Maintaining Consistent Customer Experience in Service System Networks

Stephen K. Kwan
College of Business
San José State University
San José, CA, USA

Peter Hottum
Karlsruhe Service Research Institute
Karlsruhe Institute of Technology
Karlsruhe, Germany

Abstract

Traditional B2B and B2C value propositions for service offerings are premised on the service provider convincing the business or consumer customers that they will receive superior value at certain cost in a competitive environment. As the business environment becomes more global and complex, the service provider would often have to construct a network of partners and/or contractors to fulfill the service obligations as promised by their value propositions. The success of such service system networks depends on the alignment of value propositions between the service provider and its partners so that the service obligations are delivered to the customers as promised. Often times this linkage is broken and the customers are dissatisfied with the level and quality of service provided within these trilateral constellations. In this research we will look at various scenarios in service system networks and propose value proposition formulations for multiple level engagements denoted as B2X2Y. We will also consider "loss-less" derivations of value propositions as a way of aligning value systems and expectations among the participants in order to maintain a consistent experience for the customer at different levels of engagement and forms of encounters in the service system network. We propose an integration quality gap to account for the difference between customer service quality expectation and perceived service quality in a service system network.

Keywords: service system networks, value propositions, service science, service quality, integration quality gap

1. Introduction

1.1 Motivation

This research will be of interest to industry premier IT service providers who are constantly under competitive and pricing pressure to justify the premium they charge their customers. At the same time these service providers are hard-pressed to ensure that their partners and contractors are delivering the superior service promised by the original value propositions with premium price tags. This research delves into the notion of moving from B2B (traditional service business model) to B2X2Y that requires alignment of value systems (service provider, customer, and the customer's customer) together with

the execution that can deliver high quality service and consistent customer experience across the service system network.

1.2 Literature Review

The aspects of value propositions from providers towards customers are fairly understood in theory. However, "there is no agreement […] what makes [a value proposition] persuasive" (Anderson, Narus & van Rossum, 2006). Service-Dominant Logic helps us understand how a value proposition connects partners and enables the co-creation of value (Spohrer & Kwan 2008). Based on the provider's initiative, the "value proposition is accepted, rejected, or unnoticed by other[s]" (Vargo, Maglio & Akaka 2008). Value propositions can position "the service [system] network in the market in terms of what they can offer and to whom they market and deliver" (Agarwal & Selen 2011).

There are several approaches with the aim to link different aspects of value propositions to success factors of a service interaction (Ballantyne & Varey 2006; Levina & Ross 2003). Based on the concept of service systems by Spohrer et al. (2007), Kwan & Müller-Gorchs (2011) provides a framework for value propositions, where the concepts of *Service Experience*, *Benefits*, *Costs*, *Probability of Success*, *Quality*, *Schema for Data Exchange*, *Stakeholder Roles*, and *Performance Metrics* are explicitly addressed. Through this, decision makers get a differentiated view on all aspects of value propositions and their intended interactions.

The interaction between customers and providers is also a main field of interest in agency theory, where the customer as 'principal' delegates work to the provider as 'agent': This addresses two kinds of questions: the desires or goals can conflict and it is difficult for the principal to verify what the agent is actually doing. Eisenhardt (1989) compares behavior-oriented with outcome-oriented contracts: "When the contract between the principal and agent is outcome based, the agent is more likely to behave in the interests of the principal." Gottschalk & Solli-Sæther (2006) describe different maturity level of service relationships: "When the […] value proposition is working in terms of successful application of […] resources for the client organization, […] the relationship is ready to move from the resource stage to the partnership stage."

A cooperative relationship as one of the fundamentals for relational exchanges is addressed by Morgan & Hunt (1994). The framework of Relationship marketing is built on the main components of *Relationship Commitment* and *Trust*. "When one party has confidence in an exchange partner's reliability and integrity" (*Ibid.*) a relationship between a provider and a customer can be built on trust. "In the relationship development [trust] provides a vantage point for unifying the research traditions on marketing channel power and conflict" (Dwyer, Schurr & Oh 1987). Furthermore, trust in business relationships is a consequence of "the expectation of consistently competent performance from an exchange partner" (Sirdeshmukh, Singh & Sabol 2002).

2. Value Propositions in Service System Networks

Traditional B2B and B2C value propositions for service offerings are premised on the service provider convincing the customers that they will receive superior value at certain cost in a competitive environment (Kwan, Hottum & Kieliszewski 2012). This is the case both for business customers as well as for consumer customers.

2.1 Basic model – Service System World View

In recent decades, the business environment has become more global and complex, so that service providers often have to construct a network of partners and/or contractors to fulfill the service obligations as promised by their value propositions. Customers in turn share service value more and more with their community through their own social value propositions (Figure 1). Note that these stakeholders: customer, service provider, partners, community (employees and stockholders – not shown in figure) live in a society where laws and regulations govern the legality of the value propositions.

