

## MODELLING VALUE PROPOSITIONS IN E-BUSINESS

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### Abstract

*In this paper we provide a conceptual approach to modelling value propositions. We argue that rigorous modelling in an ontological style could improve several aspects of business. Modelling and mapping value propositions helps better understanding the value a company wants to offer its customers and makes it communicable between various stakeholders. Using a common language (ontology) in defining a company's offering brings manager's mental models into a common form. Further, conceptually seized value propositions are comparable to the value propositions of a firm's competitors because they follow a rigid framework and make it possible to identify the competitive position of a firm's value proposition.*

## **1 INTRODUCTION**

Traditionally, companies concentrated on positioning themselves in the right place on the value chain, with the right products and market segments and the right value-added services. But through globalization, rapidly changing markets and new technologies things have become more complex and complicated. Companies increasingly organize in networks and offer bundles of products and services as a group. Today the art of creating and co-producing value with others is clearly at the centre of strategic tasks (Normann and Ramírez 1993). This is essentially due to the falling costs of ICT and the increased connectivity of actors, which has opened up new possibilities for creating co-engineered information goods and services, new information-based value-added services or information-rich physical goods. Especially e-business value propositions tend to be complex and hard to communicate in an easy way.

In this paper we argue that formal methods to seize value propositions are still missing, even though much literature on (customer) value in general exists. But in order to build (software-based) management, visualization and communication tools for modelling value propositions, formal models must be applied. Therefore we provide a framework that conceptualizes the bundles of products and services, in other word the value proposition, companies offer their customers. The advantages of taking a rigid conceptual and formal approach to describing a firm's offer are multiple. Firstly, it allows modelling and mapping a firm's value proposition that exists in informal ways, like unstructured documents and manager's mental models. This makes a value proposition communicable and easier to understand. Secondly, a better understanding of a company's offer by the stakeholders involved (e.g. managers, process modellers and Information Systems (IS) people) allows a better implementation. Conceptually seized value propositions are to a manager what a blueprint is to an architect. But what seems obvious in architecture is not yet evident in business. Often people assigned with implementing or changing parts of value propositions are left with a vague outline of the job they should fulfil. Thirdly, conceptually seized and modelled value propositions are easier to compare to the value propositions of a firm's competition. This is important in achieving a competitive advantage through differentiation. Last, mapping and decomposing a company's offer of products and services into its elementary parts makes it easier to experiment with new models. Especially ICT opens up a range of new opportunities to include information based aspects into a value proposition and engineer e-business value propositions.

Summarized, a formal approach to modelling value propositions allows managers to seize mental models, understand and communicate value propositions, improve their implementation, compare them to the competition and eventually foster innovation.

The paper is structured as follows. In the first section we argue why it is worth modelling value propositions. In the next section we explain the link between the concept outlined in this paper and the more general concept of business models. In the third and fourth section we outline the elements of the concept, followed by their detailed description. The fifth section illustrates the value proposition framework with a mini-case and the last section consists of the conclusion.

## **2 PRODUCT AND VALUE PROPOSITIONS - AN INTEGRAL PART OF A BUSINESS MODEL**

The value proposition concept that we explain in this paper is an integral part of the business model framework outlined by Osterwalder and Pigneur (2002). A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. A conceptual approach to business model makes it possible to seize, model, understand, share (Peterovic et al. 2001), observe over time, and, maybe even measure and simulate business models. Some authors see it as a new unit of analysis and interesting tool for innovation (Stähler 2002). According to Osterwalder and Pigneur a business model can be broken down into four simple pillars,

which are the "what", the "who", the "how" (Markides 1999) and the "how much" of a firm. In other words, these pillars allow to express *what* a company offers, *who* it targets with this, *how* this can be realised and *how much* can be earned by doing it. These pillars can be translated into four main business model elements that can then be further decomposed: Firstly, the product element, which describes the value proposition of a firm. Secondly, the customer relationship element, which describes how a firm gets in touch with its customers and what kind of relationships it wants to establish with them. Thirdly, the infrastructure management element that describes what activities, resources and partners are necessary to provide the first two elements. And finally, the financial aspects element, which describes the revenue flows and the pricing mechanisms of a firm, or in other words, how a company makes money through the other three elements (see figure 1). In this paper we focus on the product element and propose a conceptualization.

