

Modeling the Design of Value in Service-oriented Business Models

Arash Golnam¹, Paavo Ritala², Vijay Viswanathan¹, Valerian Hanser¹ and Alain Wegmann¹

¹*Ecole Polytechnique Fédérale de Lausanne, School of Computer and Communication, Sciences (I&C),
Systemic Modeling Laboratory (LAMS), Station 14, CH-1015 Lausanne, Switzerland*

²*Lappeenranta University of Technology, School of Business*

PO Box 20, FI-53851 Lappeenranta, Finland

{arash.golnam, vijay.viswanathan, valerian.hanser, alain.wegmann}@epfl.ch, ritala@lut.fi

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Abstract: Many firms redesign their business models to be service-oriented in light of the increasingly central role that services play in their business models. Two fundamental questions should be addressed in designing service-oriented business models: *how is value created for and with the customers by the service provider?* and, *how is the value captured by the service provider?*. The first question deals with “value creation” while the second addresses “value capture” in the “service value equation”. A service-oriented business model that addresses these two questions can sustain the viability and competitiveness of the firm as a service provider. The extant research mainly focuses on the service design from the value creation perspective. Thereby, there has been little discussion about service providers’ value capture and its trade off with value created for and with service customers. In this paper, adapting a holistic perspective, we introduce a modeling framework that can assist in understanding, analysis and design of value (i.e. value creation and capture and their interplay) in service-oriented business models. Our modeling framework is grounded in insights and conceptualizations of the extant theories, constructs and frameworks on value creation and capture in business and service systems. We illustrate the applicability of our framework by conducting a descriptive case study of the value creation and capture in Amazon service system in the period between 1997 and 2001.

1 INTRODUCTION

A business model is defined as a generic platform between strategy and practice, describing the design or architecture of the value creation, delivery, and capture mechanisms the firm employs (e.g. Teece, 2010). Due to the increasing and even focal role of services in their businesses and strategy, many firms have been forced to completely re-think their business models (Teece, 2010). In fact, this recent tendency of business model redesign has led to the emergence of “service-oriented business models”. This development can be explained from the perspective of “service-dominant (S-D) logic” (Vargo and Lusch, 2004 and 2008), that attempts to view and extend the concept of service beyond a “particular” kind of intangible good as traditionally viewed in the “goods-dominant (G-D) logic”. S-D perspective conceptualizes a firm’s offerings not as an output, but as an input for the customer’s value-creation process.

Central to the service-oriented business models are the concepts of value creation and capture. In order to understand how a service-oriented business model remains viable and competitive, two fundamental questions should be addressed: “how is value created for and with the customers by the service provider?” and, “how is the value captured by the service provider?” (for discussion, see e.g. Grönroos and Ravald, 2011; Bowman and Ambrosini, 2011; Pitelis, 2009; Ritala et al., 2011). In the search for understanding such questions, the extant research has developed value modeling frameworks such as (Gordijn and Akkermans, 2003; Weigand et al. 2009; Pijpers and Gordijn, 2007; Yu, 1997; Weigand, 2009; Osterwalder and Pigneur, 2010) that provide conceptual tools to support the design of service offerings. However, such tools and framework mainly address the service design from the service customers’ perspective and do not sufficiently address suppliers’ value capture in the “service value equation”. The same gap can be broadly identified in the service literature in general,

where value creation and co-creation issues have been emphasized over value capture. In addition, the interplay between value creation for and with customers and value capture by the suppliers has not been explicitly investigated in the design and analysis of service offering in service-oriented business models.

In this study, we propose a holistic approach that takes into account both value creation (for and with customers) and value capture (by service providers) in order to fully understand and model the new logic of service provisioning process in service-oriented business models. To this end, our research aims to provide a modeling framework that can assist in understanding, analysis and design of value (i.e. value creation and capture and their interplay) in service-oriented business models. We illustrate the applicability of our framework by means of a descriptive case study of the value creation and capture in Amazon.com service system. In a descriptive case study, the researcher pursues to describe a phenomenon of interest that occurs within the data. This type of research begins with an a priori theoretical perspective. Then, a pattern matching is conducted to describe the phenomenon in the data in a rigorous way (Yin, 2009). More specifically, the descriptive case we conduct can be labelled as an instrumental case study (Stake, 1995), where we aim to illustrate the applicability of the suggested framework. The case study focuses on one of the services offered by Amazon.com, more particularly; the sales of used and new books in Amazon.com over the period 1997-2001.

We have used data triangulation in order to gather rich evidence on Amazon.com, various aspects of its business model and its service offerings over time. We began the data gathering process in January 2009. Since then, a variety of secondary data sources have been accessed, analyzed and synthesized in order to gain an accurate understanding of diverse facets of Amazon.com's service offerings and implementation in Amazon Marketplace. Such sources include:

- Amazon.com annual reports between 1997–2010 (Amazon, 2011a); presentations and news releases (Amazon, 2011b).
- Books published on Amazon.com such as; Afuah and Tucci, 2002; Spector, 2002; Kalpanik and Zheng, 2011), etc.
- Harvard Business Review (HBR) cases published between 2000 and 2010 such as (Applegate 2002 and 2008)
- Journal articles such as (Heck and Vervest, 2007), etc.

