the innovation processes – in fact, the development of innovation is linked to the shaping of a coherent BM (Zolnowski & Böhmann, 2011).

BM design and business modeling is supported by engineering tools such as CAD and BMETs. The application of CAD assists the processes of designing, prototyping and simulating strategic business objects, such as BMs (Osterwalder & Pigneur, 2013). This use also includes the application of BMETs to helping improve BMs validation and implementation. BMETs provide critical insights related to the viability of BMs in different scenarios. By analyzing the different performance indicators that form the outputs of such tools, companies can monitor, test, adapt and fine tune their BMs (Di Valentin et al., 2013; Björn Kijl & Boersma, 2010; Bjorn Kijl & Nieuwenhuis, 2010).

Map Specific Businesses - Build Taxonomy	Describe the Interplay between Strategy and Operations and the Configuration of Value
Describe Different Business Components and their Relationships	Business Model Design and Business Modeling

Figure 6 BM Uses

5. Discussion

Our critical analysis of the existing views of the BM concept highlights important implications following discussed.

First, there is an overlap between BM definitions. Despite the lack of consensus about the definitions of BM among IS scholars, our close examination reveals that there is a considerable overlap in the dimensions that were coded in each definition. Generally speaking, BM definitions coalesce around two different and alternative essences of the BM concept, and four value-based components.

As far as its essence is concerned, the BM can be seen as a representation or as a template of a company's business logic. The definition of the BM as a *representation* seems to imply that its function is to provide a generic level description of how a company creates and distributes value in a profitable manner, while (as identified in our study) defining the BM essence as a *template* seems to suggest instead that the BM functions more as a blueprint or a recipe. This difference has received specific attention in work in the strategy discipline (e.g. Baden-Fuller and Morgan, 2010). By describing the company's business behavior, the BM concept can be used as a classifying device that is valuable both in expanding our understanding of business phenomena and in developing useful taxonomies. In our literature review, this dimension of the BM essence is highlighted by its use as a tool to build taxonomies. The notion of recipe, in contrast, gives scholars a way to describe different types of business behaviors, and managers an outline of how to do something so that the result will come out as expected. In this sense, the BM offers a way to copy successful businesses' structures and practices by providing descriptions of those businesses that integrate the elements of the firm's activity with a set of rules, which, if followed, can be expected to produce particular outcomes. However, this difference between the two definitions does not seem clear in the literature we analyzed: BMs seem to be defined indiscriminately as representations or as templates among the four uses that we identified. We therefore call for a deeper investigation into the essence of BMs and the use of these two alternative meanings.

All the BM definitions analyzed are broken down into BM components. *Value proposition*, *value architecture*, *value network*, and *value capture* fully describe the operational, architectural and financial arrangements of a company.

We believe that defining the BM in terms of the four dimensions highlighted by our analysis – BM essence, BM components, BM characteristics and BM functions – is exhaustive. All the definitions we observed considered the dimensions of the BM essence and BM components. At the level of the BM essence as a representation, we highlight (among others) (Kundisch & John, 2012) definition: "A BM is the representation of a firm's underlying core logic". The notion of the BM essence as a template is clearly taken into account in (Rai & Tang, 2014) definition: "The BM is the structural template that describes the organization of a focal firm's transactions". At the BM components level, among others. (Feller et al., 2011) provide a definition that highlights all four components: "The BM is a description of the value a company offers to one or several segments of customers, and of the firm and its network of partners for creating, marketing and delivering this value to generate profitable and sustainable revenue streams".

However, as our results suggest, BM characteristics and functions are less often included in BM definitions in the literature, so we call for further clarification about these two dimensions. Furthermore, we need to ask, "Are there any additional relevant dimensions that do not figure in our contribution? Is there a minimum number of dimensions required to define the BM concept adequately?" Exploring this aspect of the BM research could address the limits of the current research, and facilitate a deeper understanding of the BM concept.

Second, BM elements are presented. This paper presents an analysis of the elements of BM components, answering the call for their deeper investigation. The representation we develop (see Figure 5) synthesizes the elements of each BM component to form a complete structure of the concept. The framework presented here is generally applicable, and does not focus on any one industry in particular - so researchers can use it as a solid base to design, describe and analyze specific BMs, and it can set the basis for developing taxonomies. From a practical perspective, this framework can enhance an organization's ability to manage its existing and future BMs.

Our representation enriches the range of BM representations available in the IS literature. Our analysis has enabled us to identify several recurrent and generally applicable BM representations (Al-debei & Avison, 2010; Bouwman et al., 2008; Gordijn & Akkermans, 2001a, 2001b; Krumeich et al., 2012; Osterwalder et al., 2005; Zolnowski & Böhmann, 2011), on which IS scholars have created different taxonomies. We believe that more focus on different BM representations will help a greater understanding of the essence and components of the BM concept, and facilitate BM design. As the different BM representations are currently used indiscriminately to support all the four BM uses that our analysis reveals, we believe that further research could help identify the appropriate BM representations for each specific BM use.

Third, a framework of BM uses is provided. As noted above, the BM is an important concept that makes multiple contributions to the IS literature. We confirm these contributions in the literature we have analyzed, and we add four other contributions. The literature reveals four major uses of the BM concept: to map specific business sectors or industries and create taxonomies; to describe the interplay between strategy and operations and the configuration of value; to describe different business components and their relationships; and as a tool for BM design and business modeling. We believe that our analysis is a first attempt to classify the uses of the BM concept in the IS field.

