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THE UNIFIED BUSINESS MODEL FRAMEWORK

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Abstract: It has been said that Business Models are useful as an input for several operational, tactical and strategic tasks. This paper shows that, to be useful, the description of a business model should be sufficiently detailed and comprehensive. Extant Business Model definitions are very fragmentary and not sufficiently detailed. This paper presents the Unified Business Model Framework (UBUMOF), which is a comprehensive classification of the components of a Business Model. The framework is grounded in Enterprise Architecture and Business Model literature. It contains three submodels: a Realization Model that focuses on the inside of the company, a Value Model that shows exchanges between customer and company, and an Environment Model that considers the place of the company in its environment. Each of those submodels contains several other models. As such, a comprehensive and detailed specification is given of the Business Model concept.

Introduction

When The Medecine Shoppe introduced specialized care clinics in its stores, the Vice President Pharmacy Solutions stated that the in-store clinics “fit very nicely in our business model” (Cook, 2007). It is trendy in popular press to mention the term “Business Model”. The term is usually used to show one knows what some company does. What a ‘business model’ is, however, remains unclear in popular press. In the academic literature several definitions are given of the term. “The business model concept is generally understood as a view of the firm’s logic for creating and commercializing value” (Osterwalder et al., 2005 p 7). Obviously, it is interesting for organizations to investigate how other organizations create and commercialize value.

Studying Business Models is valuable because they show how others have taken care of things. In many engineering disciplines, people use ‘design patterns’ to deal with recurring problems. According to Alexander (1977), a *pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice*. Design patterns are for example used by software designers, but also by bridge builders and the like. During the last few decades, managers have come to understand that they also need to design their enterprise. People have started to study ‘Business Models’, which show the “story that explains how an enterprise works” (Magretta, 2002). According to Eriksson & Penker (2000), one can identify options for change and improvement by studying business models. Business Model Archetypes could be seen as the ‘solutions’ to the problems that are looked for in design patterns. While the link between Business Models’ and ‘design

patterns' is obvious, implementing the link is difficult because it is actually not clear what are the building blocks to play with when creating archetypal solutions (i.e., 'Business Models').

The Business Model concept plays an important role in several activities, ranging from 'understanding and sharing' to 'patenting' how the business works (Osterwalder et al., 2005; Pateli & Giaglis, 2003). The paper at hand shows that, to be able to play that role decently, business models should be comprehensive and detailed. It also shows that current Business Model frameworks are not comprehensive and do not offer sufficient detail. The paper presents a comprehensive and detailed Unified Business Model Framework. This framework is grounded in existing Business Models literature and Enterprise Architecture literature.

Considering Enterprise Architecture is interesting if one pursues a good understanding of the 'Business Model' concept. Indeed, by looking at a discipline where 'design' is at the core, we can find guidance on what are important building blocks of an archetypal solution. The Information Systems discipline, in which Enterprise Architecture is embedded, gives us building blocks that are transferrable to a Business context. The latter is so, because computerized information systems can actually be seen as a mirror of how a business is operating. The company's information systems should perfectly align with the way business people want to do business. Doing 'Enterprise Architecture' means building models of what the business people are doing and building models of what the information systems are doing and linking both. Because doing Enterprise Architecture is usually assigned to the IS department, knowledge from the Enterprise Architecture discipline has not yet fertilized the ideas of managers. In this paper, we take knowledge from the Enterprise Architecture discipline to define the building blocks of Business Models.

In what follows, we first review the Business Model literature and show shortcomings. Next, the Enterprise Architecture discipline is reviewed. After that, our Unified Business Model Framework is presented. We conclude with a discussion of the unified framework.

Business Models

Past research shows there is an increasing number of papers that cite the term ‘Business Model’ (Mäkinen & Seppänen, 2007; Osterwalder et al., 2005). The reported increasing number of publications on Business Models is confirmed by the ‘News reference volume’ shown by the Google Trends laboratory (see Appendix 1). Clearly, business models get more and more *reported*. However, the Google Trends laboratory (see www.google.com/trends) shows that the number of ‘Business Model’ *searches* on Google is decreasing (see Appendix 1). The current number of searches is roughly two thirds of the number in 2004. This paper does not try to explain this downward trend. Nevertheless, we believe this trend confirms our finding (see below) that the ‘Business Model’ concept is still not clearly defined at a sufficient level of detail and that people started looking at ‘Business Models’ as being a term that is too vague to be of much value.

In what follows, we first investigate a number of definitions of the term. Next we look at Business Model Archetypes. After that, the building blocks of a Business Model are assessed. Subsequently, the suggested uses of ‘business models’ are investigated and it is shown that current Business Model conceptions are not adequate to enable those uses.

What are Business Models?

Judging the number of papers that give their own definition of the Business Model concept (for an overview, see Pateli & Giaglis, 2003), there is currently no general consensus on the meaning of the term (Jansen et al., 2007). An often cited definition is the one of Magretta (2002, p87): the “stories that explain how enterprises work”. Similarly, Linder and Cantrell (2000, p2) talk about “the organisation’s core logic for creating value”. Laudon and Traver (2008, p66) state “a business model is a set of planned activities (sometimes referred to as business processes) designed to result in a profit in a marketplace”. When Applegate (2000,

p53) discusses models in the business world, she refers to “a description of a complex business that enables study of its structure, the relationships among structural elements, and how it will respond in the real world”. Timmers (1998, p2) added a level of detail to this in his definition: “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 a description of the sources of revenues”. The definition given by Osterwalder and Pigneur (2002, p2) is similar, but focuses more on the value proposition: “the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams”.

Building on the concept of a value proposition, Seddon et al. (2004, p440) investigate the link between the concepts ‘strategy’ and ‘Business Models’: “A Business model may be defined as an abstract representation of some aspect of a firm’s strategy.”

Dawson’s R5 Business Model focuses on the dynamic nature of businesses (Dawson, 2007). It can be seen as a model of the business cycle, where the business goes through five phases: research, release, reward, reinvest and review. Nepal et al. (2007) consider a business model to concern the way decisions are made with respect to investments in manufacturing facilities.

Archetypal Business Models

Several authors have put forward a classification of Business Models. Such classifications then present a number of ‘Archetypal Business Models’. An overview of a number of Business Model Archetypes is given in Appendix 2.

Timmers (1998) presents eleven Internet business model archetypes such as the e-shop, e-procurement, e-auctions, etcetera. These archetypes reflect a classification in two dimensions: the degree of innovation and the extent of integration of functions. Weill et al. (2005) suggest

16 Business Model Archetypes on the basis of a classification on two dimensions (the type of rights that are sold and the type of assets involved in the rights that are sold) with four values each. Four of the 16 archetypes, the ‘manufacturers’, ‘Wholesalers/Retailers’, ‘Contractors’ and ‘Financial Landlords’ account for 87% of the business models used by the largest 1000 publicly traded companies based in the US in 2000. As most businesses fall in the same categories, one could say that distinguishing these 16 Business Model Archetypes contributes little. However, according to Lai et al. (2006), Weill’s 16 Business Model Archetypes explain performance heterogeneity more than industry effects. Such archetypes thus have value. Still, one has to recognize that these studies only consider two business model elements (the two dimensions). It is thus clear that these archetypes do not really describe ‘the story that explains how an enterprise works’. One could obviously define many more Business Model Archetypes if a lower level of abstraction would be taken. Archetypes at a lower level of abstraction will at least have the same power and will most likely have more power to explain company performance than archetypes at a higher level of abstraction. According to Jansen et al. (2007, p 30), the general conception is that a business model involves more than just the manner of revenue generation. It also includes the design of the internal organization and the inter-organizational relationships. Weill et al. (2005) do not include such things.

Rappa (2003) presents 29 Web Business Models, divided into nine Web Business Model categories and Sinha (2007) discusses seven Business Model archetypes. Presentations of such classifications give executives an easy overview of a number of options from which they can choose. The problem with these Business Model classifications is that – from an academic viewpoint – the underlying variables for classification are often not clear. Obviously, a rigorous classification of business models requires that one knows what the underlying variables for classification are. In fact, many variables exist for classification. These variables are often referred to as ‘business model components’.

Business Model Components

The big question – in line with the search for a good definition of the Business Model concept and variables for defining Archetypal Business Models – is: what are the components of a Business Model? Literature is undetermined on this. Appendix 3 gives an overview of Business Model components discussed in diverse papers. Some authors consider the Business Model to concern the sales channel that is used. A classic statement concerns Dell's 'Business Model': "The key to Dell's success has been its direct sales and build-to-order business model" (Kraemer et al., 2000 p18). Others rather look at the 'pricing model' that is used. Already in 1999, Alsop stated "giving services away free is almost a default business model on the web". In 2008, Pauwels and Weiss (2008, p14) still talk about "an advertising-only business model". Schlachter (1995), Fedwa (1996) and Sgriccia et al. (2007) consider 'revenue generation' models such as subscriptions, advertising, shopping mall operations etcetera. Yet others look at what kind of rights are being sold (e.g., the right to use but not to own) and at the amount of transformation the company realizes (Weill et al., 2005). Gordijn and Akkermans (2001) consider the value viewpoint. In an attempt to be more comprehensive, Osterwalder and Pigneur (2002) talk about three aspects: product-related aspects, infrastructure-related aspects and customer-related aspects. Others look at organizational forms and different types of relations between organisations. Tapscott et al. (2000) talk about business webs and Livingston (2008) similarly talks about aggregating individual producers and co-op development centers.