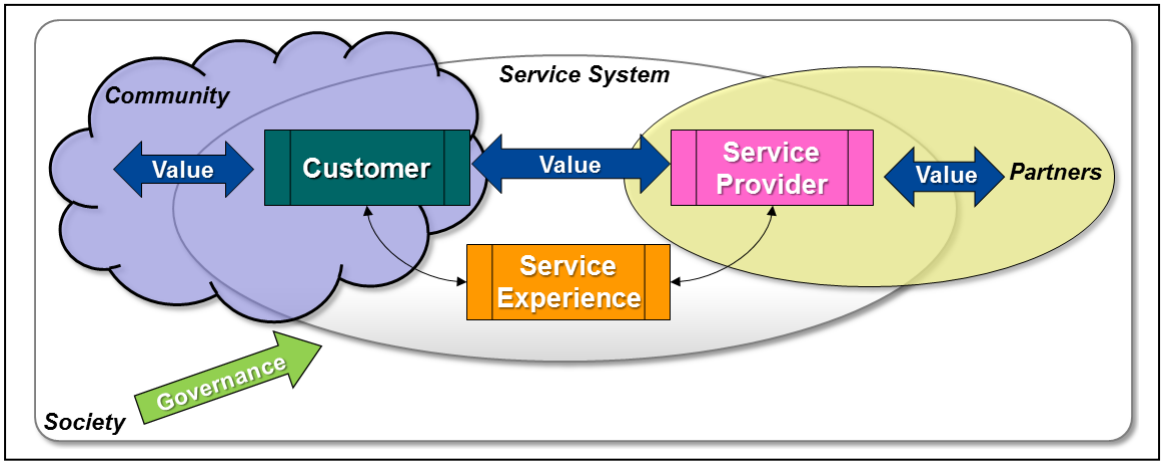

Figure 1: Value Co-Creation in Service System (based on Kwan & Min 2008)

2.2 Service System Network

In Figure 1 we showed a service system with its entities and stakeholders connected by value propositions in their environment. In Figure 2 we expended on the notions of these value propositions in a more complex network environment (Kwan & Yuan 2011). The focal relationship in the network is of course between the service provider and the customer. The service provider could in turn decompose the value proposition with the customer VP_c into its components and have the promised service experience fulfilled by subcontractors in his partner network. This transaction requires the exchange of reciprocal value propositions between the service provider and its partners (denoted as VP_p and $VP_{\bar{p}}$ in Figure 2). This is the primary focus of this research. The value proposition between the customer and his social network VP_S will receive more treatment in a future project.

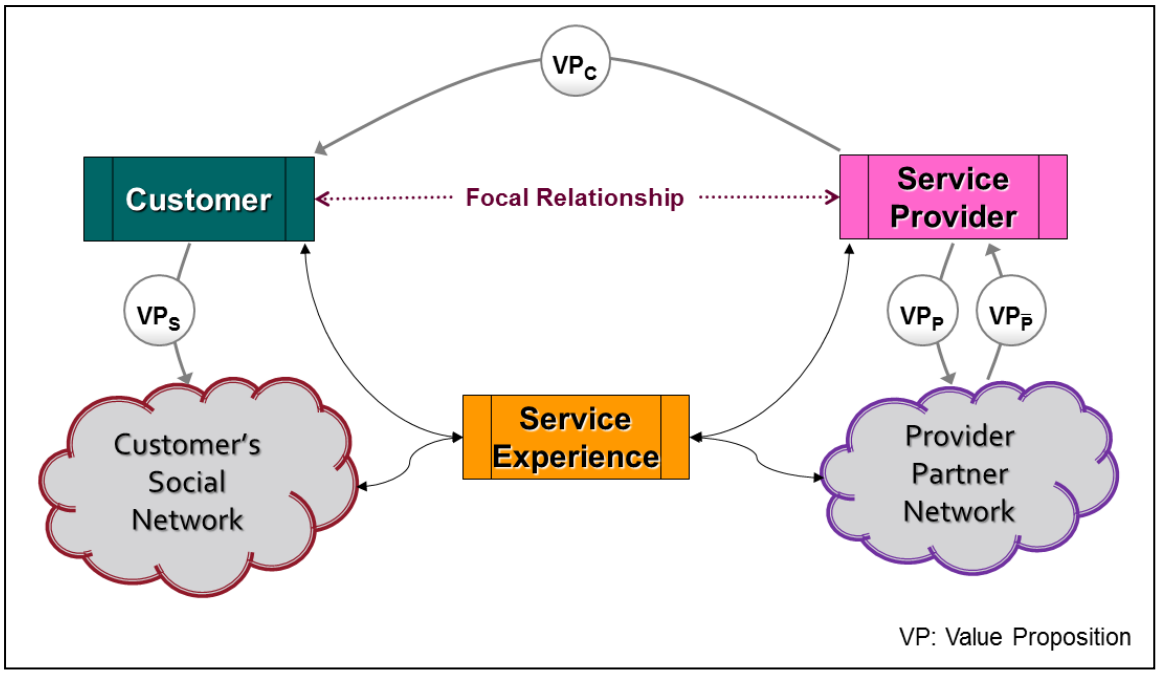

Figure 2: Service System Network (based on Kwan & Yuan 2011)