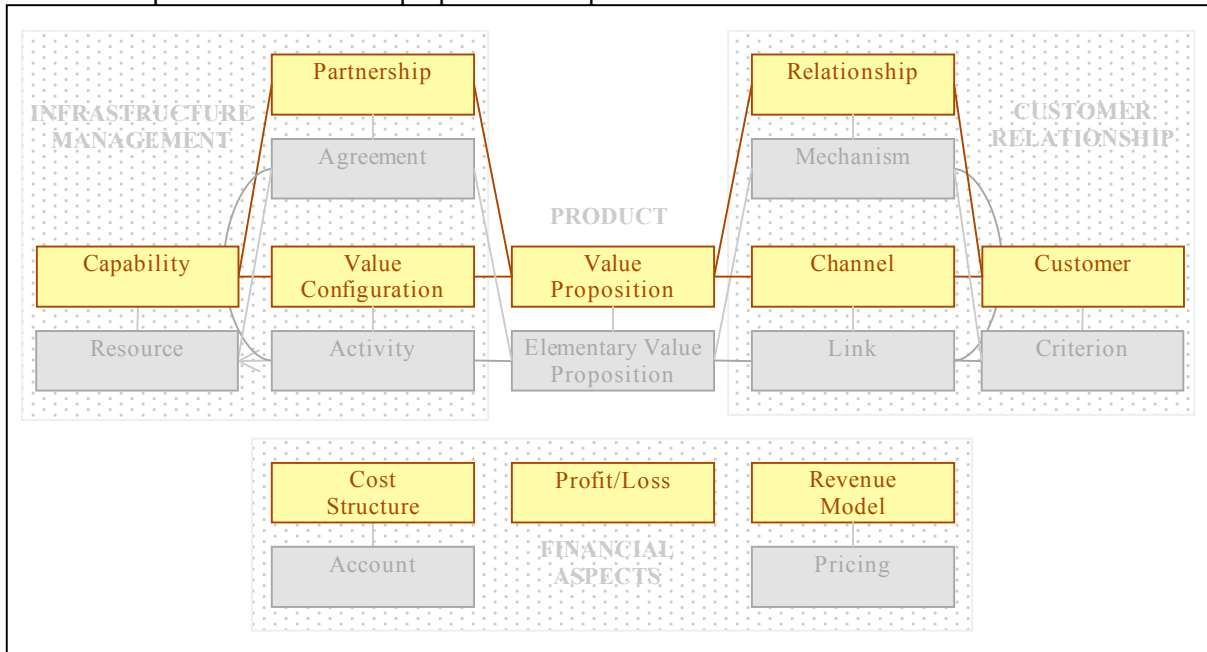


Figure 1: Business Model framework

### 3 PRODUCT

ICT has had a major impact on market offerings and thus on the product element outlined in this paper. Offerings are increasingly complex and composed of several different elements, such as physical products, informational products, services and complementary services. For example, Federal Express extended their value proposition in 1994 when they launched their Website. They were the first to offer online package status tracking, which allowed each and every customers to follow their package on its delivery. While this has not profoundly changed the shipping industry, other sectors, such as the music and film industry risk to be completely transformed because their products can be entirely digitized. This forces them to rethink their value proposition or even their entire business model. Often, companies that are not able to constantly innovate risk to fall into the commoditization trap because successful products are rapidly copied by an ever more global competition. Of course innovation is no guarantee for success, but recent research shows that superior market performers are essentially companies that are able to innovate and constantly transform their value proposition (Kim and Mauborgne 1997; Chen and Kai-Ling Ho 2002).

The product block of a business model covers all aspects of what a firm offers its customers. This comprises not only the company's bundles of products and services but the manner in which it differentiates itself from its competitors. We express this in an ontology of the value proposition,

which consists of the VALUE PROPOSITION element and its ELEMENTARY VALUE PROPOSITION(s) (see figure 2).

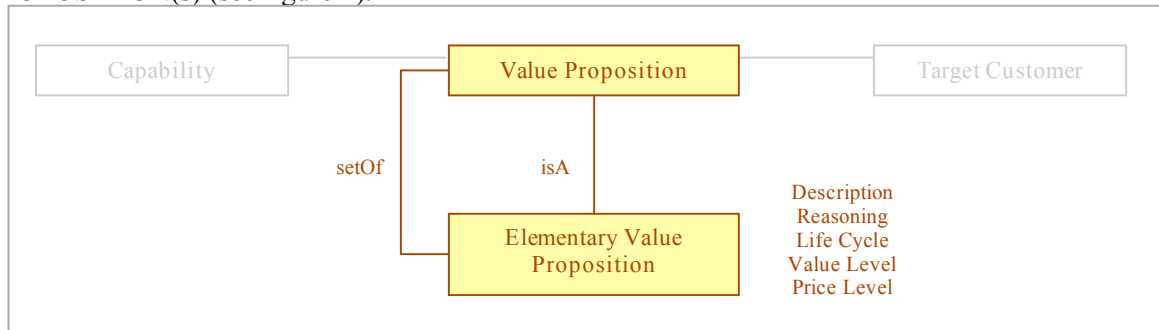


Figure 2: Product

#### 4 VALUE PROPOSITION

A VALUE PROPOSITION can be understood as the statements of benefits that are delivered by the firm to its external constituencies (Bagchi and Tulsiek 2000). We describe it as the definition of how items of value, such as products and services as well as complementary value-added services, are packaged and offered to fulfil customer needs(Kambil et al.1997). The construct of the VALUE PROPOSITION explained in this section is inspired by the works of (Kambil et al. 1997) and (Kim and Mauborgne 2002). They both provide a starting point for a more conceptual approach to modelling offerings.