There are several advantages in using secondary sources. For instance, in Ambrosini et al. (2010) suggest that teaching cases are an unexploited and rich source of data that should be used when primary data is not available. They also suggested using reputable sources for teaching cases (we mainly use Harvard Business Review cases here) and combine it with other sources to attain data triangulation. Analyzing multiple sources of objective and subjective evidence has enabled us to combine evidence in a way that gives an overall understanding of the research topic.

The paper is structured as follows. In Section 2 we present a conceptual model that summarizes the theoretical insights and perspectives on value creation and capture. In Section 3, after a brief introduction to Amazon.com we represent the design of value Amazon.com's business model applying our value modeling framework. Section 4 includes the related work and in section 5, we present the conclusion and the future work.

2 THE CONCEPTUAL MODEL

In this section, we develop a theoretical framework examining value creation and capture in service systems. The theoretical insights are presented in form of a conceptual model illustrated in Figure 1. In the following, we first discuss the tenets of customer value creation and then we proceed to examine how the service provider eventually captures value.

2.1 Customer Value Creation Conceptualizations

Creating value for the customers is the fundamental reason why any company exists and thrives in competition (e.g. Bowman and Ambrosini, 2000), and customer value creation is most pronounced in service-oriented companies (Chesbrough and Spohrer, 2006). Customer value creation is a process, where the service provider delivers the customer a service offering that creates value when the customer uses the service, i.e. the use value (see e.g. Grönroos and Ravald, 2011). In this setting, the service provider (and its value network) is responsible in producing the service, and actual customer value (co-)creation takes place when customer receives/uses the service (ibid.). The main interface where the service provider can affect customer value creation (e.g. time saving convenience) is through a concrete service offering

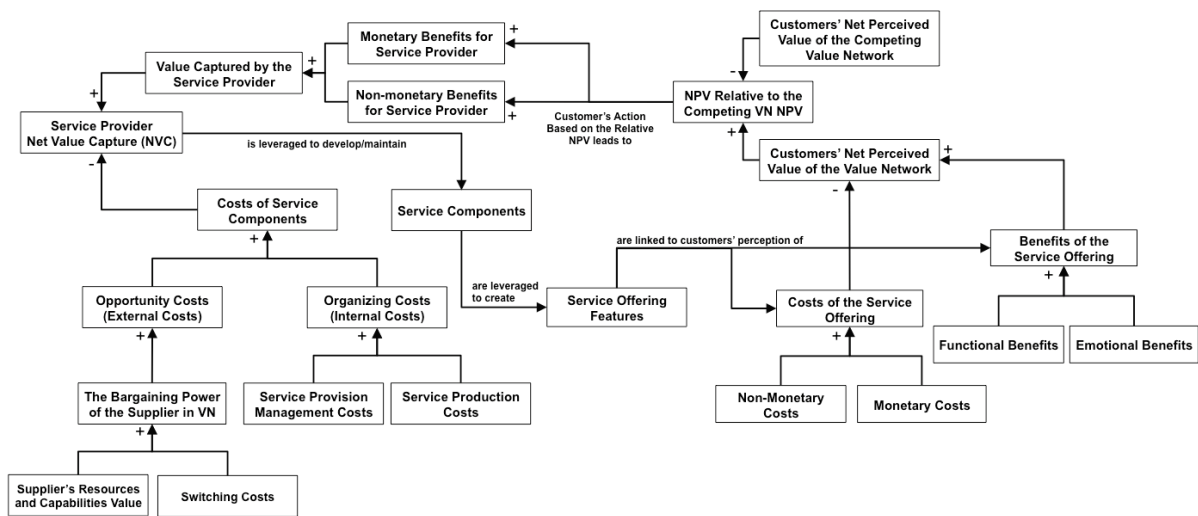


Figure 1: The conceptual model.

(e.g. transportation, entertainment). In order to provide any type service offering, the provider has a set of service components that are leveraged to create the service offering (Golnam et al., 2012). These components are created by the service provider and its value network, and they reflect the underlying resources and capabilities that are put to use to provide a certain set of service components. Thus, service components can be seen as a way of organizing the service, while service offering features are those that are linked to the actual customer's perceptions of service value.

2.1.1 Net Perceived Value (NPV)

In understanding customer value creation from the customer perspective, the net perceived value has been seen as a key concept, which is related to the overall benefits minus the costs of receiving the service (e.g. Kotler, 2000; Day, 1990; Huber, 2001). A related concept is the consumer surplus, in layman's terms often expressed as "value for money", that Bowman and Ambrosini (2000) define more precisely as the difference between the monetary amount the consumer is willing to pay and the actual price paid. It is important to recognize that consumer surplus or net perceived value is assessed ex-ante, i.e. prior to the transaction. This is precisely the reason why benefits and costs are assessed as "perceived"; this is in contrast to complementary concepts such as consumer satisfaction, which are ex-post. For instance, if a service offering consists of entertainment services, the customer perceives a certain value for being entertained, while costs of receiving it are linked to e.g. to time spent to going

to the venue, as well as the monetary costs involved.