2.3 Formal model of Value Propositions

A customer looking for service may be confronted with many Value Propositions (VPs) (Kwan & Müller-Gorchs 2011). Each VP is made up of a vector of attributes offered by a Service Provider (SP)[1]:

$$VP = [\ SE, B, C, P, Q, Sc, R, M\ ] \qquad [1]$$

where,

SE	Service Experience offered by SP
B	Benefits to be received by the customer
C	Costs of service
P	Probability of successfully performing the service
Q	Quality of service
Sc	Schema of data exchange between service provider and customer
R	Rules of behavior for service provider and customer
M	Metric with which the service is to be evaluation

A narrative of a Value Proposition with such a structure could be presented in the following manner:

> "Our service will provide such and such an experience which will result in certain benefits to you. It will cost X. We have a good reputation and will be capable to

[1] For simplicity, we will continue this development with VP to represent the one chosen by the customer among the competition and/or substitute product/services.

perform the service successfully and with high quality. We will exchange data about each other in a particular format. We will perform the service based on the agreeable upon criteria and you will also be expected to perform in a certain manner in order to co-create value as intended. You will be able to measure our performance and vice versa."

A customer will evaluate (among choices) the "worth" of a Value Proposition based on alignment among his value system, needs and wants, with what is being offered to potentially reap (Value = Benefits – Costs) when the service is completed. Ng (2013) talks about "worth" as a point-in-time decision about what one is willing to pay ("the price") for something, and "value" as a subjective, context-specific feeling of "goodness" at a later time.

3. Model of Value Propositions based on B2X2Y scenarios

3.1 Basic model

In this section we will discuss constellations of service system networks. In these scenarios, providers define Value Propositions towards customers and their related service systems, which could be a business customer's customer or a consumer customer's community. For the provider and his initial Value Proposition it is often not obvious which service system network is addressable beyond his direct service system's partners (Figure 3).

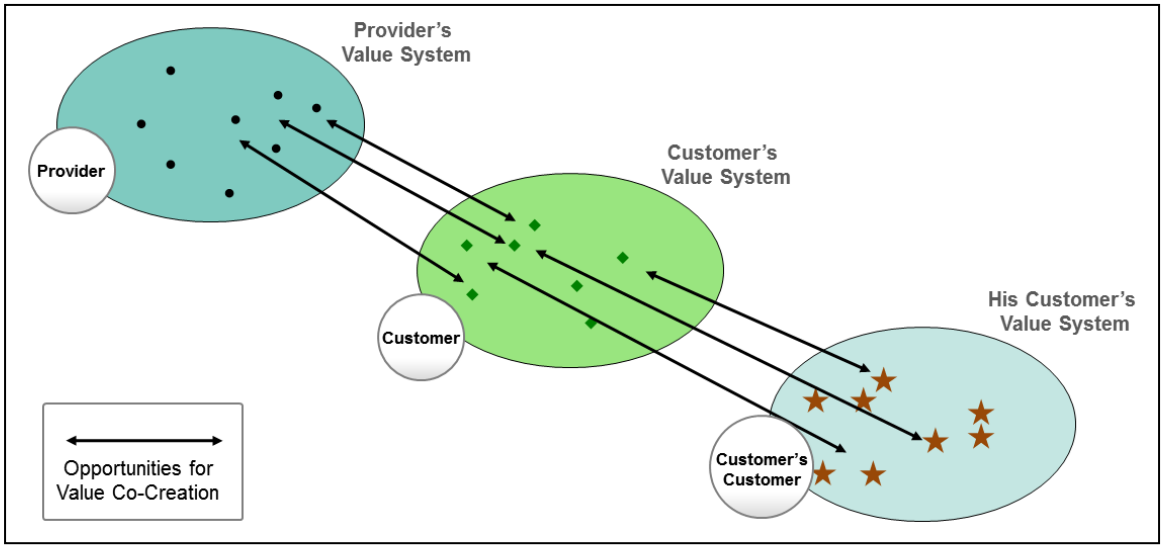

Figure 3: Limited perspective of providers in service constellations

The opportunities, which are lying beyond the direct connection of the provider, are difficult to perceive and address. Limited information about the direct interaction partners and uncertainty about their further resources and service system networks are some of the reasons.

3.2 Constructing Value Propositions

Value Propositions among stakeholders could be very diverse and complex. We propose the decomposition of a Value Proposition into three parts – the initiating stakeholder, the receiving stakeholder, and value dimensions. The stakeholders are: *Service Provider*, *Society*, *Community*, *Employees*, *Stockholders*, *Partners*, and *Customers*. There can be many value dimensions depending on the stakeholder's culture, location in a particular geographical region, educational background, religious beliefs, etc. Some possible value dimensions are: *Economic*, *Environmental*, *Functional*, *Political*, *Societal*, *Social*, *Intrinsic*, *Hedonic*, *Spiritual*, *Cultural*, *Corporal*, *Emotional*, *Intellectual*, and *Familial*. The elements of Maslow's Hierarchy of Needs could also be possible value dimensions (Maslow 1943).