As summarized in table 1, the VALUE PROPOSITION element is an overall view of a firm's bundle of products and services that together represent *value for* a specific CUSTOMER SEGMENT. It describes the way a firm differentiates itself from its competitors and is the reason why customers buy from a certain firm and not from another.

<b>Name of BM-Element</b>	<b>VALUE PROPOSITION</b>
<b>Definition</b>	A VALUE PROPOSITION represents <i>value for</i> one or several TARGET CUSTOMER(s) and is based on one or several CAPABILITY(ies). It can be further decomposed into its <i>set of</i> ELEMENTARY VALUE PROPOSITION(s). A VALUE PROPOSITION is characterized by its attributes DESCRIPTION, REASONING, VALUE LEVEL and PRICE LEVEL (see figure 1 and 2).
<b>Inherits from</b>	ELEMENTARY VALUE PROPOSITION
<b>Related to</b>	<i>Value for</i> TARGET CUSTOMER (1-n)  <i>Based on</i> CAPABILITY (1-n)
<b>Set of</b>	ELEMENTARY VALUE PROPOSITION(s) (0-n)
<b>Cardinality</b>	1-n
<b>Attributes</b>	Inherited from the ELEMENTARY VALUE PROPOSITION

Table 1: value proposition

The VALUE PROPOSITION element gives an aggregated view of the value a company offers its customers. Its components, the ELEMENTARY VALUE PROPOSITION(s), describe the different aspects of a VALUE PROPOSITION. The ELEMENTARY VALUE PROPOSITION(s) can themselves be decomposed again, which allows several levels of ELEMENTARY VALUE PROPOSITION(s) (see figure 2). By outlining these different components a firm can better observe how it situates itself compared to its competitors.

As summarized in table 2, an ELEMENTARY VALUE PROPOSITION describes a part of a firm's bundle of products and services. It illustrates a specific product, service, or even product or service

feature and outlines its assumed value to the customer. A set of ELEMENTARY VALUE PROPOSITION(s) together represent a VALUE PROPOSITION.

<b>Name of BM-Element</b>	<b>ELEMENTARY VALUE PROPOSITION</b>
<b>Element of</b>	VALUE PROPOSITION
<b>Definition</b>	An ELEMENTARY VALUE PROPOSITION is a part of an overall VALUE PROPOSITION. It is characterized by its attributes DESCRIPTION, REASONING, LIFE CYLCE, VALUE LEVEL and PRICE LEVEL.
<b>Cardinality</b>	1-n
<b>Attributes</b>	Description Reasoning Life cycle Value level Price level

Table 2: Elementary Value proposition

#### 4.1 Reasoning

This attribute captures the analysis of the VALUE PROPOSITION and the reasoning why it could be valuable to the customer. Normally value is created either through *use* (e.g. driving a car), reduction of the customer's *risk* (e.g. car insurance) or by making his life easier through reduction of his *efforts* (e.g. home delivery of groceries).

*Use.* The bulk of value often derives from the actual use of a bundle of products and services and is created when product attributes (e.g. features, design, value-added services, support) correspond to customer needs. In other words value is produced when assumed customer value matches perceived customer value after the consumption of a VALUE PROPOSITION.

*Risk* (based on (Kambil et al. 1997)). Value can be created by reducing the customer's risks. This can simply be a financial fear that the price of a purchased good will change in the future (e.g. common in commodity markets). This price risk could be neutralized with insurance contracts, buy-back guarantees, or financial options. Another risk, the one that a product won't perform as predicted or expected (e.g. obsolescence) represents a substantial problem to the customer. E-Business value proposition often take account of these risk and add forums, trust tools and other ELEMENTARY VALUE PROPOSITION(s) to reassure customers.

*Efforts.* Companies must think of new and innovative ways of making a customer's life as easy as possible. Reducing his efforts through e-business means signifies creating value through lower search, evaluation and acquisition costs, but also easier and cheaper maintenance, operations and training.