Thus, in any situation where a transaction actually occurs it is expected that net perceived value will be positive. That is, the customer is willing to pay an amount in excess of the costs (including monetary and non-monetary costs), and thus made the purchase, pocketing the "surplus". The larger this surplus is the more eager the consumer will be to make the purchase; the converse is also true, the smaller this surplus becomes, the less eager the consumer is willing to engage in the transaction. The borderline situation is that of the monopoly supplier, where the firm is able to charge exactly the maximum amount the consumer is willing to pay, thus netting zero surplus for the consumer. Therefore net perceived value can only increase through one of the following situations: (1) an increase in perceived benefits while maintaining perceived costs unchanged; (2) a decrease in perceived costs while maintaining perceived benefits unchanged; or (3) a simultaneous increase in perceived benefits with a decrease in perceived costs.

2.1.2 Customers' Perception of Service Offering's Benefits

Customer's perceptions of the benefits are related to the use value of the service for the customer (e.g. Grönroos and Ravald, 2011). Use value covers the specific characteristics of the product or service perceived by the customer as potentially serving their needs. Bowman and Ambrosini (2000) emphasize the subjective nature of use value - it maps uniquely to each customer. Use value itself can

be further categorized into two sub-components, namely functional and emotional benefits.

Functional benefits represent the tangible benefits of the product or service that fulfill the primary needs the consumer had in seeking the solution, and Grönroos (2000) calls this the “core value” of the service. Kotler’s (2000) pinpoints that these benefits – although functional – are expressed in customer terms, further reinforcing their subjective nature. Furthermore, as discussed by Amabile (1996), customers make their subjective assessment of appropriateness of the functional benefit of the service. In the majority of cases, where the product and context are well understood and established, the process is straightforward. However, in cases of innovation and disruptive products, or change in social and cultural context, buyers might not be able to properly make their assessment, resulting in a net negative impact on functional benefits.

Emotional benefits are made up of the intangible extras that the firm is able to offer that go above and beyond meeting primary needs; the analogous terminology of Grönroos (2000) is added value. Kotler (2000) highlights various specific strands of these types of benefits, such as personal interaction value and image value. Groth (1994) also suggests that customers buy products and services for other than just “pure [i.e. functional] utilitarian reasons”. He provides the example of consumers not assigning significant value to near-perfect replications of famous art work as a case-in-point. Groth terms this kind of utility, serving the psychic needs of people, as an exclusive value premium (EVP).

2.1.3 Customers’ Perceptions of Service Offering’s Costs

In addition to various types of benefits, there are always costs incurring to the customers of receiving a service. The extant literature details the many types of such costs. The most obvious is the actual monetary cost (i.e. exchange value, Bowman and Ambrosini., 2000) In addition, it is also important to take into account the non-monetary costs. Regarding these, Kotler (2000) identifies three other varieties: time, energy, and psychic costs. Time cost is made up by the sum of durations the consumer has to spend in acquiring and acquainting oneself with the product or service. Energy cost is the net of energy that needs to be expended by the customer. Finally psychic costs form a complement to psychic utility - the cognitive stress experienced by the customer in purchasing and using the product.

2.1.4 Competing Value Networks and the Relative Net Perceived Value

In addition to the value created by the focal firm and its value network, the net perceived value created by competing value networks’ offerings should also be taken into account. In analyzing this, we refer to relative net perceived value, which is the net perceived value created by the focal firm’s offering in relation to the competing offerings. The higher the relative net perceived value is, the higher is the competitiveness of the focal firm in the eyes of the customers.

2.2 Service Provider Value Capture Conceptualizations

Value capture (also termed as value appropriation or retention in some sources) by the focal firm is an issue of much interest in management research and even more so in organizations themselves. Value capture is related to the actualized profit-making of a certain party. Regarding this, an in-depth discussion is provided by Bowman and Ambrosini. (2000) where they address the importance of analytical distinction between value creation and capture. Lepak et al. (2007) also makes a point of mentioning that “the process of value creation is often confused or confounded with the process of value capture or value retention” and that the two should be understood as distinct processes.

While there is certainly a strong correlation between the two, it is essential to recognize the former neither automatically nor fully translates into the latter. Bowman and Ambrosini (2000) argue that while value is created for the customer by organizational members (i.e. the value network), value capture has a different set of determinants, including “perceived power relationships between economic actors” (in other words, the bargaining power between the firm and other entities, which is explored at depth below). Lepak et al. (2007) and Ritala and Hurmelinna-Laukkanen (2009) follow a similar line of argumentation, suggesting that only through the use of specific mechanisms is the creator of value able to capture it, and that value creation and capture may have sometimes have completely different determinants and timeframes.

2.2.1 Net Captured Value (NCV)

In our model, value capture by the service provided is determined by the benefits/compensation it can extract from the markets. Furthermore, the net

captured value (NCV) of the service provider consists of two factors: the benefits for the service provider minus the costs of service components. It is notable that this view is symmetrical to the customer side where the net perceived value of the customer is also dependent on benefits and costs. However, the perspective is different in that the service provider is the producer of the value (which incurs costs), and is receiving various types of compensation for doing that.