Our analysis focuses on the use of the BM as tool to design and analyze business performances. However, on the subject of BM design, management and evaluation, little has been said about the users of the BM concept. Shedding light on the users of CAD systems and BMETs would reveal useful managerial implications in terms of the competences and skills required. Furthermore, BMETs for BM design and management are mainly used in the software industry, although we believe BMETs could be exported to other industries and bring similar results to those observed in that setting: so further

research could be undertaken in this area. Moreover, considering BM design as part of the innovation process opens discussion about the use of CAD and BMETs to innovate BMs. BM innovation is defined as the development of significant new ways of creating and capturing business value (Fichman et al., 2014) - further investigation is needed as to how these tools can support BM innovation.

Research in the IS field offers great possibilities to enrich other fields. Many strategy scholars have called for better BM design tools and BM representations (Baden-Fuller & Mangematin, 2013; Eckhardt, 2013; Christoph Zott & Amit, 2013). We have seen in this paper that the IS field benefits from many contributions and could help operationalize BM design and BM innovation. In addition, as research on BMs portfolios progresses, the level of complexity increases, and medium and large companies need systematic tools to balance the risks and promises, and manage the tensions and synergies generated by and within BM portfolios (Sabatier et al., 2010). Further, contributions from the IS field linking BM to firm performance could fill important gaps in strategy and marketing, and answer calls by many scholars for the better evaluation and metrics of BMs (R. Amit & Zott, 2008; Frankenberger, Weiblen, & Gassmann, 2013; Gerasymenko, De Clercq, & Sapienza, 2015).

6. Conclusions

We reviewed the abstracts and titles of 115 papers from the IS literature from 2009 to 2014, and categorized 54 relevant studies: from these, we coded 28 different definitions of BMs. Based on this review, we improved the current situation by providing a more refined structure to the BM concept. Building on previous studies, we clarified the BM concept in terms of its dimensions (essence, components, characteristics, and functions), its constitutive elements and the different BM uses in the IS field. We followed a systematic, structured and replicable approach to conducting our literature review to determine the source material to be included in our analysis (Webster & Watson, 2002). The criteria we adopted for choosing studies for deeper analysis are adequately broad: however, we recognize that the choice of these criteria is indeed subjective and that we might have missed some papers that should have been included in our analysis.

Our semantic analysis of BM definitions contributes to BM research, both theoretically and methodologically, and the tables we present clearly summarize authors' different contributions to the BM concept. The paper is therefore helpful in assuaging some of the fuzziness associated with the BM definition, by clarifying the essence of the BM concept and its components.

Our categorization of the BM literature provides a useful insight into the elements that make up the BM components, and addresses the need for clarification noted in previous studies by providing a

synthesized representation of the BM concept. Moreover, our literature review focuses on the different uses of the concept, outlining its importance for the IS domain, and contributing theoretically to understanding the connections between the IS field and BM research.

Our analysis provides future perspectives for researchers in the BM field that need to be explored to achieve a successful use of the BM concept. One major gap is revealed in the analysis of the dimensions of the BM definition, and we note the need to promote research in the field of BM representation and business modeling. We suggest that BM research in IS field would also benefit from interaction with the strategy and marketing domains, where the concept of BM has been studied more extensively.

This paper improves on the research and analysis methods used in previous studies. We describe clearly the methodologies we use for our semantic analysis and literature categorization: the paper is structured in order to make these methodologies easy to be replicable. However, we are aware of the limitations of our research - which is dedicated only to the IS domain - and recognize that research in other domains may also yield other significant contributions to developing the BM concept.

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Table A1 First Cycle and Second Cycle Coding

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
1	(Al-debei & Avison, 2010)	"A BM is an abstract representation of an organization, 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."	"Abstract" "Representation" "Architectural, co-operational, financial arrangements" "Presently and in the future" "Core products and/or services the organization offers, or will offer"	"Representation" "Architectural, co-operational, financial arrangements"	"Core products and/or services the organization offers, or will offer"	"Abstract" "Presently and in the future"	
2	(Brockmann & Gronau, 2009)	"A BM contains the business logic, consisting of how inputs are transformed to output, how the products or services are distributed, what markets and customers are targeted, how value is generated for the customers, what revenues are generated and what costs occur."	"Contains" "Business logic" "How Input are transformed to output" "How product/service are distributed" "What market and customer are targeted" "How value is generated for customer" "What revenues are generated" "What costs occur"	"Contains" "Business logic"	"How Input are transformed to output" "How product/service are distributed" "What market and customer are targeted" "How value is generated for customer" "What revenues are generated" "What costs occur"		
3	(Hochstein et al., 2009)	"A BM is an organization (or architecture) of products, services, and information flow as well as sources of revenue and utilization for suppliers and clients."	"Organization (or architecture)" "Products" "Services" "Information flow" "Sources of revenue and utilization for suppliers and clients"	"Organization (or architecture)"	"Products" "Services" "Information flow" "Sources of revenue and utilization for suppliers and clients"		