#### 4.2 Value life cycle

A value proposition should be studied over its entire life cycle (Anderson and Narus 1998). Therefore we create an attribute that captures the five stages of the value life cycle (see figure 3 inspired by (Ives 1999)). Value can be created at the moment of the *value creation* (e.g. customization/personalization of a laptop), its *appropriation* (e.g. Amazon's one-click shopping), its *consumption* (e.g. listening to music), its *renewal* (e.g. software updates) or its *transfer* (e.g. disposal of old computers, selling of used books).

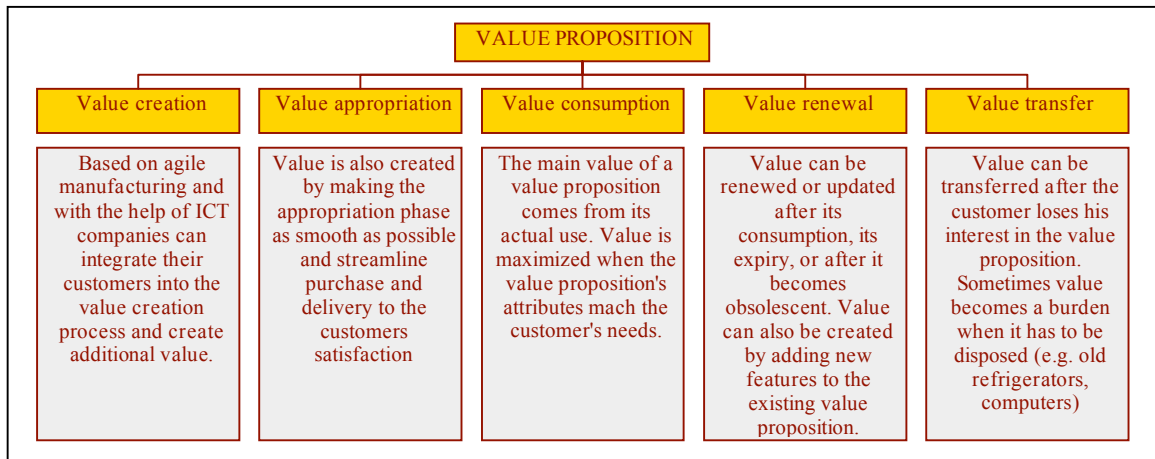


Figure 3: value life cycle

*Value creation (requirements).* Traditionally the customer has been more or less excluded from the *value creation* process. Products and services were designed by the R&D and marketing department, based on historical customer data and then thrown on the market. But through the help of ICT the customer can become an important part of the *value creation* process (Piller 2002). The concept of mass-customization and agile manufacturing (Maskell 2001) allow company's to integrate their customers by letting them personalize or configure their value package. Numerous firms have ELEMENTARY VALUE PROPOSITION(s) that include the customer in the value creation process. Dell lets customers customize their PCs, servers and laptops. CMAX allows their customers design their personal footwear over the Internet and get them delivered to their home. Adidas offers a customized shoe brand, which allows them to charge up to 50 percent higher premiums (Piller and Moeslein 2002). In the chip industry customers of manufacturers test and designs their chips, using toolkits, simulation and digital prototypes (von Hippel 2001; Thomke and von Hippel 2002). In the chemical industry International Flavors and Fragrances developed an Internet-based tool containing a large data-base of flavour profiles. Customers can select and manipulate that information on a computer screen and send their new design directly to an automated machine that will manufacture a sample within minutes (Thomke and von Hippel 2002).

*Value appropriation (acquisition).* Value can also be created during the *appropriation* phase by ameliorating and facilitating the customer's buying experience. The first step to improvement is streamlining the transaction in itself. An often cited example of convenient buying of consumer goods is Amazon.com's one-click shopping, which allows customers to purchase items through a single mouse click on their Website. For more expensive and complex industrial goods ameliorating the buying experience can include innovative price negotiation mechanisms, contract management, convenient billing and payment or attractive financing mechanisms. The next step to creating value in the *appropriation* phase is improving fulfilment. As outlined above, Federal Express improved their VALUE PROPOSTION of delivering packages by offering an online tracking service. Some companies go even further and build their entire VALUE PROPOSTION on fulfilment.

*Value consumption (ownership).* Probably the most traditional and best known phase of the value life cycle is the value derived from *consumption*. This is the value that comes from the actual use of a products and services. The dominant part of the VALUE PROPOSITION is often found at this stage of the value life cycle. Some companies define a core bundle of value, a basket of basic products and services, around which they “build” complementary value at additional cost. ABB and Microsoft have dubbed this "naked solutions" or "naked systems" (Anderson and Narus 1995) around which they wrap other services. However, as explained above ICT has opened up a lot of new opportunities for creating information-based or information-enriched products and services (Evans and Wurster 1997).