In our model, the benefit side of net value capture is fundamentally affected by customer's action, which are based on the net value of the service as perceived by the customer. Customer's action means the activities that result in generating more or less tangible (e.g. annual subscription fee) and intangible (e.g. referrals, word-of-mouth, loyalty) contributions by the customer for the service provider as a compensation for the net perceived value of the service offering. From the service provider's perspective, these actions then lead to actual monetary and non-monetary benefits, which are discussed next, and are followed by the discussion on the costs of providing the service.

2.2.2 Benefits for the Service Provider

Benefits from the service provider range from direct monetary benefits (i.e. revenue streams) to non-monetary benefits (e.g. customer loyalty, learning). While monetary benefits for the service provider are quite straightforward to interpret (e.g. bulk price, subscription fees etc.), the non-monetary benefits are more varied and ambiguous. This is partly because non-monetary benefits consist of non-negotiable value, which means that these types of compensation cannot be clearly agreed on between the parties. Ulaga (2003) proposes various types of non-negotiable value coming from the customers, such as commitment, trust, satisfaction, and loyalty. Of course non-negotiable values in and of themselves are not the ultimate end for profit-seeking firms. Thus arises the discussion as to conversion mechanisms for non-negotiable value into negotiable forms. Allee (2008) offers significant insight in this regard, offering two pathways that this conversion can take: (a) direct conversion into monetary value, and (b) an intermediate conversion into a negotiable form that can be bartered. For instance, customer loyalty involves major (non-monetary) benefits for the service provider, which may also contribute to the monetary benefits in both short and long term. In fact, customer loyalty manifests itself in the form of repeat purchases and is thus strongly linked with

superior profits: Reicheld (1994) found out that "a small increase in customer retention leads to a major increase in net present value profits."

In addition, organizations learn by doing and thus constantly evolve themselves (e.g. Nelson and Winter, 1982). Thus, one type of non-monetary benefit is also linked to the organizational learning in the form of trial-and-error, customer feedback, and therefore improved service offerings. This type of value is highly non-negotiable, but it may translate into improved service offerings and value creation in the future.

In assessing the received benefits for the provider, the offerings of competing value networks should also be taken into account. Receiving both monetary and non-monetary benefits are linked to the customer's net perceived value relative to the competing offerings, since this determines the compensation customers are willing to pay (here: customer's actions) and contribute to compensate a particular service provider. Thus, issues concerning competitive pressure and competitors' offerings are important determinants on the eventual value capture. Regarding this, Lepak et al. (2007) explains that a consequence of competition is increased supply, which following fundamental economic principles, results in decrease in exchange value (i.e. price). We suggest competition also decreases the possibility of achieving non-monetary benefits, since the potential places of customer loyalty, learning and other benefits may be decreased if competitors are too attractive.

2.2.3 Costs of the Service Components

In addition to the monetary and non-monetary benefits for the service provider, the costs of providing the service components affects value capture. We divide these costs into two broad categories: the internal organizing costs, and the external opportunity costs. Combined, these costs decrease the value captured by the service provider.

First, the *organizing costs* refer to the internal costs of the service provider related to producing the service components. These costs are comprised of the production costs, related to producing firm's offerings, and the management costs, related to administration, control, monitoring, and incentives in organizing firm's operations (e.g. Masten et al., 1991; Blomqvist et al., 2002).

Second, in addition to the organizing costs, the value network includes costs dependent on the suppliers of various independent or jointly provided service components. Following Brandenburger and

Stuart (1996), we refer to the costs of the service components provided by the suppliers/partners in the service provider value network as *opportunity costs*. Opportunity cost is defined as the financial compensation provided to the suppliers in exchange to the service components they provide to the offering, also taking into account the highest alternative compensation that they could receive from utilizing their resources in other context (ibid.). Thus, the economic rationale of the suppliers' involvement in the service system is tied to the opportunity costs of the suppliers in providing certain service components. Opportunity cost is a widely-recognized economic concept that is a measurement of the best alternative passed up on. In this analytic context opportunity cost is the option a supplier foregoes in choosing instead to deal with the focal firm – and in effect this determines the eventual cost burden that needs to be taken into account when analyzing the costs related to maintaining the external network of suppliers and partners.

The key issue affecting the opportunity costs of the suppliers is the relative bargaining power. Indeed, Bowman and Ambrosini (2000) argue that a firm's ability to bargain with suppliers and buyers from a position of strength positively influences the value it is able to capture. Macdonald et al. (2004) reinforce this line of argumentation, with a formal model, stating that bargaining is what determines a firm's "precise" level of capture. Similarly Brandenburger and Stuart (1996) state that it is bargaining power between the "players" that determines the division of value, and further that bargaining power is what determines the price of exchange between supplier and firm. Simply put, the higher the bargaining power of a focal firm relative to its suppliers and partners, the lower are the eventual costs that it has to pay for suppliers to be involved in the value network, and vice versa. There are several issues that affect the relative bargaining power of actors. At its most basic level bargaining power is garnered by the relative value of resources and capabilities of different actors, determined by e.g. rarity, inimitability, and non-substitutability of those (see e.g. Barney, 1991). The relative bargaining power is also affected by the switching costs of the supplier. Switching costs is a general microeconomics concept identifying the redundant investment (monetary and otherwise) that a supplier needs to make when switching customers. Porter (1980) highlights the proportional relationship between high switching costs and high bargaining power. This means that the higher are the switching

costs of suppliers, the higher is the relative bargaining power of the focal firm.