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
4	(Björn Kijl & Boersma, 2010)	"A BM describes the logic behind value creation. BM components are described through the STOF-Framework that uses four different domains to describe the underlying logic of BM design. Each domain represent the generation of value for customers and end users as well as the other roles participating in the value network as a key point. The BM components are: service, technology, organization, and finance."	"Describes" "Logic" "Value creation" "Generation of value for customers, end users as well as the other roles participating in the value network" "Service" "Technology" "Organization" "Finance"	"Describes" "Logic"	"Value creation" "Generation of value for customers, end users as well as the other roles participating in the value network" "Service" "Technology" "Organization" "Finance"		
5	(Bjorn Kijl & Nieuwenhuis, 2010)	"A BM is a description of the way a company or a network of companies aims to make money and create customer value."	"Description" "Make money" "Create customer value"	"Description"	"Make money" "Create customer value"		
6	(Feller et al., 2011)	"A BM is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing and delivering this value relationship capital, to generate profitable and sustainable revenue streams."	"Conceptual" "Tool" "Business logic" "Value a company offer to one or several segment of customers" "Architecture of the firm and its network of partners for creating, marketing and delivering value, to generate profitable and sustainable revenue streams"	"Tool" "Business logic"	"Value a company offer to one or several segment of customers" "Architecture of the firm and its network of partners for creating, marketing and delivering value, to generate profitable and sustainable revenue streams"	"Conceptual"	

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
7	(Burkhart et al., 2011)	"A BM describes (mainly textual on a highly aggregated level) the business logic of an underlying company by a combination of interdependent offering, market, internal as well as economical BM components in static and dynamic way beyond the company's border. BM is not limited to a certain type of business or industry and is thus generally applicable and intended for internal as well as external addresses."	"Describes" "Business logic" "Combination of interdependent offering, market, internal, economical components" "Static and dynamic way" "Not limited to a certain type of business" "Generally applicable" "Intended for internal as well as external addresses"	"Describes" "Business logic"	"Combination of interdependent offering, market, internal, economical components"	"Mainly textual on a highly aggregated level" "Static and dynamic way" "Not limited to a certain type of business" "Generally applicable" "Intended for internal as well as external addresses"	
8	(Deodhar et al., 2012) (Baden-Fuller & Morgan, 2010b) (Baden-Fuller & Morgan, 2010b)	"A BM is a collection of interrelated organizational practices that link the value creation, resource organization, value delivery, and revenue generation with the organizational context characterized by interests, people, and history."	"Collection of interrelated organizational practices" "Value creation" "Resource organization" "Value delivery" "Revenue generation" "Organizational context characterized by interests, people and history"	"Collection" "Interrelated organizational practices"	"Value creation" "Resource organization" "Value delivery" "Revenue generation" "Organizational context characterized by interests, people and history"		

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
9	(Di Valentin et al., 2012)	"The BM identifies what is being offered by the new venture, who the target customers are, how the new venture will acquire and organize resources to serve the target customers and how it will be paid for its products and services such that financial success of the new venture seems to be assured."	"What is being offered" "Who the target customers are" "How the new venture will acquire and organize resources" "Target customers" "How it will be paid for its products and services" "Financial success"		"What is being offered" "Who the target customers are" "How the new venture will acquire and organize resources" "Target customers" "How it will be paid for its products and services" "Financial success"		
10	(Rensmann, 2012)	"A BM is architecture for product, service and information flows, including a description of the various business actors and their roles."	"Architecture" "Product, service, information flows" "Business actors and roles"	"Architecture"	"Product, service, information flows" "Business actors and roles"		
11	(Moreno, Tizon, & Preda, 2012)	"A BM is blueprint for a service to be delivered, describing the service definition and the intended value for target group, the sources of revenue, and providing an architecture for the service delivery, including a description for the resources required, and the organizational and financial arrangements between the involved business actors, including a description of their roles and the division of the costs and revenues over the business actors."	"Blueprint" "Service to be delivered" "Service definition" "Intended value for target group" "Source of revenue" "Architecture for the service delivery" "Resources required" "Organizational and financial arrangements" "Business actors" "Their roles" "Division of costs and revenues"	"Blueprint"	"Service to be delivered" "Service definition" "Intended value for target group" "Source of revenue" "Architecture for the service delivery" "Resources required" "Organizational and financial arrangements" "Business actors" "Their roles" "Division of costs and revenues"		
12	(Kundisch & John, 2012)	"A BM is the representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network."	"Representation" "Core logic and strategic choices" "Creating and capturing value" "Value network"	"Representation" "Core logic and strategic choices"	"Creating and capturing value" "Value network"		

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
13	(Buder & Felden, 2012)	"A BM has become an important tool to formalize value proposition. A description of key components of a given or a particular business. The task of a conceptual BM is to enhance understanding and support the execution of BMs in business processes."	"Important" "Tool" "Value Proposition" "Description" "Key components" "Enhance understanding" "Support the execution of BMs in business processes"	"Tool" "Description"	"Value Proposition" "Key components"	"Important"	"Enhance understanding" "Support the execution of BMs in business processes"
14	(Sitoh et al., 2013)	"A BM is the logic of the firm, the way it operates and how it creates values for stakeholders."	"Logic" "Way it operates" "How it creates values" "Stakeholders"	"Logic"	"Way it operates" "How it creates values" "Stakeholders"		
15	(Giessmann & Legner, 2013)	"A BM consists of four interlocking elements that, taken together, create and deliver value. These elements are Customer Value Proposition (CVP), Profit Formula, Key Resources, Key Processes."	"Create and deliver value" "Customer value proposition" "Profit formula" "Key resources" "Key processes"		"Create and deliver value" "Customer value proposition" "Profit formula" "Key resources" "Key processes"		
16	(Malsbender et al., 2013)	"A BM is a description on how an organization is doing business. A BM comprises key elements, business concepts and value for both, the customers and the company."	"Description" "Key elements" "Business concepts" "Value for customers and company"	"Description"	"Key elements" "Business concepts" "Value for customers and company"		
17	(Morgan & Conboy, 2013)	"A BM is defined as the rationale of how an organization creates, delivers and captures value."	"Rationale" "Creates, delivers and captures value"	"Rationale"	"Creates, delivers and captures value"		
18	(Zolnowski & Bohmann, 2013)	"The BM concept offers a system-level holistic view on the business logic. This view focuses on activities that are needed for a successful execution of the business and the value that is offered to the customer, by explaining value creation and value capturing."	"System-level holistic" "View" "Business logic" "Execution of the business" "Value offered to customers" "Value creation" "Value capturing"	"View" "Business logic"	"Execution of the business" "Value offered to customers" "Value creation" "Value capturing"	"System-level holistic"	