*Value renewal (ownership).* In some cases it can be interesting to *renew* value after or during its consumption. This can be necessary when value is used up (e.g. a retail store that is out of stock),

expires (e.g. expiry of a magazine subscription), becomes obsolescent (e.g. outdated machinery) or is dysfunctional (e.g. need for a car service). Sometimes it may also be interesting to create additional value by adding new features to an existing value proposition (e.g. new titles for a game console). Finally, value *renewal* could also mean gradually updating value, as it is very common for software products where software patches, general updates or major upgrades to newer versions increase customer value.

*Value transfer (retirement)*. At this last stage of the value life cycle, the customer has the possibility to *transfers* the value he has acquired. He may want to do this because the VALUE PROPOSITION has lost value for him, but he can still gain something by transferring this value. Amazon.com, for example, lets its customers sell their used books over the same Website they sell new books from. In other cases value may become a burden after its consumption, because it has to be disposed. This is the case for refrigerators, computers and batteries, where sellers offer to take charge of disposal.

### 4.3 Customer Utility: Value level

Measuring the utility for the customer by measuring the value level of a company's offer allows a firm to compare itself to its competitors. To do this we have created a qualitative value scale that relates to the value offered by competitors rather than using a quantitative scale that ranges from low to high. Our measure goes from *me-too* value (e.g. commodities), over *innovative imitation* (e.g. pocket pc) and *excellence* (e.g. Swiss watches) to *innovation* (e.g. Viagra in the 90's).

*Me-too*. A *me-too* value level simply means that the value of the bundle of products and services the firm offers its customers does not differentiate itself from the one of the competition's. However, differentiation may still take place through a lower price, which is captured in the PRICE LEVEL attribute of the VALUE PROPOSITION.

*Innovative imitation*. *Innovative imitation* means that a company imitates an existing VALUE PROPOSITION, but improves value by adding innovative elements. Dell has done this when they combined mass-market direct selling of PCs over the Internet with the possibility to personalize the configuration of your PC. Traditionally, retailers only sold pre-configured PCs and customers had to visit speciality stores if they wanted to personalize their PCs.

*Excellence*. *Excellence* means that value is pushed to its extremes. An illustrative example of value perfection is the offer of the Switzerland based company Jet Aviation. They provide wealthy private and business customers with a private jet service. The firm claims that it can meet customers travel plans on demand within hours at any airport worldwide at any time. Of course this kind of offer comes with a hefty fee.

*Innovation*. *Innovation* means that a firm introduces either a completely new product or service or a revolutionary combination of products and services. Recent research has shown that consumers highly value innovation and would be willing to pay for new value propositions (Nunes and Johnson 2002). One of the keys to innovation is distinctiveness and impact, which often implies changing the rules of the game and bringing new players into the fold who were not initially considered to be part of the game (Chen and Kai-Ling Ho 2002). When Diners Club issued the first credit card to 200 customers in 1951, it launched a revolutionary change in payments that had a tremendous impact on the financial industry. We place innovation at the high-end of the scale because it gives a firm a temporary competitive advantage through incomparable products, incomparable services or new breakthrough markets (Linder and Cantrell 2000). Of course, at some point unique value and premium rents to the innovator will disappear, either through commoditization (e.g. automatic teller machines) or the introduction of a superior technology (e.g. the fax machine being pushed aside by e-mail) (Ruggles 2002).

It can be interesting to plot a company's ELEMENTARY VALUE PROPOSITION(s) against the ones of its competitor's to get a better picture of a firm's position in the competitive landscape. In order to achieve this, (Kim and Mauborgne 1997) have introduced the concept of the value curve (1997),

which they later called strategy canvas (2002). This allowed them to capture and visualize offerings on a graph and visualize a company's competitive position.

#### 4.4 Customer Utility: Price level

This attribute compares the value proposition's price to the one of the competition's. The scale goes from *free* (e.g. online newspapers) over *economy* (e.g. Southwest, EasyJet, RyanAir) and *market* (e.g. stocks) to *high-end* (e.g. Rolex).

*Free.* Some companies offer a VALUE PROPOSITION to the customer without asking for financial compensation. They can do this because their business model is based on other sources of income. One example are the free daily newspapers that are distributed to commuters in large agglomerations. The income of these papers are essentially based on advertising and classified ads. Similar so-called "free business models" have mushroomed during the summit of the Internet boom, but crashed because of declining advertising revenues. Other companies offer free value and derive revenues from these activities, such as selling customer information to marketers. Another completely different example of free value in the software industry has mainly become possible because of the Internet. Meant is so-called open-source software, like the operating system Linux or the Office Suite OpenOffice, that are freely available for download over the Web.