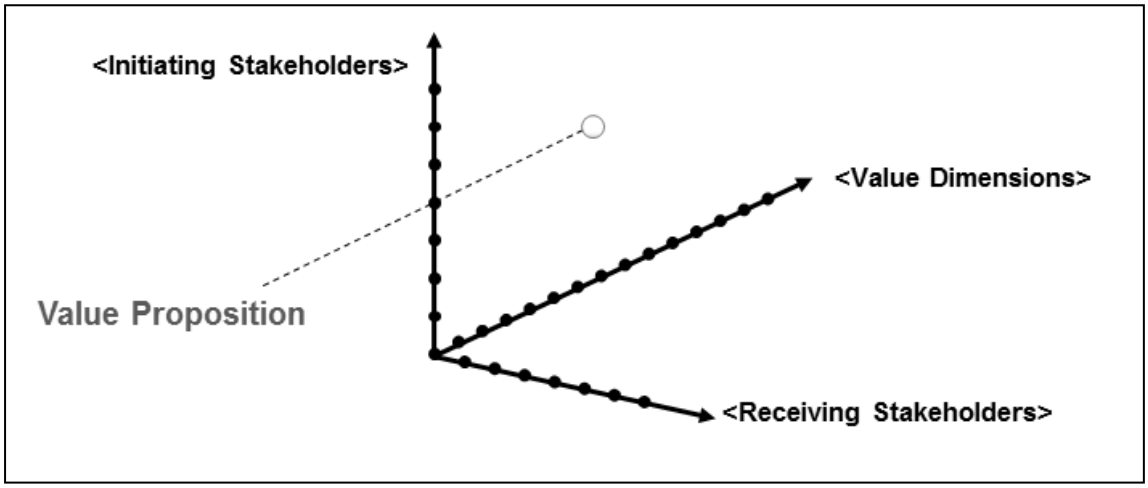

Figure 4: The variety of Value Propositions spanning value dimension vectors

For example, a Value Proposition from a Service Provider (initiating stakeholder) towards the society (receiving stakeholder) on environmental issues (value dimension). Every point in the spanned space among these three vectors (Figure 4) is a potential component of a Value Proposition.

3.3 Outsourcing

The success of such service system networks depends on the alignment of Value Propositions. Even if different parts of the service are offered by subcontractors or other third parties, it is important that every involved provider delivers the service obligations to the customers as promised and expected. If the linkages among provider, customer and partners are broken, the customers will likely be dissatisfied with the level and quality of service. This loss of information will have a direct influence on the service relationship between the customer and the provider (and the provider's service system network). Looking more closely at an outsourcing scenario of a bank – the outsourcing partner provides service to the customers of the bank. This provision is based on a contract between the outsourcing partner and the bank. The value proposition from the partner to

the provider $VP_{\bar{p}}$ is motivated by: "I will do this for your customers…." Furthermore the bank may issue an RFP of the form VP_c: "Do this for my customers…" (Figure 5). Often there is a disconnect with the bank's customers due to misalignment of value propositions and/or loss of linkage.

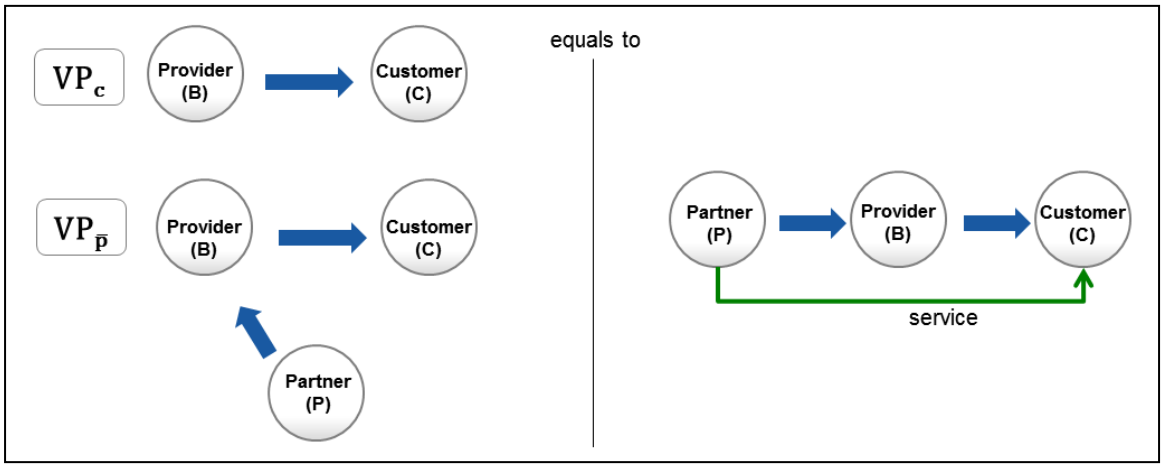

Figure 5: Value Proposition structure: Outsourcing

This type scenario is typical of services being outsourced to third parties. Anand et al. (2012) described the business environment of Tata Consultancy Services, which has over 250,000 employees. They cited examples of companies, which had to deal with complex services which were often incomplete, defective, non-standardized, poor articulation of value, poor quality, etc. These companies sought help from Tata because "We could not solve the problems so we outsource them and save on costs and efforts." At outsourcing companies, the services are performed by mass scale of people, quality varies because of the people factor, people performed in shifts monotonous, repetitive work, resulting in poor quality, and high attrition rate (NASSCOM[2] cited as high as over 40%). It would be unrealistic to expect alignment of values among the Provider, Partner, and Customer in such a scenario and often result in frustrated, disenchanted, and lost customers.