Seddon et al. (2004) see business models as abstract representations of strategy. As strategy "needs to be reflected in a distinctive value chain" (Porter, 2001 p71), a business model can be related to the concept of value chains (Amitt & Zott, 2001). A value chain is the "series of activities required to produce and deliver a product or service" (Porter, 2001, p 72). It is then

logical that a description of a Business Model, amongst other things, includes a definition of the activities a company performs.

Possible uses of Business Models

If one wants to know how to define the Business Model concept, one should know what the concept is to be used for. Business models can be used in many activities. A Business Model investigation creates an understanding of a business (Osterwalder & Pigneur, 2002) and makes it easy to communicate the understanding of a business (Gordijn & Akkermans, 2001). Several authors have indeed used a 'business model' approach to analyze companies (e.g. Chesbrough & Rosenbloom, 2002; Kraemer et al. 2000; Barabba et al., 2002; Yousept & Li, 2004; Krueger et al. 2004). By studying a business model one can come up with valid requirements specifications for supporting Information Systems (Eriksson & Penker, 2000). Knowledge about different Business Models is valuable when one wants to simulate possible business models and when suggestions for change and improvement of the current Business Model are needed (Osterwalder et al. 2005). Entrepreneurs may even want to patent aspects of their business model (Beresford, 2001).

A need for comprehensive and detailed Business Models

To offer the functions above, Business Models should generally be comprehensive and sufficiently detailed.

There is a need for comprehensive views on Business Models. It is dangerous and does not make sense to only consider the eye-catching thing.

- It does not make sense to consider only a subpart of the story that explains how the company works because everything in a company should be aligned and one can thus not just pinpoint one distinguishing element: other, less visible elements can also be different. Linder and Cantrell (2000, p3) note that Business Models have 'round logic': the

components of the model reinforce each other. It does not make sense to say that the eye-catching diversifying element defines the Business Model, as this makes the comparison of different Business Models impossible: in one case the pricing model is the distinguishing element, in another case it could be the channel model. Fact is that a Business Model is only defined by taking all of these elements together.

- It is dangerous to consider only a subpart of the story that explains how the company works because the result of a fragmentary view is that companies for example install some IT solution that is not appropriate in their situation. Swanson and Ramiller (2004) call this phenomenon “Mindless Innovation”: innovation that is not grounded in the organizational facts and specifics. The mindless pursuit of a best practice may just as likely produce real and sustained performance losses as accidental improvements (Swanson & Ramiller, 2004, p 567). The rest of the Business Model in which the ‘distinguishing element’ is embedded should thus also be considered.

A fragmentary view of the story only seems sufficient for the Business Model patenting functionality. One might argue that a fragmentary view is also sufficient to enable the Information Systems development ‘functionality’. Still, the latter would take systems development back to the stovepiped-thinking of the past, resulting in isolated applications which have not been built with integration in mind. One of the main concerns of Enterprise Architecture (see the next section) is exactly that an architecture should be developed enterprise-wide. Taking into account the key elements put forward by Ghosh (1998), Laudon and Traver (2008, p66) note that most authors focus on the value proposition and on the revenue model, but that while “these may be the most important and most easily identifiable aspects of a company’s business model, the other elements are equally important when evaluating business models or plans, or when attempting to understand why a particular company has succeeded or failed”.

For all functionalities, a ‘sufficient’ level of detail is needed. In general, a very detailed knowledge of the business is needed to be able to transfer a business model from one company to another, to patent the model, to realize a transformation to another model, etcetera. Different levels of business model understanding and analysis require different levels of detail.

The two above requirements are, unfortunately, not met in existing Business Model frameworks.

Papers about Business Models are not comprehensive but usually focus on some important element of the business practice. Companies that want to outperform other companies should work in a different way (Porter, 2001). Companies can – of course – not focus their attention on all elements of a Business Model and usually behave ‘mindlessly’ for many issues (Swanson & Ramiller, 2004). On some elements, however, companies try to diversify themselves in line with their strategy, to set them apart from the pack and to gain more profits by doing so. Papers typically focus on what is believed to be *the distinguishing* factor. Researchers have focussed so much on what makes a company successful in some case that they neglected the rest of the company. Extant literature all too often gives the impression it presents Business Models, while only parts of Business Models are presented (Osterwalder & Pigneur, 2002). Investigating one aspect of how a company does business without looking at the entire picture is, however, dangerous and does not make sense.

Furthermore, discussions of Business Models are not detailed either. Mäkinen and Seppänen (2007) for example assessed 13 business model conceptualizations with taxonomical research criteria. They incite on more detailed conceptualizations of the business model concept. They believe that one problem with extant literature is that past studies did not take into account the existing body of knowledge. Indeed, papers presenting Business Model components usually

do not build on prior frameworks. In this paper, we define a Unified Business Model Framework (UBUMOF), which integrates existing research on Business Models and existing knowledge from the engineering domain, more specifically from the Enterprise Architecture domain.

The Enterprise Architecture Discipline

In an Enterprise Architecture effort, companies describe how they do business and how information systems support the way they do business. Doing Enterprise Architecture is gaining more and more momentum. According to IEEE-1471-2000 (Maier et al., 2001), an architecture is *“the fundamental organization of a system embodied in its components, their relationships to each other and to the environment and the principles guiding its design and evolution.”* Doing architecture usually entails the creation of architectural descriptions. IEEE 1471-2000 defines an ‘architectural description’ as *a collection of products to document an architecture’*.

Following Goethals et al. (2004a) we can then say that doing Enterprise Architecture means *“actively organizing the components of an enterprise and the relationships between those components and the environment, keeping a number of principles in mind. Doing Enterprise Architecture entails the creation of architectural descriptions.”*

The Enterprise Architecture field came into being in the Information Systems discipline. It is the Information Systems department that needs to find out what the Business people are actually doing and to derive from this the Information Systems requirements. Architectural descriptions are then built of the business and of the information systems that are used to support the business. As those descriptions represent the way the company is working, and as the design of business processes and the like are considered to be among the most important

assets a company has, architectural descriptions are usually very confidential. Obviously, much can be learned from architectural descriptions.

An enterprise architecture effort returns an overall picture of what a company is actually doing. The question is: What architectural descriptions are typically built in an Enterprise Architecture effort?

In the past, many Enterprise Architecture frameworks have been put forward. Among other things, such frameworks define the deliverables of the architecture activity (TOGAF, 2002). These frameworks typically state that architectural descriptions have to be built from different viewpoints. The term ‘viewpoints’ attracted attention in 1996 in the Reference Model of Open Distributed Processing (Farooqui et al., 1996).¹ The underlying idea was that for each system a number of roles could be identified that have an interest in the system. While each role is interested in the same system, their relative views of the system are different, and they have different requirements. Therefore, it is interesting to describe the system from different viewpoints, each of which is chosen to reflect a set of concerns. IEEE 1471-2000 defines a ‘view’ as *a description of the entire system from the perspective of a set of related concerns*. In the Model Driven Architecture (MDA) (Frankel & Parodi, 2002) it is stated that a model that is based on specific abstraction criteria (suppressing irrelevant details) is referred to as a *model from the viewpoint defined by those criteria*, or in short as a *view* of the system. As such, a view typically describes the system from the point of view of a specific person in a specific role. A business person has different concerns and thus a different view on the enterprise than an information systems programmer.

For most enterprise architecture frameworks, such as Kruchten’s 4+1 View Model of Architecture (Kruchten, 1995), Soni, Nord and Hofmeister’s Framework (1995), that of

¹ Other authors (as Zachman for example, see below) discussed the *concept* of viewpoints earlier, but did not use the term ‘viewpoint’.

Tapscott and Caston (1993), and ISO's RM-ODP (Farooqui et al., 1996), the TEAF (Department of the Treasury, 2000) and the FEAF (The Chief Information Officers Council, 1999), the definition of viewpoints is where it stops. That is, usually not much detail is given about what information should be represented in those views. However, in his 1987 seminal paper, John Zachman gives more guidance.

The Zachman Framework

John Zachman is regarded as being the person who introduced the idea of 'Information System Architecture' (ISA). He considered information system design by analogy to the work steps and the representations of the classical architect and producers of complex engineering products. Besides defining different viewpoints, Zachman also stated that only a complete description of an enterprise can be given if six *aspects* are considered. These aspects concern six basic English questions: what, how, where, who, when and why. One may be interested in *what* entities the system works with, in *how* the system works, in the location *where* the system is placed, in *who* (which agent) does something with the system, in *why* the system does something or in *when* something is supposed to happen. Answering these questions can be done by building different types of architectural descriptions about the system under consideration.