2.3 Net Captured Value and Future Value Creation

The cyclical feedback that net captured value offers to future value creation activity remains a relatively unexplored domain in the literature. However, we suggest that this should be taken into account when building a practically oriented model of value creation and capture. As the most evident issue, the actual monetary value and related resources (i.e. the revenue streams coming to service provider) directly help to maintain service providing activities in that they provide funding for the on-going operations.

In addition, and more important in longer term, is the development of value creation activities that take place over time. Lepak et al. (2007) touches on this point in his conclusion, suggesting that "a key question is whether actors learn from past value creation efforts in terms of the amount of value they capture and use this knowledge for decisions regarding future value creation activities." In other words organizational learning accumulated by value capture over time can guide a firm to better structure its value creation efforts.

Thus, we suggest that over time, there is a feedback loop from value capture to developing and maintaining service components. In terms of development of service components, the feedback loop is a result of organizational learning, leading to improved capabilities and resources related to service production. This can lead to either increasing the customers' value, or cost reduction on the service provider's side, or both. In general, these improvements can be linked to Porter's (1980) generic strategies of cost leadership and the second as differentiation.

3 MODELING THE DESIGN OF VALUE IN AMAZON.COM BUSINESS MODEL

In July 1995 Amazon.com began as an online bookseller and by September 1995, the company was selling \$20,000 per week. After nearly three years as an online bookseller, the company began aggressively diversifying its offerings to include other product categories beyond books, initially adding music, videos, toys, and electronics (Afuah and Tucci, 2002). Such diversifications were followed

by the launch of several other stores such as home improvement software and etc. In parallel with such product diversifications, in October 1998, Amazon.com expanded geographically by launching its first international sites Amazon.co.uk and Amazon.de through the acquisition of UK-based online bookstore Bookpages and German-owned Telebook (Applegate, 2002). The rationale behind such diversifications was Amazon.com’s strategy of “get big fast” to turn Amazon into the biggest mass merchandiser or E-mall in the online world (Spector, 2002).

Following its evolution from an online bookseller or to an e-tailer by diversifying its product offering through new store openings, Amazon.com extended its business model to become a third-party market place by launching Amazon Marketplace in November 2000. Marketplace idea was then implemented in Amazon.com’s international websites, UK and Germany in 2002, and France, Canada and Japan in 2003.

In the case study analyzed in this paper, we focus on the Amazon.com’s evolution from an online bookseller to a third-party Marketplace in the online bookselling segment. From a service perspective, we model the value creation and capture in Amazon.com’s transition from selling new books to establishing a partnership with other booksellers to sell used and new books. To this end, we develop a value model representing the design of value creation and capture in Amazon.com business model circa 1997. In order to map our modeling framework to the theoretical discussions in the previous section and to gain a better understanding of the modeling constructs and notations, we present the model in three parts (i.e. customer value; customer value creation; and provider value capture) and explain each part step by step. Finally, we discuss the rationale behind changes in the business model of Amazon.com in 2001 in light of the theoretical insights embodied in our modeling framework.

3.1 Modeling Customer Value in Amazon.com’s Business Model

The first part of our modeling framework deals with the service value attributes as perceived by Amazon.com’s customers circa 1997. In Figure 2, we have listed a number of value attributes to reflect the perceptions of customers about the benefits and costs of Amazon.com’s online book selling service. In Section 2.1, we discussed that a customer assesses a service based on its net perceived. The next step is to understand the relative importance of value

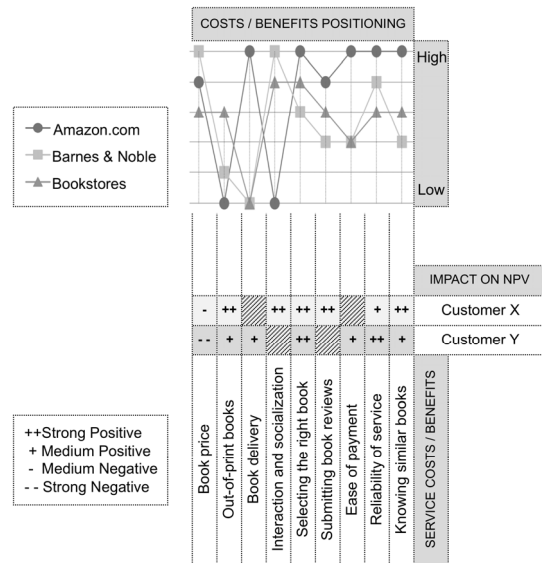


Figure 2: Modeling customer value.

attributes in terms of their impact on the net perceived value. As illustrated in Figure 2, we use minuses and pluses to represent the nature of impact (i.e. negative or positive) and its intensity (medium or strong).