3.4 Channel Partners

Cisco Systems, a telecommunication equipment manufacturer, sells its products and services through channel partners (except direct sales to large customers such as Fortune 50). The service relationship (Figure 6) to the customers VP_c is based on a contract with channel partners VP_p: "Sell this to my customers…" Often the channel partners are Value Added Resellers (VAR) that bundle hardware, software, and services to sell as solutions.

Problems arise when there is a misalignment of value propositions between those involved parties. This is apparent, for example, when channel partners are not enthusiastic in selling certain services to the customers because they do not benefit directly from them.

[2] The National Association of Software and Services Companies (NASSCOM) is a trade association of Indian Information Technology (IT) and Business Process Outsourcing (BPO) industry.

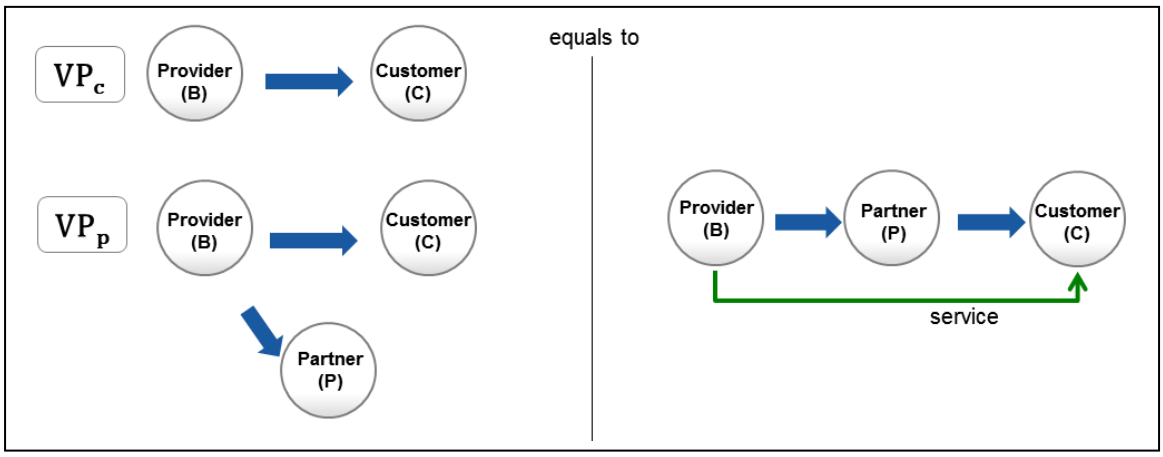

Figure 6: Value Proposition structure: Channel Partners

3.5 Outcome-based value propositions

Outcome-based value propositions are based on the business model that the provider gets compensated based on how much the outcome of the customer could be improved. Usually, the customer's outcome is measured by some KPI – it is reflected by some dimension of his value system. Within the customer's service system network, this could well be what the customer needs to improve his performance to serve his own customer better (Figure 7).

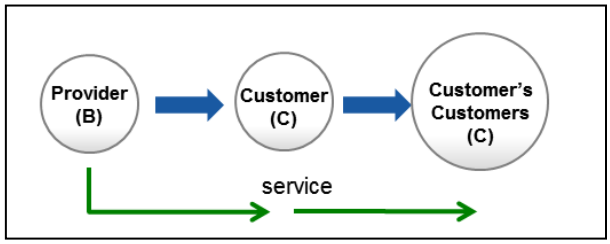

Figure 7: Value Proposition structure: Outcome-based Contracting

Even though Figure 7 looks less involved than the other examples before. This is the most difficult value proposition scenario to be considered. Many premier service companies are under pressure from their customers to justify the premium they charge for services that competitors are commoditizing. Often the global brand, capacity, historical quality performance (cf. P and Q in [1]) are no longer the customer's deciding factors.

The outcome-based value proposition is one way for such service providers to combat commoditization. This requires the service provider to have a much more in-depth and thorough understanding of the customer's value system (e.g., KPI's) as well as the way he does business in order to offer a value proposition that would appeal to the customer (see Figure 3). It could take the form of "I will provide such service to help you increase your revenue (or market share, etc.) and you will pay me based on the accomplishing of such results."

There are already many examples in industry that have been successful with such a model (e.g., see Ng et al. 2012). For example, "flyable hours" of Rolls Royce jet engines; John Deere's service to farmers to increase their yields; BAE's service contract with the British Air Force for mission-ready military helicopters; UPS' taking over the logistics functions of customers; UL using IT to connect with their customer's business practices (Hickens 2012); etc. These successful examples are rare but the practice had been garnering industry interest[3] as service providers try to find new profitable business models that are relatively *risky* in an increasingly complex, competitive, and global environment.