For every question, there are different perspectives to consider: one for each of the different participants in the systems development process. The so-constructed 'Zachman-framework' is shown in Table 1. The combination of the two dimensions results in a schema containing 30 cells (5 perspectives x 6 aspects). Each description (cell) stands alone and each is different from the others, although all the descriptions pertain to the same object and therefore are related to one another. As such, the schema offers a taxonomy for relating things in the real world to computer representations: "*The ISA framework serves as a convenient classification*

scheme or “periodic table” for information entities” (Sowa & Zachman, 1992). The third row in the Zachman-framework is actually called the “Business Model”.

Table 1: The Zachman Framework (Sowa & Zachman, 1992)

	Data (What)	Function (How)	Network (Where)	People (Who)	Time (When)	Motivation (Why)
Scope (Ballpark View)	List of things important to the business	List of processes the business performs	List of locations in which the business operates	List of organizations important to the business	List of events / cycles significant to the business	List of business goals / strategies
Business model (Owner’s view)	e.g. semantic model	e.g. business process model	e.g. business logistics system	e.g. work flow model	e.g. master schedule	e.g. business plan
System Model (Designer’s view)	e.g. logical data model	e.g. application architecture	e.g. distributed system architecture	e.g. human interface architecture	e.g. processing structure	e.g. business rule model
Technology Model (Builder’s view)	e.g. physical data model	e.g. system design	e.g. technology architecture	e.g. presentation architecture	e.g. control structure	e.g. rule design
Detailed Representations (Subcontractor)	e.g. data definition	e.g. program	e.g. network architecture	e.g. security architecture	e.g. timing definition	e.g. rule specification

Given the fact that there is often made a distinction between the process-side and the data-side of information systems, Goethals et al. (2006) pointed out that the six questions suggested by

Zachman should be answered twice in the software process: both, for the process-side of the enterprise and the data-side of the enterprise. In a similar vein, Kim (2001) uses ‘Objects’ and ‘Processes’ as the building blocks of inter- and intra-organizational coordination models.

Once the business has been made explicit in architectural descriptions, one can use the architectural descriptions as an input for an optimization effort. While Enterprise Architecture is done to architect the enterprise, the Enterprise Architecture discipline does not offer any guidance on what archetypes one can choose from. That is, it is only defined what viewpoints and aspects of an architecture can be considered, but it is not revealed what are the important architectural decisions to make in this view. Decisions are supposed to have been made already by business people. Interestingly, the Business Models literature is all about innovative ideas of business people. The Business Models literature and the Enterprise Architecture literature are thus complimentary and both have a lot to learn from each other.

Research approach

Our major goal being the identification of the components of a business model, we started to compare components that were mentioned in diverse Business Model frameworks. We then tried to classify the identified elements on which companies make decisions. The elements fitted naturally in the classification of Zachman [1]: they concerned the what, how, where, who, when and why of a company. This is logical, as the Zachman framework is a framework meant for describing the business. From this, one could define a Business Model as “the what, how, where, who, when and why of doing business”. This is illustrated in Figure 1.

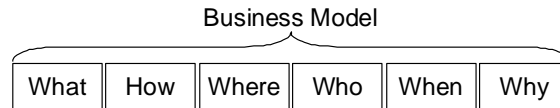


Figure 1: Components of a Business Model (1)

We soon noticed that some topics concerned things that are in some state, whereas other topics concerned changes to the state of things. This suggested that the six questions of Zachman would have to be investigated twice, similarly to what was suggested in Goethals (2006). Following Simon (1994) and Hirschheim et al. (1994), we concluded that one can see an enterprise as being (1) a collection of *things that exist*, and (2) as a collection of *tasks that change* the things that exist. Just like one can look at a circle as being ‘an infinite collection of dots at an equal distance of a point’ or as a figure that is ‘created by having ink flowing out of a pen that was attached first to a pinned cord’. Therefore, if one is to get a complete image of the business, it is logical to consider both conceptions of the world and one should answer the six questions proposed by Zachman twice. This resulted in a new definition of the Business Model concept: “the what, how, where, who, when and why of (1) the things in some state and of (2) the way things are changed”. This is illustrated in Figure 2.

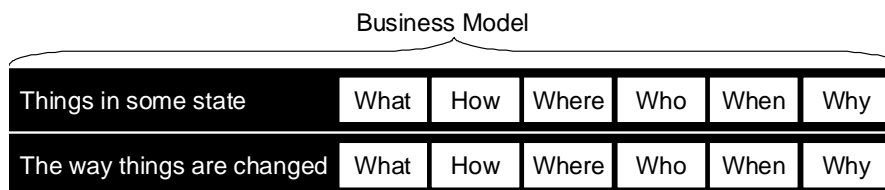


Figure 2: Components of a Business Model (2)

Each of the boxes in Figure 2 contained a multitude of elements. As was clear from the Business Models literature, these elements could be logically grouped in ‘submodels’ such as the ‘Resource Model’, the ‘Value Proposition Model’, etcetera. Assigning components to

different submodels was done iteratively. The reason for this is that authors sometimes use one name to denote different concepts. For instance, Laudon and Traver (2008) talk about a 'Revenue Model' when Petrovic (2001) talks about a 'Value Model'. The other way around, different frameworks use different names for the same concept. For example what one calls a 'Value Proposition', the other calls 'Value Model'.

As a simple example of moving components from one submodel to another, consider Petrovic et al.'s Production Model. This model contains something like a Bill-Of-Materials. However, to bring Petrovic et al.'s model in line with the models of other authors, this concept was moved to the Resource Model.

Each submodel than considered six aspects: the what, how, where, who, when and why of a specific facet of doing business. After assigning all components mentioned in literature to different models, we brought more flesh to the bone and further identified topics in each of the submodels. Knowing the six Zachman questions, we were able not only to work bottom-up, but also top-down. That is, while topics identified in the literature fitted with the six questions, the six questions helped us identifying issues that were overlooked. That is, we could formulate questions such as 'Where are operations controlled?', 'Why is some channel appropriate?', etcetera. We compared the business models of several organizations and put the design decisions that had been made in the different boxes of the framework. This way, the UBUMOF arose.

The Unified Business Model Framework

The Unified Business Model Framework (UBUMOF for short) contains three submodels:

- 1) The Realization Model, which shows how the company functions internally.
- 2) The Value Model, which shows the exchange of ‘value objects’ between company and customer.
- 3) The Environment Model, which shows how the organization is placed in its environment.

Each of these three submodels is composed of other sub-submodels. A high-level view on the different models is given in Figure 3. In what follows we look at each model in more detail. More specifically, for each sub-submodel six aspects will be considered twice, reflecting the what, how, where, who, when and why-questions suggested above.

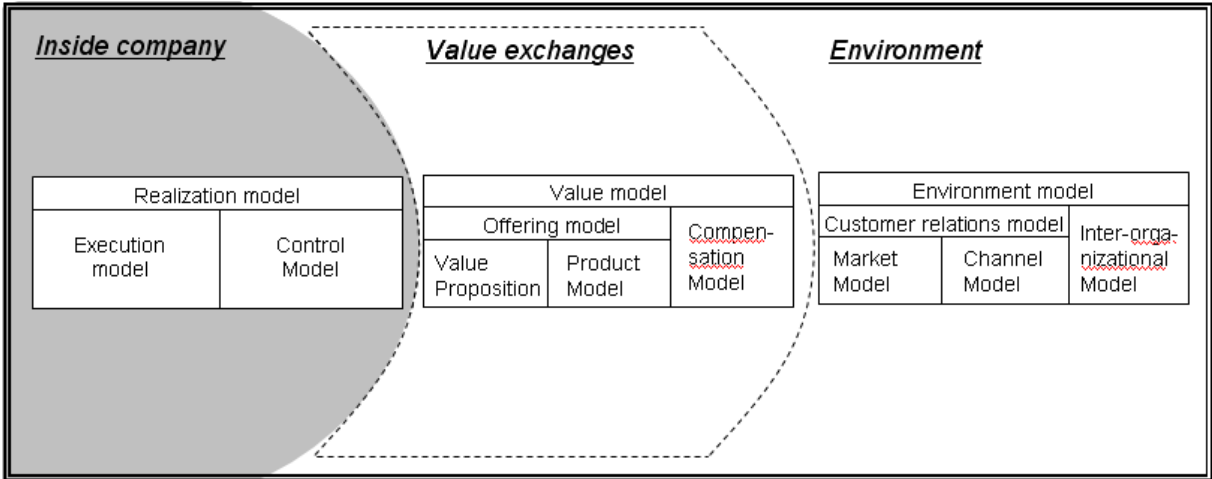


Figure 3: A Business Model is composed of several submodels

The Realization Model

The Realization Model contains two main components. On the one hand, companies need to *execute* tasks using resources. On the other hand, companies need a *control* structure to control those executions. The Realization Model, therefore, contains two submodels: An Execution Model and a Control Model. The Control Model is all about the management of the enterprise and the structure of the enterprise and thus lays ‘on top’ of the Execution Model. The Realization Model is illustrated in Figure 4.