Information on customers’ perception and their relative importance can be gathered through direct interaction with customers or customer surveys. Revealed preference methodologies (Carson et al., 1996) can also be used to understand customer’s needs and preferences based on their behavior. In this paper, the information provided on the value attributes the Amazon.com customers perceive and their relative importance has been gathered through the secondary sources outlined in Section 1.

As illustrated in Figure 2, different customers can perceive different value attributes of the service offered by the service provider. Similarly a value attribute can have different impacts on different customers. For instance as shown in Figure 2, the value attributes “Ease of payment” and “Book delivery” do not have any impact on Customer X’s perception of Amazon.com’s service offering. By the same token, “Submitting reviews” and “Interaction and socialization” do not influence Customer Y’s perception of service value. Moreover, “Book price” and the “Reliability of service” are more important for Customer Y. Whereas, Customer X cares more about value attributes such as (availability of) “Out-of-print books” and “Knowing about similar books”.

Finally, as already discussed in Section 2, it is important to identify the strategic positioning of the

SERVICE PROVIDER VALUE NETWORK								
Amazon.com				X	X	X	X	
Amazon.com's Bank			X					
Credit Card Company	X							
Customer's Bank			X					
Book Distributor Co.		X						
Book Publisher Co.				X				

SERVICE COMPONENTS	SERVICE FEATURES							SERVICE COSTS / BENEFITS										
	Credit card processing	in-print book inventory	Electronic Funds Transfer	Book publishing	Distribution centers	Book review submission sys.	Book recommendation sys.		Customer relationship mgt.	Book price	Out-of-print books	Book delivery	Interaction and socialization	Selecting the right book	Submitting book reviews	Ease of payment	Reliability of service	Knowing similar books
		X		X	X							X	X					
	X		X													X		
						X							X	X				
	X		X							X	X							
							X									X		
							X											X

Figure 3: Modeling customer value creation.

service provider by understanding where the provider is standing relative to the competing value networks in terms of the value attributes. This assists the service provider in identifying the service improvement opportunities as well as analyzing whether delivering the perceived value attributes results in a competitive advantage. In our example we compare Amazon.com, Barnes & Noble and the Bookstores with respect to the value attributes listed in the model. By Bookstores we refer to small and independent bookstores that were not a part of the book superstores or chains such as Barnes and Noble or Borders. As illustrated, Bookstores were doing better in the price and availability of out-of-print books. Bookstores superiority in these two value dimensions was mainly due to selling used books.

3.2 Modeling Customer Value Creation in Amazon.com’s Business Model

The previous section focused on the analysis of value attributes and their impact on net perceived value as well as the strategic positioning of the service relative to the competition. In this section we present the design of the value creation process.

Figure 3 illustrates the value creation process in Amazon.com business model wherein we model the service features created by the service components that are provided by the service provider and its

value network and their corresponding value attributes. In the model, we put an X to map the service components to service features and service features to the value attributes. More concretely, we can see that for instance, Amazon.com provides the service component “Book recommendation system” which creates the service feature “Recommended books” that is linked to the value attribute “knowing similar books”. Similarly, the Distributor Co. holds an “In-print book inventory” that creates the feature “Availability of in-print books” which pertains to the value attribute “Book delivery”.

3.3 Modeling Service Provider Value Capture in Amazon.Com’s Business Model

In Section 2 we explored different choices available to service providers to increase their net captured value (NCV). As discussed in section 2.2.2 the monetary and non-monetary benefits created by the customers determine the value captured by the service provider that increases the net value captured by the service supplier. The costs of the service components (i.e. organizing cost of service provider and the opportunity cost of the suppliers in the value network) reduce the net captured value by the service supplier.