3.6 Extending value beyond customers

Apple Computers sells products that empower the customers to connect and share value with their friends and community. Apple addresses this with its emotional ads to emphasize the social network of the customer (Figure 8) – his relationship to friends and family. This is done by offering customers ubiquitous solutions for preserving and improving the availability of emotional relationships.

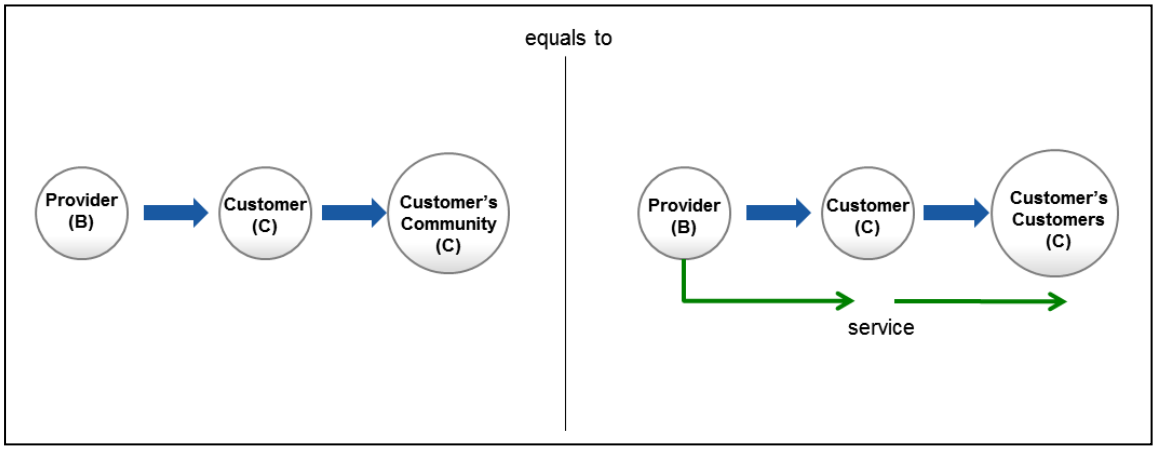

Figure 8: Value Proposition structure: Extending Customer Value

3.7 Representation of B2X2Y

By looking on these different examples of multi-step service delivery, with value which is co-created in different interactions within the considered service system networks – one aspect is quite similar. Regardless of whether value is co-created with business or consumer customers, there is always a service system network where value makes an impact. Based on this insight, we recommend an approach, where this value evolving service system is also part of the original service relationship.

The patterns presented above: Outsourcing (Value Proposition: P2B2C), Channel Partners (Value Proposition: B2P2C), Outcome-based Contracting (Value Proposition: B2C2C), and Extending Customer Value (Value Proposition: B2C2C) – can be factorized into the

[3] For example, see the section on "Outcome-based Business" in IBM's Global Technology Outlook 2012. Retrieved May 6th, 2013: http://www.zurich.ibm.com/pdf/isl/infoportal/GTO_2012_Booklet.pdf

common form: B2X2Y where X and Y could be any type of participant in the service network.

4. Value Propositions in a Service System Network

4.1 Derivation of Value Propositions

An enterprise can be viewed as a hierarchy of Value Propositions presented to its stakeholders. Each Value Proposition at a lower (more micro) level should be derived from one at a higher (more macro) level – without loss of essential information – and vice versa. The Value Proposition, when accepted, in essence becomes a Service Level Agreement (SLA). For example, a student chooses to enroll at a University based on its Value Proposition (e.g., reputation, rigor, programs, environment, etc.) should expect to enjoy the promised experience until he graduates (e.g., taking classes, staying in the dormitory, participating in campus activities, etc.; see notion of "customer journey" below.)

The subcontract for third/fourth party service provider should be derived from the original Value Proposition without loss of essential information. Furthermore the experience of the customer is cumulative as the sum of experience (quality, completeness, etc.) from all the service episodes.

In this section we provide a theoretical model of loss-less derivation of Value Propositions described above. Let's consider the connections between the service provider and its partners/subcontractors in a service system network (Figure 2) as an "information system" in the classic sense. That is, a set of information structures that facilitates "inquiry, communicating and deciding" (Marschak 1968). A service provider will have to communicate the value proposition accepted by the customer to its partners/subcontractors and so forth. This communication process is loss-less if essential information is passed from initiator to receiver without loss of fidelity. We consider only the essential information because in many situations not all components of the Value Proposition needed to or desired to be communicated (e.g., pricing, competitive, proprietary information, etc.) The essential information being communicated could be in the form of shared records from Customer Relationship Management (CRM) systems or in more formal B2B EDI transactions (e.g., see Kwan, McGrath & Lee 2008 for a discussion of such a language - Universal Business Language for Services). Fidelity of communicated information could be loss often not by deliberate means but by the effect of "quasi-garbling". That is, the information received may not be equivalent to the information sent due to "noise".