Realization Model	Control Model	<p>Current state</p> <p><u>What:</u> departments in the company (per product, per geographic region, etc.)</p> <p><u>How:</u> automatic/manual monitoring of activities; formal, informal and automated communication mechanisms; size of departments; number of management levels; level of task specialization of department</p> <p><u>Where:</u> the official location of the organization; central or decentral task monitoring</p> <p><u>Who:</u> asset/stock owners; employee ownership stimulation; legal organization form; who monitors task executions; skills and knowledge of employees (specialized or not);</p> <p><u>When:</u> how often managers meet;</p> <p><u>Why:</u> differentiate to deal with environment requirements, coordination mechanisms to integrate departments</p>	<p>Change state</p> <p><u>What:</u> planning and company engineering efforts</p> <p><u>How:</u> coordination via mutual adjustment, direct supervision or standardization; how initiate task executions; how motivate personnel; take care of unexpected events</p> <p><u>Where:</u> decisions made on production floor or not</p> <p><u>Who:</u> skilled managers; talented employees; culture of flexibility and high performance; who initiates task executions; who redesigns tasks and processes and determines properties of desired resources; who can influence vs. take decisions</p> <p><u>When:</u> how fast can managers adapt plans and can the organization change</p> <p><u>Why:</u> long term sustainability, improved operations</p>
	Execution Model	<p>Current state (Resource Model)</p> <p><u>What:</u> Tangible and intangible resources are necessary, such as technology, products, equipment, brands, etc. core assets vs. supporting and complementary resources; tangible and intangible; financial sources, Intellectual Property rights; resource properties; what information is stored</p> <p><u>How:</u> storage and transmission media of (information about) resources;</p> <p><u>Where:</u> properties of facilities; where are (information about) resources stored: central or decentral</p> <p><u>Who:</u> who is responsible for storing and maintaining (information about the state of) resources?</p> <p><u>When:</u> Viability of product (design). Information update frequency.</p> <p><u>Why:</u> cradle-to-cradle approach; price-quality trade off; availability</p>	<p>Change state (Services Model)</p> <p><u>What:</u> definition of recurring tasks, when is their execution considered successful; create awareness of a need, to steer evaluations, to sell and to deliver after-sales service</p> <p><u>How:</u> procedures of subprocesses (task decomposition), automated or manual, standardized or not, how are resources combined in the transformation process from source to output</p> <p><u>Where:</u> location where tasks are executed; geographical (de)centralization; specific region, spatial relationships between activities</p> <p><u>Who:</u> Who executes production, procurement, executor relationships between activities</p> <p><u>When:</u> Temporal relationships between activities: when and in what sequence are the tasks done? Under what conditions can tasks be executed</p> <p><u>Why:</u> value-adding tasks, experience, image</p>

Figure 4: The Realization Model is composed of the Execution Model and the Control Model

The Execution Model

The Execution Model shows the different facets of how the company creates the value it is offering customers. In executing processes, companies need to execute tasks to change the state of resources. At some point in time, the resources of a company will then be in some state. The amount, alignment, uniqueness, visibility and complexity of resources and tasks

influences how easy it is for competitors to copy the execution model (Piccoli & Ives, 2005). It is thus of major importance to assess the execution model rigorously.

When it comes to *resources*, tangible and intangible resources are necessary, such as technology, products, equipment, brands, etc. (Hwang, 2008). Resources can be divided into core assets and supporting and complementary resources. These resources have specific properties that qualify them as appropriate or not (Kim, 2000). Companies may also have important Intellectual Property rights (Lee et al., 2006). Information (e.g. current and old Bills Of Materials) are important assets as well (McKay & Marshall, 2004). The financial sources the company uses show its solvency (Petrovic et al., 2001). Resources can be stored and transported in different ways. Information can for example be stored on different media (paper, computer, RFID-tag) and transmitted using different media (mail, XML, cd), all with their own properties. Product information could be made available for customers on the website, in some paper manual, etc. (Lee et al., 2006). Resources and information about resources can be centralized or decentralized. The storage locations have important properties (Hwang, 2008). It is for example important that primary and backup storage places have independent possibilities of being hit by hurricanes. Companies have to determine who is to store and maintain (information about) resources.

The above discussion looks at the different aspects of resources that are in some state. Several Business Model researchers group information concerning resources in a separate model, for example called the 'Resource Model' (Hwang, 2008). The Resource Model then is the subpart of the Execution Model that only considers the 'things that are in some state' (see Figure 4).

Several authors also give a separate name to models that contain information about *processes* that are executed to change the state of things, such as the 'Production Model' (Petrovic et al.,

2001) and the 'Processes Model' (Hwang, 2008). In Figure 4 the more generic name 'Services Model' is used..

The Services Model shows what recurring tasks need to be performed (Hwang, 2008) and when their execution is considered successful (Kim, 2001). Linder and Cantrell (2000) talk about the 'activity configuration': the activities that are needed to create and deliver value and their relationships. Examples of tasks are production and procurement (Petrovic et al., 2001). Osterwalder and Pigneur (2002) and Lee et al. (2006) consider the tasks in the customer decision process: to create awareness of a need, to steer evaluations, to sell and to deliver after-sales service. Different companies can execute the same task in diverse ways. It is thus valuable to investigate the procedures of subprocesses (Kim, 2001). Such subprocesses show how resources are combined in the transformation process from source to output (Petrovic et al., 2001). It is equally interesting to assess the automation of tasks, the standardization, etcetera. Innovations can also stem from where tasks are executed. There can be innovative policies about spatial relationships and about executor relationships between activities. A party may for example only be allowed to do one of the two tasks in a process but not both (or the other way around a single party has to do both).

The control Model

Control can be defined as "a systematic effort by business management to compare performance to predetermined standards, plans, or objectives in order to determine whether performance is in line with these standards and presumably in order to take any remedial action required to see that human and other corporate resources are being used in the most effective and efficient way possible in achieving corporate objectives" (Mockler, 1970). Fifteen years ago, Mintzberg (1993) already made clear it is very important to pay attention to organizational models. On the one hand, one has to consider how the organization looks like

and how things are monitored at execution time. On the other hand, one needs to consider how the organization is being designed and directed.

At 'execution time' *things* are the way they are and everything is monitored. The company is organized in a number of departments. The division may be based on several variables: the product, the geographic region, etcetera. Information can be communicated within and across departments in different ways (informal, formal meetings, automated communications). Departments can be rather big or rather small – what determines the number of people under one supervisor's supervision – and can have few or many management levels. Tasks of people in the department can be rather specialised or rather broad. This influences skills and knowledge that are needed in each position. Task executions can be monitored in different ways (e.g. automatically or by humans). The organization has some official location what determines applicable laws and taxes. Assets and stocks of the organization can be owned by many or a few. Employee ownership may for example be stimulated (Linder & Cantrell, 2000). The organization also has some legal form (Amit & Zott, 2001).

The enterprise also needs steering to *change* the way the company operates. Some things can actively be planned and engineered, whereas others remain more fluid. Coordination can happen via mutual adjustment, direct supervision or standardization of work, outputs or skills (Mintzberg, 1993). Personnel can be motivated in many different ways (Linder & Cantrell, 2000). In some cases, decisions can be made on the production floor. Companies may try to employ skilled managers (Laudon & Traver, 2008), talented employees and a culture of flexibility and high performance (Linder & Cantrell, 2000). Companies have to define who has to initiate task executions, who has to (re)design tasks and processes and who can influence decisions vs. who can take decisions.

The Value Model

The Value Model contains two main components. On the one hand, there is the Offering Model which shows the value that is offered by the company to the customer. On the other hand, there is a Compensation Model which shows how the company is compensated for the value it gives to the customer. The Value Model is illustrated in Figure 5.

We note that – in contrast to the presentation in Figure 5 – in the following textual presentation of the different models no distinction is made between *things that are in some state* and *tasks that change things*. The reason for this is that such a presentation would lead to repetition. After all, in the Value Model, the “*things that are in some state*” are the *products* (e.g., a car) a company sells or gets from the customer in return, whereas the “*tasks that change things*” are the *services* (e.g., a painting job) a company sells or gets in return. For both largely the same issues arise.