*Economy.* This is the low-end of the scale where a company offers a price that is more attractive than the one of the bulk of its competitors. Often, but necessarily this goes hand in hand with a lower value level. In order to be able to offer attractive prices over a sustained period of time a firm has to streamline other elements in its business model, such as its activity configuration or its complementary revenue streams. Through attractive prices, made possible because of just-in-time production and direct selling over the Internet, the computer seller Dell was able to achieve a dominant position in computer retailing.

*Market.* Pricing at the market simply means little price demarcation from the rest of the market. Nevertheless, a market price can still seem attractive if special features or attributes of the value proposition signal additional value.

*High-end.* Represents the upper boundary of the price scale. High-end prices are usually found in luxury goods, but also for new and innovative value propositions that still allow charging a premium (Linder and Cantrell 2000).

By capturing the two elementary characteristics of an offering, the value level and the price level (Anderson and Narus 1998), a company can draw a so-called value map (Kambil et al. 1997). This helps defining its relative position in an industry along the price-value axis. Such a map also contains the value frontier, which defines the maximum value (performance of a value proposition) currently feasible for any given cost (minimum price of a value proposition). Market leaders will either extend and rethink their position in the value map to differentiate themselves from their competitors or radically innovate to shift the value frontier. The first strategy consists in extending the value frontier towards the low-end, as has been demonstrated in the airline industry by Southwest in America or easyJet and Ryanair in Europe. These three carriers have adopted a low-frills, low-cost service through which they have become the most successful airlines of the industry. The second strategy is to extend the value frontier towards the high end, as McKinsey, a strategy consulting company, has done during the 1980s and 1990s. By only working with the very best people and only accepting customer projects at the highest level of management, they have dominated high-level consulting for a very long time. The third strategy is to shift the value frontier. This means providing the same level of value at a lower price, or more value at the same price or even better more value at a lower price than the rest of the industry. This can be achieved through business model innovation, most often based on technological change (e.g. e-business). Dell Computer is a widely cited example of a company that offers its customers high value at moderate prices. Through direct selling and online customer services Dell was able to rapidly achieve a dominant market position in computer and server retailing.

Something that must be considered is offering ELEMENTARY VALUE PROPOSITIONs for free because they can have the sole function of complementing and making a core ELEMENTARY VALUE PROPOSITION more attractive. The VALUE PROPOSITION of an online bookseller, for instance, is composed of a multitude of ELEMENTARY VALUE PROPOSITIONs, such as the large range of books, personalized book recommendations, excerpts and book critics. But the only costs the customer finally has to bear is the book price and probably delivery charges. However, it makes a lot of sense to price ELEMENTARY VALUE PROPOSITIONs because it allows a better comparison to the competition's set of ELEMENTARY VALUE PROPOSITIONs that may be priced differently. Further, companies increasingly start to offer so-called "naked solutions" or "naked systems" (i.e. core ELEMENTARY VALUE PROPOSITIONs) to which customers can add further features according to their requirements (i.e. complementary ELEMENTARY VALUE PROPOSITIONs) at an additional cost (Anderson and Narus 1995). This essentially allows firms to offer a cheaper core VALUE PROPOSITION.

## 5 MINI CASE: easyMoney.com

The main goal of conceptualizing VALUE PROPOSITIONs and decomposing them into their ELEMENTARY OFFERINGS is a better understanding of the value a firm offers to its customers and the possibility to compare them to a competitor's VALUE PROPOSITION. Further, it allows a firm to understand where it could innovate and use ICT to add new information-based value components. The strategic tools we can derive from this conceptualization are the strategy canvas (Kim and Mauborgne 2002), the value map (Kambil et al. 1997) and a combination of the two, by also considering the entire value life cycle. We illustrate this with a mini case in the credit card industry.

easyMoney.com is a credit card company founded by Haji-Ioannou who has also created easyJet, easyCar, easyInternetCafé, easyValue.com and easyCinema.com. Its value proposition consists of customized credit cards at attractive prices. Through transparent pricing, clear product offerings, the use of ICT and avoiding cross-subsidies between products and customers the credit card client only pays for what he gets. Table 3 and figure 4 give an overview of the core ELEMENTARY VALUE PROPOSITIONs of easyMoney.com. The data has been collected from the easyMoney.com website.