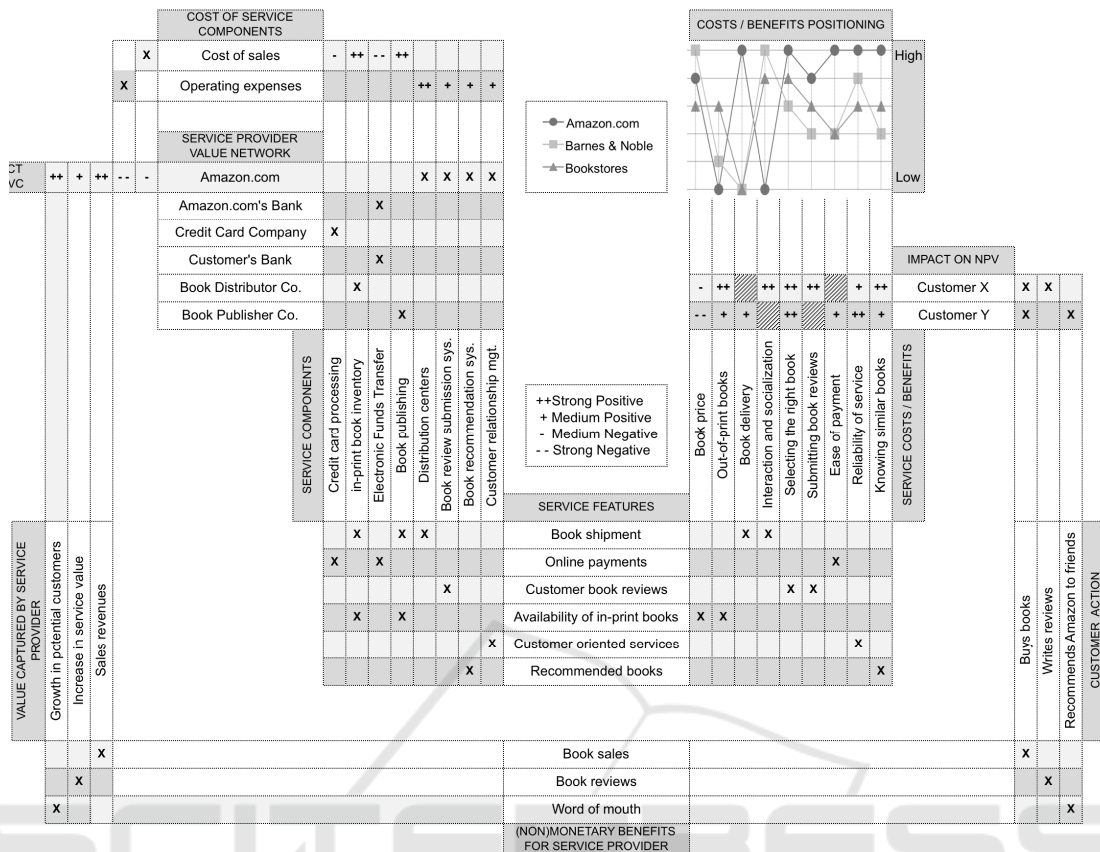


Figure 4: The overall modeling framework, including service provider value capture.

To model the service provider’s net captured value we start our analysis from the customer side. As discussed in Section 2.2, the customers of the service offering take actions based on their perceptions of the net perceived value of the service provider relative to the competing offerings. As illustrated in Figure 4, both Customer X and Y buy books on Amazon.com. This action generates the monetary benefit of “Book sales” which leads to “Sales revenues” as the value captured by Amazon.com. As illustrated, revenues have a strong positive impact on Amazon.com’s net captured value. Similarly, Customer X “Writes reviews” and generates the non-monetary benefit of “Book reviews” which results in an “Increase in the service value” of Amazon.com and thereby a higher net perceived value that can lead to more sales and revenues. Thereby, a non-monetary benefit can lead to the generation of monetary benefit by the passing of time. As shown in the model “Increase in the service value” has a medium positive impact on the net value captured by Amazon.com. Finally, Customer Y “Recommends Amazon.com to friends”. The non-monetary benefit of “word of

mouth” results in “Growth in potential customers” and a strong positive impact on Amazon.com net captured value by the passing of time. The gray background denotes that this impact will not occur immediately.

To model the cost of service components, we represent the “opportunity cost” and “organizing cost” *concepts* as elaborated in Section 2.2.3, by “cost of sales” and “operating expenses” *constructs*. We define these two indicators based on the definitions in the Amazon.com’s annual reports 1997 – 2010 (Amazon, 2011b). As our study focuses on the book segment of Amazon.com’s business, we modify these definitions to match the scope of our analysis.

- *Cost of sales* consists of the purchase price of the books sold by Amazon.com, inbound and outbound shipping charges to Amazon.com, packaging supplies, etc.
- *Operating expenses* comprise; marketing and sales expenses (i.e. advertising, promotional and public relations expenditures including the related expenses for personnel engaged in marketing, selling and fulfillment activities.

Product development expenses, and general and administrative expenses (i.e. payroll and related expenses).

As illustrated in Figure 4, we link the service components to the cost of sales and the operating expenses. More specifically, to represent the organizing and opportunity costs, the service components provided by Amazon.com are linked to the “Operating expenses” and the service components provided by the suppliers in Amazon.com value network are connected to the “Cost of sales”.

In 1997, books could be acquired from publishers or from a network of distributors. Both the publishers and the distributors had very high opportunity costs. Months before publishing a book, the publishers should determine the number of copies they intend to print. Publishers could not come up with an estimate before negotiating a deal with the booksellers that grant the booksellers the permission to return the unsold books. In 1994 for instance, 35% of the 460 million books shipped by the publishers were returned to them. The distributors, on the other hand carried around 500,000 titles in their inventories to ensure they met the demand (Spector, 2002). Moreover, Amazon.com was also suffering from its high organizing costs that were mainly related to managing its huge distribution centers. In November of 1997 Amazon.com opened up its second distribution center. The 200,000-square-foot state-of-the-art Delaware distribution center, the length of three football fields, together with the expansion of its Seattle distribution center, drastically increased the operating expenses.

In the late 1990s, Amazon.com’s net captured value capture had decreased, mainly due to: high opportunity costs of publishers and distributors; high operating expenses of its operations, and the attributes reducing the net value perceived by its customers (see Figure 4.). This reduction in the net captured value had placed Amazon.com on the brink of bankruptcy. As a matter of fact, by the summer of 2000, Amazon’s stock price had dropped by more than two-thirds and by the end of 2000, was down more than 80% of the beginning of 2000. Wall Street speculated that Amazon would file for bankruptcy or that another company would buy it. Analysts assert that if Amazon had not been able to borrow \$680 million in February of 2000, it would have run out of cash and gone bankrupt (Applegate, 2002 and 2008).