Value Model	Offering Model	<p>Product Model</p> <p>Things in some state</p> <p><u>What:</u> core and supplement products, bundled offerings, advertisements, right to use vs. ownership, cross-selling opportunities, composite value objects</p> <p><u>How:</u> / <u>Where:</u> / <u>Who:</u> / <u>When:</u> / <u>Why:</u> /</p>	<p>Tasks changing states</p> <p><u>What:</u> core and supplement services and experiences, composite services, excess capacity</p> <p><u>How:</u> / <u>Where:</u> / <u>Who:</u> / <u>When:</u> / <u>Why:</u> /</p>
	Value Proposition Model	<p>Things in some state</p> <p><u>What:</u> cool, new, high quality, compatible, cheap, tailored, complimentary</p> <p><u>How:</u> effort and risk to use the product, product packaging</p> <p><u>Where:</u> locally available, one stop shopping</p> <p><u>Who:</u> network effects, customer as co-creator</p> <p><u>When:</u> immediately available, order-to-delivery time</p> <p><u>Why:</u> fulfil customer needs</p>	<p>Tasks changing states</p> <p><u>What:</u> cool, new, fun, high quality, cheap, tailored</p> <p><u>How:</u> service levels</p> <p><u>Where:</u> locally available, one stop shopping</p> <p><u>Who:</u> customer as co-creator</p> <p><u>When:</u> immediately available, order-to-delivery time</p> <p><u>Why:</u> fulfil customer needs</p>
	Compensation Model	<p>Things in some state</p> <p><u>What:</u> financial, tangible, intangible, coupons, low or high price, for free</p> <p><u>How:</u> payment systems (VISA, PayPal), compensation calculation (cost plus, percentage of deal), price for different segments, online or offline</p> <p><u>Where:</u> location of compensation, requiring move</p> <p><u>Who:</u> does customer compensate or a third party, who determines appropriate compensation (negotiated or fixed), different willingness to pay</p> <p><u>When:</u> immediate or in the future, once or repeated payments</p> <p><u>Why:</u> secure, taxation, loyalty, price sensitivity</p>	<p>Tasks changing states</p> <p><u>What:</u> services</p> <p><u>How:</u> value calculation of compensation (cost plus, percentage of deal), different compensation for different segments</p> <p><u>Where:</u> location of compensation , requiring move</p> <p><u>Who:</u> does customer compensate or a third party, who determines appropriate compensation (negotiated or fixed), different willingness to execute</p> <p><u>When:</u> immediate or in the future, once or repeated</p> <p><u>Why:</u> secure, taxation, loyalty, price sensitivity</p>

Figure 5: The Value Model is composed of an Offering Model and a Compensation Model.

The Offering Model

The Offering Model contains two submodels. A company offers specific products and services, modelled in the Product Model. If customers want to buy this product or service, that is because the product or service has some value to them. The aspects of the product that are valued by the customer form the Value Proposition Model. The latter looks at the same product as the Product Model, but from a different level of abstraction.

The Value Proposition Model looks at the value that is offered to the customer. The value may come from any combination of what, how, where, who and when elements. The goal of the Value Proposition is usually to fulfil the customers' needs (Laudon & Traver, 2008). Customers may appreciate the product or service because it is cool, new, high quality, compatible, cheap, tailored or offers a fun experience (Linder & Cantrell, 2000). Products may be complimentary to other products (Osterwalder & Pigneur, 2002) and network effects may exist (Lee et al., 2006). Using the product or service may require little effort and risk or not (Osterwalder & Pigneur, 2002). The service levels that are provided may be very good or not (Osterwalder & Pigneur, 2002). Special attention may be paid to the way the product is packaged: environmental friendly packaging, convenient quantities (fixed quantities or flexible, consumer-determined quantities), etc. The customer may also appreciate one stop shopping possibilities (Lee et al., 2006). Another advantage of the company may lie in a short order-to-delivery time (Lee et al., 2006). The customer may like the fact that he can act as a co-creator of a product or service (Osterwalder & Pigneur, 2002).

The Product Model actually only concerns the 'what'-aspect. The products the company provides form the What-aspect of the 'things-in-some-state'-box. The services the company offers the customers form the What-aspect of the 'tasks-that-change-states'-box.

The Product Model shows the 'value objects' (Gordijn et al. 2000): the products or services that are of value to the customer. It concerns the core and supplement products, services and experiences that are delivered (Petrovic et al., 2001; Lee et al., 2006). Excess capacity can also be sold (Linder & Cantrell, 2000). Other companies sell information (Amit & Zott, 2001), one specific type being advertisements (Mahadevan, 2001). According to Weill et al. (2005) the assets that are involved can be financial, physical, intangible and human. Companies can sell the right to use or the right to own an asset (Weill et al., 2005). It may be

important to consider cross-selling opportunities (Lee et al., 2006) and selling bundles of products (Linder & Cantrell, 2000) to create 'composite value objects' (Gordijn et al, 2000).

The Compensation Model

The compensation Model looks at the compensation the company gets in return for giving a value object to the customer (Petrovic et al., 2001). Companies cannot only ask a monetary compensation but may also get some other tangible object in return or may ask some service.

It has to be determined what compensation the company will accept in return for each of the provided products and services and which of those products and services are most important for the company from this viewpoint (Lee et al., 2006). The compensation may be something financial, tangible or intangible. It could for example concern a money transfer, but also advertising. Companies can offer coupons or may generally ask a high or a low price (Linder & Cantrell, 2000). Some companies provide products and services for free: they give up today's revenues for assured future revenues (Mahadevan, 2001). Some type of compensation may be more secure, more interesting from a taxation viewpoint, enhance loyalty, reduce price sensitivity, etc. (Lee et al., 2006). The compensation can be realized in diverse ways. For instance, different payment systems can be supported (VISA, PayPal, etc.), advertising can be done online or offline, etcetera. The location of the compensation can be important. Sometimes a customer has to come over to the seller or an intermediary to pay (e.g. at a notary office) or to execute a service. Innovations can lie in how the compensation is calculated (cost plus, percentage of the deal, etc.) (Linder & Cantrell, 2000) and different prices can be specified for different segments (Lee et al., 2006). Different consumers may indeed have a different willingness to pay (Mahadevan, 2001). It has to be investigated who determines the compensation: it can be negotiated or fixed (Linder & Cantrell, 2000). Innovative companies experiment with who is going to take care of the compensation. This

could be the customer himself or a third party (maybe with a higher willingness to pay). Possibly this third party gets a compensation from the customer in return. Innovations can also stem from when compensation is desired: immediately or after some time, only once or repeatedly as a subscription, etcetera (Linder & Cantrell, 2000).

The Environment Model

The environment of the organization contains many parties. One of those parties, the customer, gets special attention. The Customer Relations Model shows how the company is related to the customer. The Inter-organizational Model concerns the relation of the company with other companies in the environment. The Environment Model is illustrated in Figure 6.

Environment Model		
Customer Relations Model		Inter-organizational Model
Market Model	Channel Model	
<p>Things in some state</p> <p><u>What:</u> Stage of the Product Lifecycle <u>How:</u> Customer segment overserved or underserved <u>Where:</u> location of target customers; regional or global market; mobile access required or fixed location required; where gather customer information <u>Who:</u> target customer segments (B2B vs. B2C), customers with similar valuation function; groups of customers presented as single customer <u>When:</u> produce to stock or to order <u>Why:</u> get economies of scope</p>	<p>Things in some state</p> <p><u>What:</u> information transmission through channels, <u>How:</u> how transport products (plane, boat, truck, train); packed in big lots or small lots; transport and storage together with other products; virtual or physical channel; accuracy of deliveries; high pressure or consultative selling, how share information (RFID, barcode, paper, XML) <u>Where:</u> products stored centrally or decentrally; stored on the customer's premises (consignment); location of the distributor (on premises of producer or not) <u>Who:</u> who takes care of delivery (customer or company); direct or indirect sales; referrals and pyramid schemes; properties of transporter (safe, ethical). <u>When:</u> when happens delivery (immediately, overnight, next week)? <u>Why:</u> efficient delivery, Just-In-Time enabled, risks</p>	<p>Things in some state</p> <p><u>What:</u> product and cost structure different from competitors; product or service easy to copy; role of company at inter-organizational level (market-maker, aggregator) <u>How:</u> how share information with parties <u>Where:</u> Location of suppliers; competitors; and partners; <u>Who:</u> integration with upstream and downstream parties; who are competitors (incl. providers of substitute products), suppliers? <u>When:</u> a first mover advantage; <u>Why:</u> focus on core competences,</p>
<p>Tasks changing states</p> <p><u>What:</u> the marketing plan; tasks in which customer information can be used <u>How:</u> how choose relevant environment in which the business will operate; how provide purchasing opportunities; how persuade customers to buy; how easy to retain customers <u>Where:</u> where are products actually sold <u>Who:</u> who chooses relevant environment in which the business will operate; who can use customer information <u>When:</u> when are purchasing opportunities provided; trend of the size of target customer segment <u>Why:</u> increase market share, increase target customer segment, secure sales</p>	<p>Tasks changing states</p> <p><u>What:</u> transportation plan, automisation/virtualisation plan <u>How:</u> how to gain knowledge about advanced technologies for information sharing <u>Where:</u> Central or decentral steering of the Channels (push vs. pull). <u>Who:</u> disintermediation, who decides what services channel partners should provide, who creates transportation plan (seller, transporter, third party) <u>When:</u> Short or long term relation with channel members <u>Why:</u> increase efficiency and effectivity</p>	<p>Tasks changing states</p> <p><u>What:</u> tasks done collaboratively; <u>How:</u> how collaborate with others (groupware); how redesign inter-organizational processes <u>Where:</u> central or decentral control of inter-organizational processes <u>Who:</u> candidates for future mergers; possible spin-offs; threat of new competitors; future insourcing and outsourcing options <u>When:</u> duration of relation with other companies (short term vs. long term) <u>Why:</u> sustain competitive advantages</p>

Figure 6: The Environment Model is composed of the Customer Relations Model and the Inter-organizational Model

The Customer Relations Model

The Customer Relations Model contains two important components. First, there is the Market Model that specifies who is the customer. Secondly, there is the Channel Model that reveals how the company is going to reach the customer.