	<b>Card Builder</b>	<b>Personalized credit card</b>	<b>Online account</b>
<b>Description</b>	With the so-called Card Builder customers can select their own individual combination of interest rate, cashback rewards, annual fee and servicing options. They build their own personalized credit card	The easyMoney.com credit card is accepted at over 19.1 million locations worldwide displaying the MasterCard logo and is financially attractive.	Customers can handle their account online and receive their statements electronically. At every moment they have an up to date overview of their account history.
<b>Reasoning</b>	A customized credit card reduces the financial risk of paying for options the customer doesn't need nor use.	By configuring his own credit card the customer benefits from attractive prices because he pays for what he gets.	Clients can conveniently manage their accounts from their PC and profit from lower handling costs.
<b>Value life cycle</b>	Value creation	Value Consumption	Value Consumption
<b>Value level</b>	Innovation	Innovation	Innovation/me-too
<b>Price level</b>	free	economy	free

Table 3: The core ELEMENTARY VALUE PROPOSITIONs of easyMoney.com

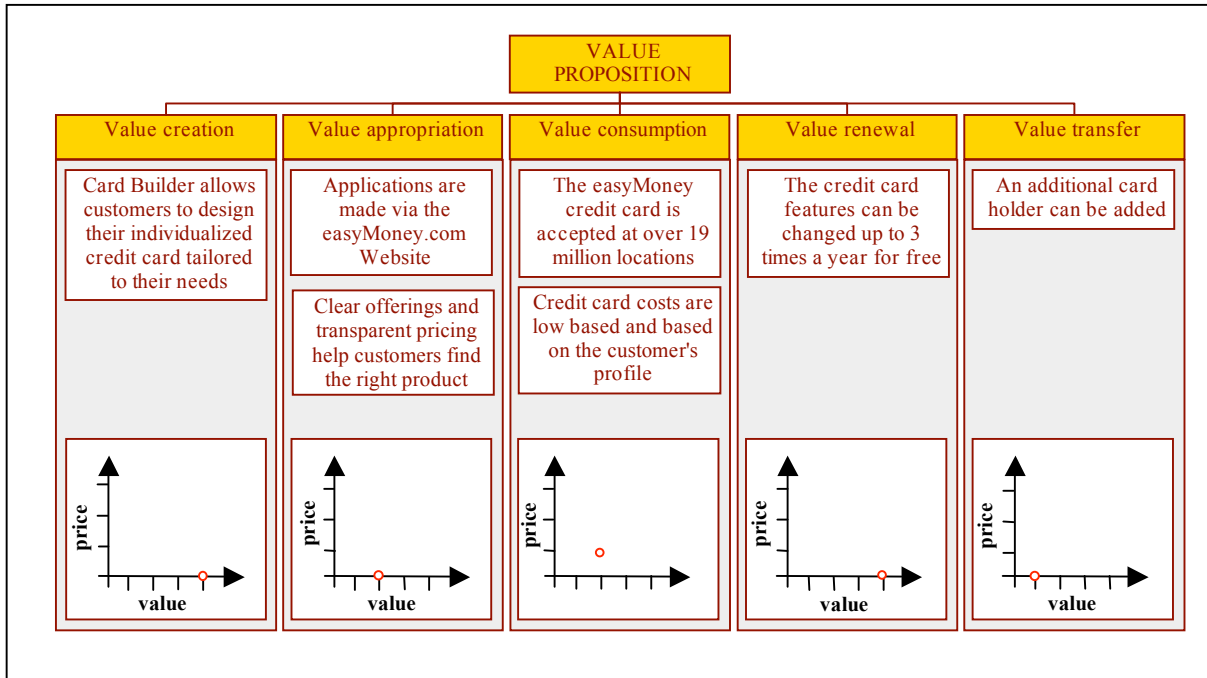


Figure 4: easyMoney.com's value proposition

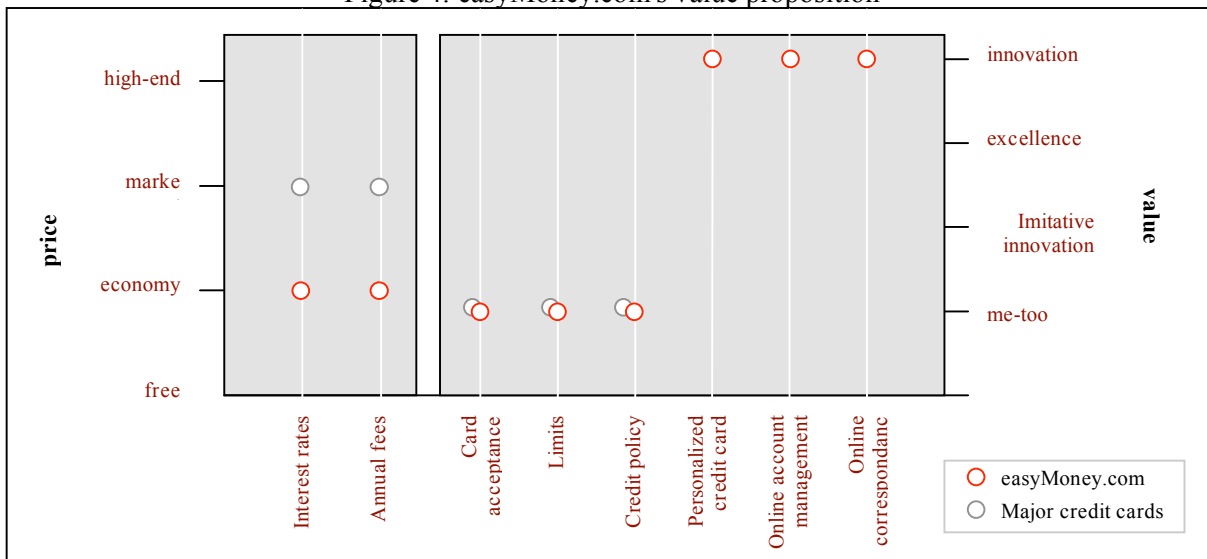


Figure 5: Strategy canvas easyMoney.com based on (Kim and Mauborgne 2002)

Figure 5 shows a simplified strategy canvas for easyMoney.com and visualizes where its main differentiation can be found. Namely these are in price advantages and new innovative features, such as the personalized credit card and the online account