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
19	(Rai & Tang, 2014)	"The BM is the IT-enabled structural template that describes the organization of a focal firm's transactions with all of its external constituents in factor and product markets"."	"IT-enabled" "Structural Template" "Firm's transaction" "External constituents" "Product markets"	"Structural Template"	"IT-enabled" "Firm's transaction" "External constituents" "Product markets"		
20	(Fichman et al., 2014)	"A BM defines how the enterprise creates and delivers value to customers, and then converts payments received to profits."	"Create and deliver value" "Customers" "Payments received" "Profits"		"Create and deliver value" "Customers" "Payments received" "Profits"		
21	(Ryschka, Tonn, Ha, & Bick, 2014)	"A BM is a blueprint for a service to be delivered, describing the service definition and the intended value for the target group, the sources of revenue, and providing an architecture for the service delivery, including a description of the resources required, and the organizational and financial arrangements between the involved business actors, including a description of their roles and the division of costs and revenues over the business actors."	"Blueprint" "Service to be delivered" "Service definition" "Intended value for target group" "Source of revenue" "Architecture for the service delivery" "Resources required" "Organizational and financial arrangements" "Organizational and financial arrangements" "Business actors, their roles" "Division of costs and revenues"	"Blueprint"	"Service to be delivered" "Service definition" "Intended value for target group" "Source of revenue" "Architecture for the service delivery" "Resources required" "Organizational and financial arrangements" "Organizational and financial arrangements" "Business actors, their roles" "Division of costs and revenues"		
22	(Kuebel, Limbach, & Zarnekow, 2014)	"The BM comprises how a firm economically engages with external parties outlining the value proposition and its delivery towards stakeholders and customers."	"How firm economically engages with external parties" "Value proposition" "Delivery toward stakeholders and customers"		"How firm economically engages with external parties" "Value proposition" "Delivery toward stakeholders and customers"		

N°	Authors	BM Definition	First Cycle Coding (Codes)	Second Cycle Coding (Nodes)			
				BM Essence	BM Components	BM Characteristics	BM Functions
23	(Ghezzi et al., 2014)	"A BM is architecture of a business or the way firms structure their activities in order to create and capture value."	"Architecture of a business" "Create and capture value"	"Architecture of a business"	"Create and capture value"		
24	(Lindman et al., 2014)	"A BM is a concise representation of how an interrelated set of elements – the offering, relationships, resources, revenue model and management mind-set – are addressed to create and capture value in defined markets. "	"Representation" "Offering, relationships, resources, revenue model and management mind-set" "Create and capture value" "Defined markets"	"Representation"	"Offering, relationships, resources, revenue model and management mind-set" "Create and capture value" "Defined markets"		
25	(Kuebel & Zarnekow, 2014)	"A BM describes the content, structure, and governance of transactions between the focal firm and external parties. "	"Describes" "Content, structure and governance of transactions" "External parties"	"Describes"	"Content, structure and governance of transactions" "External parties"		
26	(John, 2014)	"A BM describes the fundamental logic of how an organization creates, captures and delivers value."	"Describes" "Fundamental logic" "Creates, captures and delivers value"	"Describes" "Fundamental logic"	"Creates, captures and delivers value"		
27	(Di Valentin et al., 2014)	"A BM explains how a company works by offering an abstract view on aspects like critical success factors, activities of value creation and a company's organizational structures."	"Abstract" "View" "Critical success factors" "Activities" "Value Creation" "Organizational Structures"	"View"	"Critical success factors" "Activities" "Value Creation" "Organizational Structures"	"Abstract"	
28	(Sitoh et al., 2014)	"A BM depicts the trans-active elements of a firm through opportunity exploitation."	"Trans-active elements" "Opportunity exploitation"	"Depicts"	"Trans-active elements"		"Opportunity exploitation"

Table A2 – BM Definitions from Authors and Referred Authors

N°	Authors	BM Definition Provided from Authors	Referred BM Definition	
			IN Domain	**Off Domain**
1	(Al-debei & Avison, 2010)	X		
2	(Brockmann & Gronau, 2009)	X		
3	(Hochstein et al., 2009)		(Timmers, 1998)	
4	(Björn Kijl & Boersma, 2010)		(Bouwman et al., 2008) (Björn Kijl, Bouwman, Haaker, & Faber, 2005)	
5	(Bjorn Kijl & Nieuwenhuis, 2010)	X		
6	(Feller et al., 2011)		(Osterwalder et al., 2005)	
7	(Burkhart et al., 2011)	X		
8	(Deodhar et al., 2012)(Baden-Fuller & Morgan, 2010b) (Baden-Fuller & Morgan, 2010b)	X		
9	(Di Valentin et al., 2012)	X		
10	(Rensmann, 2012)		(Timmers, 1998)	
11	(Moreno et al., 2012)		(Bouwman et al., 2008)	
12	(Kundisch & John, 2012)			(Shafer et al., 2005)
13	(Buder & Felden, 2012)		(Gordijn & Akkermans, 2001b)(Gordijn & Akkermans, 2001b) (Gordijn & Akkermans, 2001a) (Osterwalder et al., 2005)	
14	(Sitoh et al., 2013)			(Casadesus-Masanell & Ricart, 2010)
15	(Giessmann & Legner, 2013)			(Johnson, Christensen, & Kagermann, 2008)
16	(Malsbender et al., 2013)	X		
17	(Morgan & Conboy, 2013)		(Osterwalder et al., 2005)	
18	(Zolnowski & Bohmann, 2013)			(Christoph Zott, Amit, & Massa, 2010)
19	(Rai & Tang, 2014)			(C. Zott & Amit, 2008)
20	(Fichman et al., 2014)			(Teece, 2010)
21	(Ryschka et al., 2014)		(Bouwman et al., 2008)	