On the one hand the Market Model looks at the current state of the target customer segment.

On the other hand, it investigates how the state of the target segment evolves.

The *existing* target customer segment can be defined in many ways. The company may play in the Business-to-Business and/or in the Business-to-Consumer markets (Osterwalder & Pigneur, 2002). The company can serve a regional or a global market. Specific locations may be selected (Lee et al., 2006). Customers may want mobile access to the shop or access at fixed locations. Customers can be grouped according to different criteria (e.g., showing similar valuation functions (Gordijn et al., 2000)). Sometimes, groups of customers may present themselves as a single customer (Gordijn et al., 2000). The company may try to gather customer information in diverse locations in diverse ways on different moments. The target customer segment can currently be overserved or underserved (Lee et al., 2006). Relating the target customer segment to the product that is delivered shows the stage of the product lifecycle the product is in (Lee et al., 2006).

The Market Model also shows that the target customer segments *evolve* over time. Someone has to be appointed who can choose the relevant environment in which the business will operate in the future. There is some trend of the size of the target customer segment and it may be easy or difficult to retain customers (Petrovic et al., 2001). Companies can target a bigger customer segment in order to get economies of scope (Lee et al., 2006). The way in which a relevant environment is chosen in which the business will operate is important (Petrovic et al., 2001). Customer information can be used (Osterwalder & Pigneur, 2002) for

example to set up a marketing plan to reach the customers better, to provide new purchasing opportunities and to find new ways to persuade customers to buy (Lee et al., 2006).

On the one side, the Channel Model shows the current of the sales channel. On the other hand the Channel Model reveals how the sales channel evolves.

At some point in time, the Channel Model has the form of a direct or indirect sales model. The properties of the specific parties that are involved are important (Petrovic et al., 2001). The delivery-mode also has significant properties, such as the means used for transportation (plane, boat, truck, train), the way products are packed (in big lots or small lots), individual transport or grouped with other products, the use of a virtual or a physical channel (Linder & Cantrell, 2000), the timing of deliveries (night transport or not), etcetera. Products can be stored centrally or decentrally and can even be stored on the customer's premises (e.g., under consignment). Companies can use ubiquitous or focussed channels (Linder & Cantrell, 2000). All in all, the goal is to get the product in the right place (Osterwalder & Pigneur, 2002). Channels may use high pressure or consultative selling (Linder & Cantrell, 2000).

Channel Models evolve over time. There are different drivers for changing channels. In several industries, intermediation or disintermediation has been considered. The amount of value-added that is provided by the channels is then weighted against the costs. Because of climbing oil prices, transportation issues get renewed attention and partnerships can be set up to share transportation costs (see e.g. www.freecargo.com). A single company may be able to force decisions upon other companies. Sales channels can gain more or less power over time and several dealers in dealer networks may join forces to steer the way a company deals with them. It may be noticed that information gets lost in the channel. Information that is transmitted through the channel may increase or may have to be transmitted faster. Someone has to identify requirements upon channels. A single party may decide what services channels

should provide or parties may decide on this together. New ways of working may be introduced. It can be decided to follow recommendations of standard organizations. Companies could for example implement Vendor Managed Inventory (VMI) and CPFR (Collaborative Planning, Forecasting and Replenishment).

The Inter-organizational Model

The Inter-organizational model reveals (1) how the organization is currently related to other companies in its environment and (2) how this relation could evolve.

The *existing relations* with other companies influence the possible profits the company can get. As Porter (2001) states, to find out more about the profitability of a company one has to consider the industry structure and one has to investigate whether the company outperforms the average competitor. Looking at the industry structure, one has to consider the properties of competitors, suppliers, providers of substitutes and compliments (Laudon & Traver, 2008) and the relation with the government. The company may be integrated with upstream or downstream parties (Lee et al., 2006). Suppliers and partners may execute their tasks in geographical proximity or not, what influences the determinability of transportation time. They may be present locally or globally. They may or may not have other more important customers. Inter-organizational processes can be controlled by a central party or not (Goethals et al., 2007). Companies may outperform competitors if they have a different product and cost structure from competitors (Lee et al., 2006), if they have a first-mover advantage, etc.

The relations with other companies can *change* over time. Companies can plan for financial growth through mergers or may envision the creation of new companies through spin-offs (Lee et al., 2006). Outsourcing or insourcing can be advisable. There is also a threat of new entrants. Integration with upstream and downstream parties can be pursued/threatened. Some people get the responsibility or possibility to assess possible integration scenarios and the assessment can be done in different ways. Diverse parties can be involved in redesigning

inter-organizational systems and different coordination mechanism can be used in such a redesign effort. Standardization organizations could suggest process designs and data exchange standards or a single player in the supply chain may define processes (Goethals et al., 2004b). Companies may go through a ‘rationalization’ process to limit the number of suppliers (Neef, 2001) with which they pursue a long term relationship, or they may pursue short term relationships by investigating links with electronic markets for example (Goethals et al., 2005).

Discussion

Table 2 gives an overview of the components that are mentioned in 12 Business Model frameworks by placing their components in the UBUMOF. This table clearly shows that there is not a single Business Model framework in extant literature that includes all elements of a Business Model that are mentioned in other frameworks. Our research confirms the findings from Mäkinen and Seppänen (2007) that the conceptualization of Business Models is highly fragmented. They believe that one reason for this is the fact that past studies did not take into account the existing body of knowledge. In this paper, existing knowledge from engineering disciplines is integrated with existing research on Business Models.

Table 2: Overview of different Business Model frameworks. 1 = Petrovic et al. (2001), 2 = Linder & Cantrell (2000); 3 = Osterwalder & Pigneur (2002); 4 = Gordijn et al. (2000); 5 = Amit & Zott (2001); 6 = Weill et al. (2005); 7 = Mahadevan (2000); 8 = Kim (2001); 9 = Hwang (2008); 10 = McKay & Marshall (2004); 11 = Lee et al. (2006); 12 = Laudon & Traver (2008). Black cells are ‘inexistent’.

Submodels of the Business Model			Things that are						Tasks that change things					
			what	how	where	who	when	why	what	how	where	who	when	why
Realization model	Control model		5			2			2	2, 5		2, 5, 12		
	Execution model	Resource model	1, 3, 5, 9, 10, 11	1, 3, 11	1, 7, 9, 11	1, 4, 7, 9, 11	1, 3, 11	3						
		Services model							1, 2, 3, 4, 8, 9, 10	1, 3, 4, 9, 10, 11	1, 3	1, 3, 4, 10	1, 3, 4	3
Value model	Offering model	Value proposition	2, 9, 10, 11, 12	3, 9, 11	2	2, 11	2		2, 7, 10, 11, 12	3	2	3	2	12
		Product model	1, 2, 4, 5, 6, 7, 10, 11, 12							1, 4, 6, 10, 11, 12				
	Compensation model		1, 2, 3, 7, 10, 11	1, 2, 4	1	1, 2, 10	1, 2, 7	1	1, 3, 10	1, 7	1	1	1, 12	1, 11
Environment model	Inter-organizational model		11, 12	11, 12	11, 12	5, 11, 12	11, 12	11	10, 11, 12	11, 12	11, 12	2, 3, 5, 10, 11, 12	11, 12	11
	Customer relations model	Market model	11	4	3	3, 4, 7, 10, 11, 12		11	11, 12	1, 11, 12	11, 12	1, 4, 12	1, 11, 12	1, 11, 12
		Channel model	3	1, 2, 7, 11	1, 2, 3	1, 3, 5, 7, 11	1, 3, 5			2	2	2, 3, 7		

The presentation of the diverse submodels in the previous section may look like a simple enumeration of some elements. However, all mentioned elements are important. In fact, the UBUMOF contains all elements that are mentioned in the 12 frameworks in Table 2. Some submodels from other frameworks have been melted together in the UBUMOF. Petrovic et al. (2001) for example include a Capital Model component. Those financial sources could be seen as any other resource and are included in our Resource Model. Models also overlap. In so-called ‘Production models’ (see e.g. Petrovic et al., 2001), one can often find information about resources that are used in the production (i.e., things) besides the production logic’s description (i.e., tasks). In so-called ‘Resource models’, one sometimes finds how resources are changed. Overlap between Production models and Resource models is not desired. All in all, the resource models should focus on ‘things that exist’ and production models should

focus on ‘tasks that change things’. The two are inextricably bound up with each other and or grouped in our ‘Execution Model’.