handling. The value map in figure 6 shows that easyMoney.com has shifted the value frontier by offering innovative value to cheaper conditions. In other words by applying a new business model supporting its value proposition it has modified the competitive landscape.

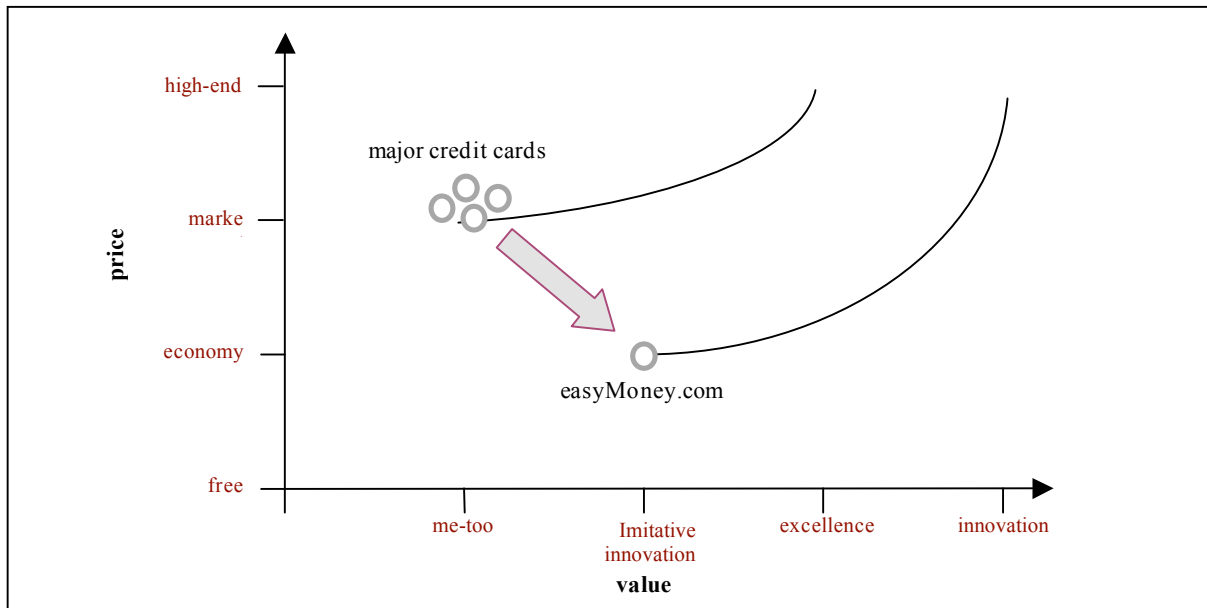


Figure 6: Value map easyMoney.com, based on (Kambil et al. 1997)

## 6 CONCLUSION

In this paper we explained in more detail the product pillar of the business model framework of (Osterwalder and Pigneur 2002). We provide a conceptual approach to value propositions that allow their modelling and mapping. Using such a systematic approach to value helps manager's bring their mental models in a more structured form. This is particularly important in e-business, where value propositions tend to be complex and difficult to communicate. Formally seizing value propositions helps firms compare their value proposition to the one of their competitors and helps them find out where they could innovate and include new information-based value elements into their value proposition. The value proposition framework we outline in this paper is the basis for strategic management tools, such as the strategy canvas (Kim and Mauborgne 2002) and the value map (Kambil et al. 1997). In this paper we argue that formal methods to seize value propositions are still missing, although some concepts can be found in literature. But in order to build (software-based) management, visualization and communication tools for modelling value propositions, formal models must be provided as a basis.

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