22	(Kuebel et al., 2014)			(C. Zott & Amit, 2008)
23	(Ghezzi et al., 2014)		(Timmers, 1998)	(Christoph Zott, Amit, & Massa, 2011b)
24	(Lindman et al., 2014)	X		
25	(Kuebel & Zarnekow, 2014)			(A. Amit & Zott, 2001)
26	(John, 2014)	X		
27	(Di Valentin et al., 2014)		(Al-debei & Avison, 2010)	(Magretta, 2002)
28	(Sitoh et al., 2014)			(A. Amit & Zott, 2001)

Table B1 – Elements of the BM components

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
1	(Al-debei & Avison, 2010)	The BM should include a description of the products/services offers and the value elements incorporated within the offering, as well as the nature of the target market segment(s) along with their preferences	Technological architecture and organizational infrastructure; Core resources; Value Configuration; Core Competency	BM is a description of the position of an organization in the value system and its relationship with different stakeholders. It includes: suppliers, partners, marketers, distributors, intermediaries, channel, communication flow, governance	Financial set-up and returns: Total cost of ownership, Pricing method, Revenue structure
2	(Susarla et al., 2009)				Cost Model
3	(Lucas Jr. & Goh, 2009)				
4	(Clemons, 2009)				Monetization Model
5	(Brockmann & Gronau, 2009)	Value proposition Value Creation: additional services besides core products. Market/Customer	Core activities	Distribution (provider or intermediaries)	Revenue and costs
6	(Hochstein et al., 2009)				
7	(Chen et al., 2009)				Revenue structure
8	(Baumoel, Georgi, Ickler, & Jung, 2009)	Product and services Customers	Production processes	Position in the value chain or network	Price model
9	(Demirkan et al., 2010)				

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
10	(Björn Kijl & Boersma, 2010)	Service (a description of the service concept an organization or group of organizations offers, its value proposition and the market segments that are targeted	Technology (a description of the technological architecture, service platform, devices and applications) Organization (a description of actors. roles, interactions, strategies and goals and value activities),	Organization (a description of actors. roles, interactions, strategies and goals and value activities)	Finance (a description of investment sources, cost sources, revenue sources, risk sources and pricing)
11	(Clemons & Madhani, 2010)	Customer Product	Business activities		
12	(Bjorn Kijl & Nieuwenhuis, 2010)	Service (a description of the service concept an organization or group of organizations offers, its value proposition and the market segments that are targeted	Technology (a description of the technological architecture, service platform, devices and applications) Organization (a description of actors. roles, interactions, strategies and goals and value activities),	Organization (a description of actors. roles, interactions, strategies and goals and value activities)	Finance (a description of investment sources, cost sources, revenue sources, risk sources and pricing)
13	(Feller et al., 2011)	Product (*Value Proposition*: gives an overall view of a company's bundle of the products and services) Customer Interface (*Target Customer*: describes the segments of customers a company to get in touch with its customers)	Infrastructure Management (*Value Configuration*: describe the arrangement of activities and resources - *Core Competency* outlines the competencies necessary to execute the company's BM)	Customer Interface (*Relationship*: explains the kind of links a company establishes between itself and its different customer segments) Infrastructure Management (*Partner Network* portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value)	Financial Aspects (*Cost Structure* sums up the monetary consequences of the means employed in the BM - *Revenue Model* describes the way a company makes money through a variety of revenue flows)
14	(Tay & Chelliah, 2011)			Partner Network	
15	(Zolnowski & Böhmann, 2011)	Value Proposition: describe how the value is created for the customer Target customer	Technology, resources and skills define the prerequisites for implementing the BM	Network and activities examine the activities within a company or a network of different companies required to implement the BM Value flow: exchange relationships between different business actor	Value capture - the revenue model Funding and costs: the financing and cost aspects of a BM

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
16	(Burkhart et al., 2011)	Offering factors: how company creates values for its stakeholders Market factors: express for whom the company creates value	Internal capability factors: deal with the internal activities and competences of the company		Economic factors: bundle all economic-related aspects of the company
17	(Raivio, Luukkainen, & Seppala, 2011)	Service (a description of the service concept an organization or group of organizations offers, its value proposition and the market segments that are targeted	Technology (a description of the technological architecture, service platform, devices and applications) Organization (a description of actors. roles, interactions, strategies and goals and value activities),	Organization (a description of actors. roles, interactions, strategies and goals and value activities)	Finance (a description of investment sources, cost sources, revenue sources, risk sources and pricing)
18	(Lin et al., 2012)				Revenue Model
19	(Deodhar et al., 2012)	Product/services	Organizational processes that are coordinated to achieve a certain goal Organizational practices are defined as organization's routine use of knowledge for conducting a particular function that has evolved over time under the influence of the organization history, people, interests and actions		