Besides the black, ‘inexistent’ cells in the Resource Model and Services Model rows, there are also black cells in the Product Model row in Table 2. The Product Model actually only concerns the ‘what’-aspect. The other aspects could actually also be considered. However, doing that would lead to an overlap with other models such as the Market Model and the Channel Model. Therefore, those cells are wiped out.

The Business Model concept has often been said to provide a link between strategy and operations (Mäkinen and Seppänen, 2007). Strategy is the ‘why’ element in the UBUMOF. It gives direction on why to choose some option in the other boxes and helps aligning all decisions. Several ‘why’ cells in Table 2 are empty. This shows that strategy considerations are often omitted in Business Model literature. Seddon et al. (2004) state that Business Models are ‘abstract representations’ of the strategy. As such, Business Models would themselves not contain the motivations for making choices. This may lead one to the conclusion that the why cell should not be included in the UBUMOF. However, if one considers the functionality of Business Models discussed earlier in the paper, it is clear that the why cell has an important role in realizing several functions. For example, how can one analyze choices companies have made if drivers for making choices are not considered? Similarly, how can one suggest a TO-BE Business Model if the strategy of the company is neglected? It is not because the why-aspect is at a higher level than the five other aspects that it would not be part of the Business Model.

Table 2 shows that several models concern the environment of the company. In the context of Business Models, one should not only consider the enterprise of the legal entity under consideration, but also how this legal entity is placed in its environment. This is important for two reasons. First, the way the company interacts with its environment is actually part of the

business and may in fact be its distinguishing characteristic. Secondly, as contingency theory tells us, there should be a fit between the organization's structure, its size, its technology, and the requirements of its environment (Borgatti, 1996; Hatch, 1997). Alignment of all parts in the Business Model thus includes an alignment with the way the company interacts with its environment.

Another observation from Table 2 is that very few authors pay attention to 'organization design'. Nevertheless, Mintzberg (1993) clearly showed the importance of different configurations, such as the simple structure, the machine bureaucracy, the professional bureaucracy, the divisionalized form and the adhocracy. The law of requisite variety shows the importance of having a match between organizational complexity and the complexity of the environment. The law, actually originating from cybernetics, states that *'only variety can destroy variety'* (Ashby, 1956, p207). That is, *'for one system to deal with another it must be of the same or greater complexity: organizations map perceived environmental complexity with their internal structures and management systems'* (Hatch, 1997 p90). Organizations are segmented in units, each of which has as its major task the problem of dealing with a part of the environment. Lawrence and Lorsch (1977) found that diverse and dynamic environments require highly differentiated and highly integrated organizations, while in stable and less diverse environments less differentiation and (still) a good integration are needed. The higher the degree of differentiation, the harder it gets to achieve the necessary level of integration. Differentiation is defined as *'the difference in cognitive and emotional orientation among managers in different functional departments'* (Lawrence and Lorsch, 1977, p11). Because of the differentiation, there is a need for integration. The latter is defined as: *'the quality of the state of collaboration that exists among departments that are required to achieve unity of effort by the demands of the environment'* (Lawrence and Lorsch, 1977, p11). Integration can happen in many ways: the *managerial hierarchy, integrating committees, activities carried*

out by individual managers outside official channels, and routine control and scheduling procedures. These integration devices are not always equally effective. The environment can put requirements on the way integration can be achieved. In stable environments conflicts are likely to be resolved at the top levels of the managerial hierarchy. In less certain environments integration (and conflict resolution) is more likely to happen at the lower levels of the hierarchy (Lawrence and Lorsch, 1977). Clearly, the ‘Control Model’ is an important part of a Business Model, although it is often neglected in literature.

Business Model Archetypes are formed by combining decisions about a limited number of UBUMOF components. Future research will investigate how diverse Business Model Archetypes are related to the components of the UBUMOF. Such research has the potential to reveal other related Business Model Archetypes and to show the differences and overlap between different Business Model Archetype classifications. A study of different detailed Business Model Archetypes could show which Business Model Archetypes outperform others in specific circumstances. Those ‘specific circumstances’ could then be defined by elements of the UBUMOF that are not part of the definition of the Business Model Archetypes.

One of the elements of a Business Model identified by Lee et al. (2006) is not included in the UBUMOF. The ‘unique resource system’ component includes the requirement to align online and offline systems. In our opinion, this is not a Business Model component, but a property of the entire Enterprise Architecture. As shown in the Enterprise Architecture discussion, the Business Model should be aligned with the ICT system that is to support the business operations. This ICT system is a lower row of the Zachman framework and is not included in the definition of the Business Model.

Companies can gain advantages from identifying elements in their Business Model that are not sufficiently optimized or aligned. The key to strategic positioning is to build a distinctive

value chain where trade-offs are made and all things nicely fit together (Porter, 2001). On the one hand, the UBUMOF shows practices that companies may redesign. On the other hand, the UBUMOF also shows the other elements that need be considered when redesigning. If companies know the contents of all cells of the framework for their company, they know the AS-IS situation which is *limiting* the TO-BE models that are realistically feasible. The AS-IS model, however, also shows the assets the company has and on which it can build to create sustainable competitive advantages.

Conclusions

In order to gain sustainable competitive advantages, it is key to build upon skills and assets the company already has and to bring all in line (Piccoli & Ives, 2005). “The value embedded in the business model increases as the bundle of resources and capabilities it encompasses becomes more difficult to imitate, less transferable, less substitutable, more complementary, and more productive with use” (Amit & Zott, 2001). As it is easier to challenge something you know well (Levina & Vaast, 2006), it is important for a company to know its Business Model. Several authors have tried to come up with frameworks to define the elements that are to be found in a Business Model. Despite the number of frameworks suggested so far, to this date no appropriate framework existed that enables the analysis, sharing, managing, prospecting and patenting of Business Models and the specification of information systems requirements from Business Models. This paper shows that to enable that functionality, a Business Model framework should be comprehensive and detailed.

This paper identified and defined the relevant components of a comprehensive and detailed Business Model. The Unified Business Model Framework (UBUMOF) is grounded in Enterprise Architecture and Business Model literature. It contains three submodels: a Realization Model that focuses on the inside of the company, a Value Model that shows

exchanges between customer and company, and an Environment Model that considers the environment of the company.

Each of those submodels contains several other models. The Realization Model contains the Execution Model (composed of the Resource Model and the Services Model) which looks at how the company executes its processes. It also contains the Control Model which reveals how the company controls the executions. The Value Model is composed of the Offering Model, which shows what the company is offering to the client, and the Compensation Model, which reveals what the company gets in return. The Environment Model, finally, is composed of the Customer Relations Model and the Inter-organizational Model. The latter investigates how the company is placed in the broad environment. The Customer Relations Model focuses on how the company is related to the customer. It is composed of two submodels: the Market Model and the Channel Model. The Market Model shows the properties of the target customers. The Channel Model shows how products are delivered to that customer.

For each of the models a number of elements are suggested, which reflect the six aspects that were put forward by Zachman in the Enterprise Architecture discipline. More specifically, each of the models considers the 'what', 'how', 'where', 'who', 'when' and 'why' of the model. Companies can be innovative on one or more elements of the diverse models. It is, however, important that they bring all elements in line.

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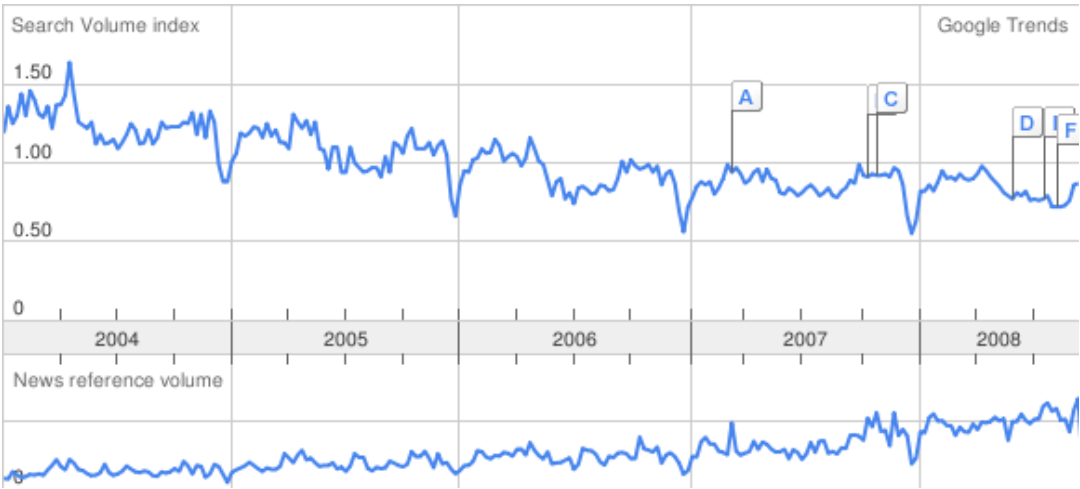
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Appendix 1: 'Business Model' search and publication trends on Google