In section 2.3 we have defined SE as the Service Experience part of the Value Proposition accepted by the customer. SE can be further partitioned into Service Components S such that $SE \supseteq S_i$, i=1,…,M. These service components are *to be* performed for the customer in the duration of the SE (e.g., by contract or SLA).

When a service provider subcontracts or work with a partner (or partners) to deliver the service to the customer, these S_j's are to be made known to the partner. These S_j's are *messages* in the communication process. For reasons of simplicity, we assume that part of the communication process will also involve sending messages about the customer, i.e., the Sc (data schema) part of the Value Proposition.

Consider Se as the service experienced by the customer and $Se \supseteq Se_j$, $j=1,\ldots,N$. These Se_j represent *events*, i.e. evidence of service performance. Obviously both the service provider and customer hope that SE = Se as promised and all the stakeholders are happy. But more often than not $SE \neq Se$ and one or more parties are not satisfied/fulfilled. This could be caused by various forms of service failure or miscommunication between the Service Provider and its partners as to what was promised to the customer.

4.2 Service System Network as Information Systems

Take the case of a single partner that was subcontracted by the service provider to fulfill the contract with the customer. Let the communication process be represented by η - that is the "information system" being used to communicate SE to the partner. The process is represented as $Se = SE \bullet \eta$. This "information system" can be modeled as a M x N Markovian matrix with S's as rows and Se's as columns.

For each element of the matrix, $\eta_{ij} = p(S_i|Se_j) \geq 0$ and $\Sigma_j \eta_{ij} = 1$ for all S's. That is, conditional probability of the customer experienced Se_j given the promise of S_i. The ideal situation of SE = Se is where η is an M x N identity matrix (all diagonal elements are 1's). The less than ideal situation where "quasi-garbling" is present is where not all the messages were communicated perfectly to the partner and the customer received less than or none of the promised service experience (a common phenomenon in teams, see Marschak & Radner 1972).

In the case of more than one partner, there are more chances of "quasi-garbling" and the customer receives service experience farther from those promised. This is represented as $Se = S \bullet \eta_1 \bullet \eta_2 \bullet \ldots \eta_K$ with K partners. Each "information system" could in turn introduce more noise into the process. This is typical of a "customer service journey" where the customer receives service from one or more service provider under one service experience expectation (e.g., in health care, education, telecommunication, travel, etc.) During the journey, the customer could receive service from multiple providers in parallel (e.g., buying items from multiple vendors on Amazon.com in a single transaction on Amazon.com; see example of university student above.) In this case, the service experience from each vendor (*in parallel*) contributes to the overall experience of the transaction. In another situation, the customer could be receiving service from multiple providers *in sequence*. For example, using mobile phone in different cities or countries, or visiting multiple medical offices for procedures based on a single referral. For an application of this "quasi-garbling" model to search services and more detailed mathematical derivations, see Venkatsubramanyan & Kwan (2008).

A colleague[4] used the following analogy to describe the quality of service in a customer service journey:

> "Consider a customer service journey as a bottle of good vintage wine. If you put one drop of sewage into the wine, the whole bottle of wine becomes repugnant and undrinkable. On the other hand, if you start with sewage, it will still be sewage no matter how many bottles of good wine you pour into it."

So why would a communication process between the service provider and its partners create noise that could lead to less service or service failures? There are three common reasons. First, the service provider and intervening partners might not want to pass on all the information about the original and subsequent Value Proposition(s). This could be the result of the contract being divided up into different pieces in the subcontracting process and subcontractors do not need visibility of what others are contributing to the service performance. Second, the service provider might deliberately leave out some components of the Sc in the communication process due to proprietary information, intellectual property safeguard, and customer confidentiality, etc. Third, the original service provider sold off the subcontracts and as a result of further "flipping"[5], the customer is receiving lower-quality service from a lower-cost provider.

4.3 Derivations and Derivatives

We use the term "derivation" to describe the way Service Providers divide up a Value Proposition into components to be fulfilled by partners. Conceptually this process has a lot of similarities with the creation of "derivatives" from financial instruments or assets. A common view is that if a transaction can be modeled as "A + B" then A and B could be broken apart and separately sold or subcontracted. For example, when a customer buys a PC with service contract, the service contract is usually sold by the vendor to another entity and the customer will receive service from the new participant. In another example, consider the bundling and re-packaging of real estate mortgages sold as financial instruments. A new bundle could be made up of mortgages from various packages from previous transactions. This is similar to service providers packaging and re-packaging service contracts and selling them to other partners/subcontractors for fulfillment. One of the oft-cited contributing factors to the global financial crisis is the exposure of financial institutions to so-called "toxic mortgages." What happened was that when a financial institution holds a failing mortgage from some previous transaction, it has very little information as to its provenance and could not determine which other financial institutions have exposure to this failure. That is, the holding institution could not reconstruct the previous packages and trace the mortgage back to its history of holders and allocate exposure to them. Thus the holding institution has to bear a hundred percent

[4] This analogy is attributed to Dan Pritchett of Rearden Commerce.
[5] "Flipping" is a term borrowed from the real estate market where the rights and privileges of a contract is assigned to a third party in exchange for consideration.

of the exposure. This led to the failure of quite a few large financial institutions around the world and contributed to the precipitation of the global financial crisis[6].