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
20	(Krumeich et al., 2012)	VALUE OFFERING MODEL Value proposition describes which benefits BMs provide their customers. The Value Proposition not only express the benefits customers will receive, but also the value-adding partners participating in the BM Product and Service Offering it expresses which product and service offering actually realizes the Value Proposition Competitive advantage: long term sustainability; this term serves to formulate to what an extent a BM is different to competing ones and how its competitive advantage will be maintained. Strategic growth decision should be captured within this component. Competitive model depicts the competitive environment VALUE CAPTURING MODEL Customer and Market segment The VOM must be adapted to its targeted customer and market segments.	VALUE CREATION MODEL Resource model: companies need to have certain resources (tangible, intangible, HR) Competence model Abilities enabling the usage of resources Activities and processes Organizational structure role and responsibilities	VALUE CAPTURING MODEL Communication and distribution channel (own or pattern channels - direct and indirect channels) Customer Relationship: getting new customer, maintain existing ones and increase their share market (self-services to co-creation) COOPERATION MODEL Structure and Position: corporative relationship in which external economic parties take over parts of the VP in order to operatively provide the VP Coordination: appropriate communication channels and coordination mechanisms Maturity of the cooperation relation	FINANCIAL MODEL Funding Model: sources of the capitol to operate the BM Revenue Model: revenue structure Pricing Model: pricing of the product and the service offering Cost Model: major cost incurring activities of BM with the overall goal to minimize the costs in achieving VP Profit Model: as a result of pricing, revenue and cost model Distribution Model: all investments, cost and revenues are shared among participants in order to assure the sustainable financing of the corporative value creation
21	(Di Valentin et al., 2012)				

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
22	(Rensmann, 2012)	Product (Value Proposition: gives an overall view of a company's bundle of the products and services) Customer Interface (Target Customer: describes the segments of customers a company to get in touch with its customers)	Infrastructure Management (Value Configuration: describe the arrangement of activities and resources - Core Competency outlines the competencies necessary to execute the company's BM)	Customer Interface (Relationship: explains the kind of links a company establishes between itself and its different customer segments) Infrastructure Management (Partner Network portrays the network of cooperative agreements with other companies necessary	Financial Aspects (Cost Structure sums up the monetary consequences of the means employed in the BM - Revenue Model describes the way a company makes money through a variety of revenue flows)
23	(Moreno et al., 2012)	Service (a description of the service concept an organization or group of organizations offers, its value proposition and the market segments that are targeted	Technology (a description of the technological architecture, service platform, devices and applications) Organization (a description of actors. roles, interactions, strategies and goals and value activities),	Organization (a description of actors. roles, interactions, strategies and goals and value activities)	Finance (a description of investment sources, cost sources, revenue sources, risk sources and pricing)
24	(Kundisch & John, 2012)				Cost structure and revenue model
25	(Buder & Felden, 2012)	Value proposition		Partner Network	
26	(Schief & Buxmann, 2012)	Value proposition + the customer Offering	Internal processes and competencies Activities	Value network	Money Revenue model
27	(Osterwalder & Pigneur, 2013)	Value proposition			
28	(Keen & Williams, 2013)	Product or service Customer	Resource management	Value network	
29	(Oestreicher-Singer & Zalmanson, 2013)	Products and Clients	Producing and delivery		Revenue Model and cost model
30	(Sitoh et al., 2013)				
31	(Giessmann et al., 2013)	Value proposition	Activities	Partner Network	Cost structure and revenue model

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
32	(Di Valentin et al., 2013)	Strategy (unique selling proposition, product portfolio) Downstream (target industries, target customer size, target customer type)	Strategy (value chain strategy) Upstream (technical platform, principles, localization, degree of standardization) Usage (operating model, support model, maintenance model, replacement strategy)	Downstream (sales channel types)	Strategy (investment horizon) Revenue (license model; pricing model; sales volumes, operating margins)
33	(Krumeich et al., 2013)	VALUE OFFERING MODEL Value proposition (includes Product and Service Offering) Competitive advantage (includes Competitive model) VALUE CAPTURING MODEL Customer and Market	VALUE CREATION MODEL Resources/Competencies and activities Organizational structure	VALUE CAPTURING MODEL Channel & Relationship COOPERATION MODEL	FINANCIAL MODEL Revenue Model Cost Model Pricing Model Distribution Model
34	(Loebbecke & Tuunainen, 2013)				Monetization model
35	(Oechslein & Hess, 2013)				
36	(Labes et al., 2013)	Value Proposition (defines the offering factors by describing the product and its unique selling proposition).	Value generation: internal capability factors like technologies, resources, skills and activities as well as external supplier network are incorporated	Distribution and customer relationship (Value distribution, comprises internal delivery aspect like the communication or distribution	Value capture: the revenue block Cost