Appendix 2: Literature overview: Business Model Archetypes

Sinha G. (2007)
Online business model
Network effect model
Reseller business model
Direct selling model
Exchange business model
Free offering coupled with premium offering
Subscription business model

Applegate (2001)
Focused distributor models
Portal models
Producer models
Infrastructure provider models

Linder & Cantrell (2000)
Price models
Convenience models
Commonality-Plus models
Experience models
Channel models
Intermediary models
Trust models
Innovation models

Weill et al. (2005)
Entrepreneur
Manufacturer
Inventor
Financial trader
Wholesaler/retailer
IP trader
Financial landlord
physical landlord
IP landlord
contractor
financial broker
physical broker
IP broker
HR Broker
"Human creator" (not applicable)
"Human distributor" (not applicable)

Rappa (2003)
Brokerage
Advertising
Infomediary
Merchant
Manufacturer
Affiliate
Community
Subscription
Utility

Sgriccia et al. (2007)
On-Deck postpaid
Off-Deck prepaid
On-Deck prepaid
Off-Deck postpaid subscription

Hartman & Sifonis (2000)
E-business storefront
Infomediary
Trusted intermediary
E-business enabler
Infrastructure providers/Communities of commerce

Timmers (1998)
E-shop
E-procurement
E-auction
E-mall
Third-party marketplace
Virtual communities
Value-chain service provider
Value-chain integrators
Collaboration platforms
Information brokerage
Trust services

Mahadevan (2000)
Portals (B2C and B2B)
Market Makers (B2C and B2B)
Product/Service Providers (B2C and B2B)

Appendix 3: Literature overview: Components of Business Models

Petrovic et al. (2001)	
Value model	What core product(s)/service(s)/experience(s) are delivered
Resource model	How to identify and get elements necessary for the transformation process
Production model	How elements are combined in the transformation
Customer relations model	Distribution model (logic behind delivery process) + marketing model (reaching and maintaining customers) + service model (logic behind serving the customer)
Revenue model	What, when, why and how the company receives compensation
Capital model	What financial sources make up the debt and equity
Market model	How the relevant environment is chosen in which the business will operate

Linder & Cantrell (2000) (from the Operating Business Model and the Change Business Model)	
Pricing model	Pricing model: high to low price, coupons, bundled, stable or discounts; based on cost plus/percentage of deal/value in use; negotiated or fixed; based on number of eyeballs; pay per click, subscription
Revenue model	Revenue model: products, information - broad/narrow --- bundled offering --- protect or license proprietary information --- sell excess capacity Revenue model: services, solutions, experiences - broad/narrow --- bundled offering
Channel model	Channel model: virtual or physical channel; ubiquitous or focussed channels; high pressure or consultative selling; direct or indirect sales; (dis)intermediation; referrals and pyramid schemes
Commerce process model	Auction, reverse auction, community
Internet-enabled commerce relationship	Market-maker, aggregator, virtual supply alliance, value network
Organizational form	Financial structure: who owns assets/stocks; privatize; IPO; employee ownership; motivate personnel; standardize processes; outsource, consolidate, vertically integrate, link with suppliers and customers; talented employees, culture of flexibility and high performance
Value proposition	Cool product, high quality, compatibility, convenience, ease of use, low price, one stop shopping, price vs. value, tailored; fun experience, trusted solution, reliable service

Gordijn & Akkermans (2001), Gordijn et al. (2000)	
Actor	Actors (independent economic entities)
Value object	A value object is a service or product that is of value for the actors
Value port	Value ports interconnect actors so they are able to exchange objects. They abstract away from internal business processes
Value interface, the "exchange of value"	A value interface shows how individual value ports fit together in one transaction
Value exchange	A Value exchange is the trade of a value object between value ports
Value offering	A value offering is an assembly of value exchanges
Market segment	A market segment shows a set of actors that share a similar valuation function
Composite actor	Composite Actors: a number of actors may present themselves as a single actor
Composite value object	Composite value objects can be decomposed into other value objects
Value activity	A value activity is performed by an actor and produces objects of value for an actor

Amit & Zott (2001)	
Content of transactions	Goods and information exchanged, resources and capabilities used for the exchange
Structure of transactions	The 'adopted exchange mechanism for enabling transactions'; the parties that participate in the exchange and the ways in which these parties are linked; the order in which exchanges take place
Governance of transactions	The way flows of information, resources and goods are controlled

Osterwalder & Pigneur (2002)	
Product-related aspects	New, complimentary or customized offerings; price of the offering; what product segments; where are the target customers; what are the target customer segments (B2B vs. B2C); capabilities as repeatable patterns of action in the use of assets to create, produce, and/or offer products and services; value proposition: what effort and risk are involved in the offering; how good are service levels?; the customer can be co-creator, buyer, user or transferer
Infrastructure-related	Inhouse resources and assets (tangible, intangible); the partner network; Activity configuration: activities to create and deliver value and their relationships; human assets
Customer-related	Distribution channel: provide the right quantity of the right product; provide product at the right time; provide product in the right place; provide product to the right party; use indirect or direct channels; channels are needed to create awareness, to steer evaluation, to sell and to deliver after sales service; how to gather customer information; Information strategy; trust and loyalty: create positive relationship dynamics, where emotional as well as transactional elements in the interaction between firm and client play an important role
-- financial aspects go through other three aspects --	Revenue model: what is given as compensation? -- Cost structure: costs of resources and assets

Lee et al. (2006)	
Value propositions	What core and supplement products to provide, substitutes; target segment: stage in product lifecycle
Scope of offerings	What customer problem do we solve? How efficient and effective are our products? What customer information do we store? How are products delivered? How do we give customers product information? What steps in the customer decision process do you tackle how? provide assistance, do something with postpurchase evaluations; How do we provide purchasing opportunities? How do we persuade customers to buy (advertising)? Where do we provide purchasing opportunities? When do we provide purchasing opportunities? How will the product be delivered (digitally or physically)? Desire to increase customer switching costs, to get economies of scope:
Unique resource system	Capital and assets needed; supporting and complementary resources and capabilities; intellectual property rights; labor needed; who provides necessary capabilities inhouse and outsourced; how easy is it for competitors to copy our system; with what partners can we collaborate; what is the order-to-delivery time
Revenue and growth models	Do revenues come primarily from (core/complementary) product sales or from services?; additional products to offer; cross-selling opportunities; one stop shopping appreciation; what compensation is required (+ new pricing models); revenue model: how to test prices for different segments; financial growth model: mergers vs. spin-offs to establish a new company
Competitive strategy	Is our product and cost structure different from competitors?; Internet usage; integrate with upstream and downstream companies; Generic strategy: sustain competitive advantages; what tasks create value?

Weill, Malone, d'Urso, Herman & Woerner (2005)	
Asset involved	Asset involved: financial, physical, intangible and human
Kind of rights sold	What rights are being sold: distributor, landlord, broker and creator roles

Mahadevan (2001)	
Value stream	Value proposition for the buyers, sellers, and the market makers and portals
Revenue stream	Plan for assuring revenue generation (the realization of the value proposition in the short term)
Logistical stream	Design of the supply chain for the business

Kim (2001)	
Objects	Object name, it's attributes, and the relationship with other objects
Processes	Process name, input, output, precondition, postcondition, procedure of subprocesses optionally, actor, resource, and constraints
Actors	Actor name, role and (optionally) hierarchy

Hwang (2008)	
Profit formula	Assets and fixed cost structure
Value proposition	A product that helps customers do more effectively, conveniently, and affordably a job they've been trying to do
Processes	Ways of working together to address recurring tasks
Resources	People, technology, products, facilities, equipment, brands and cash that are required to deliver the value proposition

McKay & Marshall (2004)	
Customers	Customers: what constitutes value for customers
Products and services	The products the company offers
Business process	The business process required to make and deliver services and to make products
Resources	A list of required resources (now and in the future)
Supply chain	What tasks are to be executed; who will execute tasks, including suppliers and business partners
Revenue model	Expected revenue and costs; sources of financing

Laudon & Traver (2008)	
Value proposition	Needs of customers linked to the product; personalized offering; desire to fulfill the customers' needs + lower transaction costs
Revenue model	For what product does the customer pay?; showing advertisements; transaction fees; when does a customer pay?
Market opportunity	The intended marketplace
Competitive environment	Porter's 5 forces
Competitive advantage	A superior product and/or a lower price; availability of complementary resources; first mover advantage
Market strategy	Marketing strategy
Organizational development	Organizational structure
Management team	Skilled managers