3.4 Value Redesign in Amazon.com Business Model Circa 2001

In November 2000, Amazon.com introduced its new service offering, Amazon Marketplace. In the online book value segment, Marketplace allows bookstores to sell new, used (including out-of-print books) on the same page that Amazon.com sells its new books. This side-by-side placement dramatically expanded the book selection available to the book buyers by enabling them to choose between new and used books from multiple booksellers including Amazon.com on one single store (Spector, 2002) and thereby, led to an increase in the value perceived by the customers by expanding the titles available.

By launching the Marketplace services, Amazon.com put itself in a head-on price competition with the bookstores to win over customer orders.

Amazon Marketplace increased customer’s net perceived value by reducing the book prices and the availability of out-of-print books. Amazon.com and the bookstores had to think out ways to decrease their organizing costs so that they could offer the book at the lowest price possible in a reverse bidding process in order to win customer orders. This competition resulted in a reduction in book prices on Amazon Marketplace. In addition, the presence of the Bookstores in Amazon Marketplace led to the sales of used books on Amazon Marketplace that could once more result in a lower prices and availability of out-of-print books

Amazon Marketplace enables sellers to utilize the e-commerce services and tools to present their products alongside Amazon.com’s on the same product detail page on Amazon.com’s website pursuing what Bezos phrased as “single store strategy”. To realize this single-store strategy, by adapting a coepetitive (simultaneously competitive and cooperative) strategy, Amazon.com provided third-part sellers with automated tools to migrate their catalogs of millions of used and out-of-print books onto the new single product pages inside the Amazon books tab and thereby, reducing the bookstores’ opportunity cost by decreasing their costs of doing business with Amazon.com. More importantly, the Marketplace created the opportunity for the bookstores to merchandise their products on the highly trafficked web pages that historically had sold only Amazon products. This, in effect, would mean higher volume of orders and thus lower opportunity costs for bookstores.

The Marketplace led to the generation of significant business and thereby considerable increase in net sales and gross profit helping Amazon.com to offset operating expenses and sales costs and achieve profitability in 2003 for the first time after its establishment. The Marketplace was the major factor behind Amazon.com's profitability. Amazon reported that third-party transactions accounted for 20% of its North American units sold in the second quarter of 2002 (Applegate, 2008).

4 RELATED WORK

e3Service (Kindern and Gordijn, 2008) is a method for semi-automatically reasoning about matching service offerings with service adopter needs. In order to make this semi automatic reasoning possible, e3Service assumes that the service adopter and service supplier share the same ontology, that the service adopter specifies her needs in the same vocabulary as the service supplier specifies its offering. We precisely avoid making this simplifying assumption. This comes at the cost of enormously complicating automatic or event semi-automatic reasoning with the benefit of models that more accurately reflect reality. Also, e3Service defines the value of a service only from the point of view of the service adopter.

House of Quality (Clausing and Hauser, 1988) is an improvement method, in which the main modeling artefact is very similar to the modeling framework presented in this paper. The House of Quality was derived from Quality Function Deployment (QFD), a method that was developed by Japanese companies to improve manufacturing processes for greater service adopter satisfaction. House of Quality is, therefore, more geared toward manufacturing processes.

Strategy canvas (Kim and Mauborgne, 2004 and 2005) is a diagnostic framework for strategy development. It allows an organization to visualize the competitive factors and the current state of play of those factors within a market place and to compare the organization's offering with those of the industry in general.

The Business Model Canvas (Osterwalder and Pigneur, 2010) is a strategic management tool, which assists in the development of new and improvement of existing business models. The canvas includes the nine blocks of a business model: key partners; key activities; key resources; value propositions; customer relationships; channels, and customer segments. While Business Model Canvas

presents all the building blocks of a business model it does not provide a holistic view where the interplay and the linkages between the building blocks are modeled.

Value model in this paper is an extension to the SAR (Supplier Adopter Relationship) diagram in (Golnam et. al, 2010 and 2011). The SAR is a part of the Systemic Enterprise Architecture Methodology (SEAM) (Wegmann, 2003).

5 CONCLUSIONS AND FUTURE WORK

In this paper we proposed a modeling framework to conceptualize and represent the design of value in service-oriented business models. Our framework is theoretically grounded in the theoretical insights from management science and economics, drawing principally upon work from the past two decades on value creation and capture including theories, frameworks, constructs, and other models. Thanks to the theoretical rigour embedded our framework the modeling artefact is generic enough to be applicable in the representation of value design in service-oriented business models.

We illustrated the usability and applicability of our framework by modeling value creation and capture in Amazon.com service system circa 1997 and gained insights into the changes that occurred in Amazon.com's business model circa 2001.

Future work will seek to validate and refine the proposed model by way of applying it to an actual firm and its ecosystem. In this way this research, which has already drawn on the knowledge base for its foundations, will draw upon the environment (composed of people, organizations, and technology) through its real business needs for feedback and validation. Following this a justification and evaluation process should take place, eventually leading to the next iteration of the model.

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