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
37	(Malsbender et al., 2013)	Value proposition (A way that demonstrates the business logic of creating value for customers and/or to each party involved through offering products and services that satisfy the needs of their target segments) value statement (short statement for central value proposition to the customer) products and services (IT related products, that is, fat client, web-based, or mobile applications and consulting service offerings) target customer segment (addressed customer segments, including specialized offerings for distinct industries)	Value architecture (An architecture for the organization including its technological architecture and organizational infrastructure that allows the provisioning of products and services in addition to information flows) Core Resources (Comprises organizational resources, such as expertise, and technology-related resources, such as proprietary data centers and application development environments.) Core competency (Specific offerings made to the customer with reference to application scenarios of those offerings, for example, gaining brand insights, create customer engagement, increase brand loyalty.)	Value network (A way in which an organization enables transactions through coordination and collaboration among parties and multiple companies) Referenced customers (Existent customers which the companies indicate as reference customers.) Strategic Partners (Including sales partner networks for increasing market penetration, and technological partners that allow deep technology integration, for example in existent CRM solutions.)	Value finance (A way in which organizations manage issues related to costing, pricing, and revenue breakdown to sustain and improve its creation of revenue.) Pricing model (The pricing model for the offered value propositions, including software as a service, "fermium" models (e.g. basic versions of applications are free of charge, advanced versions cost a monthly fee), or individual pricing for consultancy services.)
38	(Morgan & Conboy, 2013)	Product (Value Proposition: gives an overall view of a company's bundle of the products and services) Customer Interface (Target Customer: describes the segments of customers a company to get in touch with its customers)	Infrastructure Management (*Value Configuration*: describe the arrangement of activities and resources - *Core Competency* outlines the competencies necessary to execute the company's BM)	Customer Interface (*Relationship*: explains the kind of links a company establishes between itself and its different customer segments) Infrastructure Management (*Partner Network* portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value)	Financial Aspects (*Cost Structure* sums up the monetary consequences of the means employed in the BM - *Revenue Model* describes the way a company makes money through a variety of revenue flows)
39	(Bonakdar et al., 2013)				

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
40	(Zolnowski & Bohmann, 2013)	The customer segment illustrates the target with its characteristic. By defying characteristics, it is possible to define customer needs in more detailed way. The value proposition represents the potential value that the customer can receive by the offering. The provider has to consider the customer and its problems, needs and wants	The key resources describes the most important required to make a BM work. Key activities describes the most important things a company must do to make its BM work	The channels describes how a company communicates with and reaches its customer segment to deliver a value proposition. Customer relationship describes the types of relationships a company establish with specific customer segments. Key partnership describe the need for a partnership in the development and provision of a service	Revenue stream represent the cash a company generates from each customer segment (costs must be subtracted from revenues to create earnings). Cost structure describes all costs incurred to operate a BM
41	(Niculescu & Wu, 2014)				
42	(Rai & Tang, 2014)				
43	(Fichman et al., 2014)	Customer			Profit
44	(Ryschka et al., 2014)	Service (a description of the service concept an organization or group of organizations offers, its value proposition and the market segments that are targeted. Proposed Values, value-creating characteristics, target groups and different application areas	Technology (a description of the technological architecture, service platform, devices and applications) Data, functionality, hardware and software. Organization (a description of actors. roles, interactions, strategies and goals and value activities) Resources, activities	Organization (a description of actors. roles, interactions, strategies and goals and value activities) Actors, relations	Finance (a description of investment sources, cost sources, revenue sources, risk sources and pricing) revenue sources, pricing, financing, cost
45	(Fritscher & Pigneur, 2014)	What we do? Who we do it for?	How we do it?	Who we do it for? How we do it?	How much?
46	(Kuebel et al., 2014)	Value proposition which comprises the value creation for the customer through offering products and services	Value architecture which focuses on the way an organization's resources are configured	Value network which includes the relationships with different stakeholders to deliver the value proposition	Value finance which is concerned with issues related to costing, pricing, revenue breakdown to sustain or improve the value proposition

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
47	(Zolnowski, Weiss, & Bohmann, 2014)	Customer Segments define the different groups of people or organizations an enterprise aims to reach and serve The value proposition describes the bundle of products and services that create value for a specific customer segment	The key resources describes the most important required to make a BM work Key activities describes the most important things a company must do to make its BM work	The channels describes how a company communicates with and reaches its customer segment to deliver a value proposition Customer relationship describes the types of relationships a company establish with specific customer segments Key partnership describe	Revenue stream represent the cash a company generates from each customer segment (costs must be subtracted from revenues to create earnings) Cost structure describes all costs incurred to operate a BM
48	(Ghezzi et al., 2014)	Value Proposition is composed by product/service delivered- target customer- customer value - resources and competencies		Value network: vertical integration, customer ownership and relationship, interconnection modality-business agreements, content-data delivery model	Financial configuration: revenue model, revenue sharing charging issues and money flows and cost model
49	(Giessmann et al., 2014)				
50	(Lindman et al., 2014)	An offering is a value proposition that a software firm offers its customers and other stakeholders, and with which it position itself in the market	Resources are the assets and the capabilities that are needed to develop and implement a given BM. They can be tangible (personnel, equipment, etc.) or intangible (broad name, relationship) In the essence they are internal sources of advantage, or the core competency of a company. Managerial mind-set distinguish a BM as something that stems from the values, emotions, and attitude of management instead of cognitive, rational thinking and planning	Relationships are the means to access external resources and capabilities	A revenue model includes the revenues sources, pricing policy, cost structure, and revenue velocity
51	(Kuebel & Zarnekow, 2014)	Value created through offered products and services for both their customers and for each party engaged in service provision	Configuration of resources and competencies for service provision. Represents how an organization's resources and core competencies are configured in order to create and provide value to customers	Actors' roles in the business network and open and closed modes of participations. Inter-organizational relationships within a BM	Revenue generation and cost structure
52	(John, 2014)				

No.	Reference	Value Proposition	Value Architecture	Value Network	Value Finance
53	(Di Valentin et al., 2014)	Value offering + marketing and customer related aspect + distribution model		Partnership - cooperation -	Financial Model
54	(Sitoh et al., 2014)				