In our case, the packaging and re-packaging (derivations) of service contracts (i.e., accepted Value Propositions with specified Service Experience - SE) sold to partners/subcontractors have similar behavior in that information is lost along the way and the customer did not receive the service experience as originally promised. (i.e., SE ≠ Se).

4.4 Integration Quality Gap in a Service System Network

The concept of Service Quality Gaps provides a very practical method of defining, analyzing, and managing service quality (Parasuraman et al. 1985 and Schneider & White 2004). The overall customer satisfaction gap can be viewed as the sum of the differences between expected and perceived service attributed to market research, service design, standards/training conformance, and communication). Researchers have also developed validated instruments to measure gaps based on the dimensions of service quality (Parasuraman et al. 1998, 2005). Freund & Kwan (2010) extended the concept of perceived service quality to include the perspectives of both the service provider and the customer in a value co-production and co-creation environment.

The works cited above provides a gap model, which is sufficient to describe the quality of service delivered from a single service provider to a customer. In a service network environment under consideration here, a customer could encounter multiple service providers in his service journey. We propose the concept of an "Integration Quality Gap" to describe the difference between the customer's expected and perceived service quality where multiple service providers are involved.

We use the term "Integration" to describe the quality gap here because it connotes the result of putting things back together. That is, if all the service experiences from the partners/subcontractors are integrated (put together), how does it compare to the original service experience promised in the value proposition (i.e., SE ~Se)?

4.5. Maintaining Consistent Customer Experience

The proffered Value Proposition from the service provider creates the expectation of a customer. The service provider should ensure the consistency and quality of the customer's experience even though the service is to be provided by partners and subcontractors. There are two approaches:

- Derive "loss-less" Value Propositions for the partners/subcontractors. That is, the Value Propositions for them (VP_P's) should contain essential components and information such that the promises made to the customer in VP_C are not affected

[6] Thanks to Dr. Frank Jones, finance professor at the College of Business, San José State University for an educational conversation about the topic. See recent developments in (Rappaport 2013).

by communication noise or loss. A mathematical analogy of this is that it should be able to re-construct the original Value Proposition by summing all the sub-Value Propositions together.

- The measurement of the quality of service to a customer should include evaluation of the experience delivered by partners/subcontractors to form a complete picture of the customer's service journey. A mathematical analogy of this is that the integration (in the calculus sense) of all the service episodes the customer experienced should equal to the service experience promised (SE). In other terms, the evaluation should include a measurement of the integration quality gap.

These two approaches delineate the service provider's responsibility in creating the service system network environment to deliver the service for the customer (*ex-ante*) and the subsequent evaluation of the quality of the delivered service (*ex-post*).

5. Conclusions and Future Research

In this paper we have made the following contributions. First, we extended Value Propositions of the traditional business model of B2B and B2C to a B2X2Y model for a service system network environment with multiple levels of service provider and customer relationships. A formal model of a Value Proposition that incorporated components of service experience, benefits, costs, quality, reputation, data schema, roles and metrics was introduced. We also discussed the composition of Value Propositions among stakeholders that span the space of multiple value dimensions. We illustrated the B2X2Y model emphasizing the need to take into consideration the value systems of a customer's customer by the service provider with examples from outsourcing, channel partners, outcome-based contracting, and value sharing in a social community.

Second, we put forth a model of the derivation of a hierarchy of Value Propositions in a service system network environment where the service delivery is relegated to subcontractors/partners. The model was based on the concept of a classic communication process in an information system network where noise could be introduced, deliberately or inadvertently, such that the fidelity of information was affected by "quasi-garbling" or even loss. This resulted in the customer not receiving components of the service or quality of service in his journey as promised by the original Value Proposition.

Third, we proposed an integration quality gap as a measure of service quality (difference between expected and perceived) in a service system network environment as an addition to the traditional service quality gaps.

In our discussion of the B2X2Y model in this paper we have focused on the service provider and customer relationship. One of the next steps in this research is to incorporate the customer and his social network side of the relationship in the model (see Figure 2). In addition to understanding the customer's value systems, the service provider also

needs to under the value systems of the customer's social network and community since the customers are increasingly demanding the ability (and functionalities) to share received value with others. That is, the service provider must present a compelling story with the VP_S in a B2C2S (Business to Consumer to Social) scenario.

Another direction of our future research is motivated by the *ex-ante* and *ex-post* approaches to maintaining consistent customer experience discussed in section 4.5 above. This will include the mathematical modeling of the "loss-less" derivation of Value Propositions with illustrative examples. We will also work on the evaluation of service quality in a service system network environment where a customer's service journey could involve encountering multiple providers in a single service episode or in multiple service episodes over time. We will develop the concept of the integration quality gap further to take into consideration of both types of interaction (we characterized these as vertical vs. horizontal interactions). We will also develop the evaluation methodology for the integration quality gap along the same line of traditional service quality gaps as measured by established instruments such as SERVQUAL and E-S-QUAL.

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