Table B2 – Literature Categorization according to BM use

No.	Reference	Describe the Interplay between Strategy and Operations and the Configuration of Value	Describe Different Business Components and their Relationships	BM Design and BMling	Map Specific Businesses
1	(Al-debei & Avison, 2010)	Review: The BM is a conceptual tool of alignment between strategy and operations	Review: Focus on the primary BM components		
2	(Susarla et al., 2009)		Define the pricing model for application service providers		
3	(Lucas Jr. & Goh, 2009)				Kodak BM
4	(Clemons, 2009)	Explain the impact of different monetization strategy on the value creation processes and operations for different application and website BM	Monetization (profit and revenue model)		
5	(Brockmann & Gronau, 2009)				BM for Enterprise Resource Planning Providers
6	(Hochstein et al., 2009)				External Web Services BM
7	(Chen et al., 2009)				Community-based Recommender Systems Operators BM
8	(Baumoel et al., 2009)				BM for Service Integrator
9	(Demirkan et al., 2010)	Explain the impact of different coordination strategies for Saas Supply Chain BM			
10	(Björn Kijl & Boersma, 2010)			BM Engineering and Experimentation Tool	
11	(Clemons & Madhani, 2010)				Google's BM
12	(Bjorn Kijl & Nieuwenhuis, 2010)			3 steps BM engineering approach to design BM	
13	(Feller et al., 2011)	Explain the impact of open innovation on public administration BM			
14	(Tay & Chelliah,	Supply chain management in the chemical			

No.	Reference	Describe the Interplay between Strategy and Operations and the Configuration of Value	Describe Different Business Components and their Relationships	BM Design and BMling	Map Specific Businesses
	2011)	industries supply chain BM			
15	(Zolnowski & Böhmann, 2011)			Review: BM modeling for value creation	
16	(Burkhart et al., 2011)	Review: the BM concept is linked but still distinct to the concept of business strategy	Review: focus on the primary components		
17	(Raivio et al., 2011)				BM for API management providers
18	(Lin et al., 2012)		Revenue and cost model for content distributor BM		
19	(Deodhar et al., 2012)	Management practices and strategies used for formulating BM of organization			
20	(Krumeich et al., 2012)		Description of the different BM components proposed in the literature and categorization in a framework		
21	(Di Valentin et al., 2012)	BM is a mediator between strategy and business processes. The paper provide a framework for mapping strategic BM updates onto the BM processes			
22	(Rensmann, 2012)				Multi-sided BM for cybermediary platform
23	(Moreno et al., 2012)				BM of Gaming as a Service
24	(Kundisch & John, 2012)		Real Options used for the financial analysis (value capture) of the BM		
25	(Buder & Felden, 2012)	BM is used for the execution of business process management. BM is the base for scribing and define operations			
26	(Schief & Buxmann, 2012)				Software industry BM
27	(Osterwalder & Pigneur, 2013)			CAD assist the process of designing strategic management objects, such as BM	
28	(Keen & Williams, 2013)	Value architecture determine digital business strategy success			

No.	Reference	Describe the Interplay between Strategy and Operations and the Configuration of Value	Describe Different Business Components and their Relationships	BM Design and BMling	Map Specific Businesses
29	(Oestreicher-Singer & Zalmanson, 2013)	Impact of digital business strategy on freemium BM			Freemium BM for content providers
30	(Sitoh et al., 2013)	The BM is a result of the strategic choices. The creation of a new BM is an enactment of opportunity also linked to IS strategy			
31	(Giessmann et al., 2013)			Develop of a BM design theory that facilitate the design of a PaaS BM	PaaS BM
32	(Di Valentin et al., 2013)			Architecture design and prototypical implementation of BM assistance system	
33	(Krumeich et al., 2013)		Analysis of the BM literature with the objective of discovering structural relations between BM components		
34	(Loebbecke & Tuunainen, 2013)	Evolution and adoption of the BM in response to general trends of internet going mobile			
35	(Oechslein & Hess, 2013)				Digital BM for online review
36	(Labes et al., 2013)				Cloud BM
37	(Malsbender et al., 2013)				Software company (social media analysis) BM
38	(Morgan & Conboy, 2013)	The BM is used to analyze the process of value creation in the cloud computer industry providers			
39	(Bonakdar et al., 2013)	Analysis of the BM processes influences on the BM			
40	(Zolnowski & Bohmann, 2013)				Service BM
41	(Niculescu & Wu, 2014)				Software industry BM
42	(Rai & Tang, 2014)	IT-enabled BM are distinctive source of value creation and appropriation			
43	(Fichman et al., 2014)	Digital BM innovation as fundamental and powerful concept			
44	(Ryschka et al.,				Location-based services BM

No.	Reference	Describe the Interplay between Strategy and Operations and the Configuration of Value	Describe Different Business Components and their Relationships	BM Design and BMling	Map Specific Businesses
	2014)				
45	(Fritscher & Pigneur, 2014)			CAD assist the process of designing strategic management objects, such as BM	
46	(Kuebel et al., 2014)				BM of developer platform in the telecommunication industry
47	(Zolnowski et al., 2014)				Service BM
48	(Ghezzi et al., 2014)				Assured Service Quality Products BM
49	(Giessmann et al., 2014)				PaaS BM
50	(Lindman et al., 2014)				Open data entrepreneurs BM
51	(Kuebel & Zarnekow, 2014)				PaaS BM
52	(John, 2014)			Evaluation BM process	
53	(Di Valentin et al., 2014)				e-Learning companies BM
54	(Sitoh et al., 2014)				Social BM