

An Evolutionary Framework of Service Systems

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To be presented at the International Conference on Service Science
Beijing, China, April 17-18, 2008

Abstract

A framework of service systems is described in this paper. Specifically, the components of a service system, its environment as part of service systems worldview, stakeholders, the interactions among its entities constituting the service experience, the formulation of a service supply chain are discussed. It is posited that the sustainability of a service system follows an evolutionary process. The survival of the service system depends on the service provider's awareness and responsiveness to the continuous and disruptive pressure of the dynamic environment.

Keywords: Service Systems, Service Systems Worldview, Service System Evolution

1. A Service System Framework

In this paper, we describe a framework that provides a common language and foundation for research and teaching of the analysis, design, and management of service systems. There are many attempts at defining frameworks for service systems in the literature¹ (e.g., Alter 2006, Alter 2008, Den Hertog, 2000; Howells, 2003, Teboul, 2006, Lusch & Vargo 2006, Sampson 2006, Zeithaml, Bitner & Gremler 2006, Spohrer, Maglio, Bailey & Gruhl 2007) The present case takes into consideration not only the details of the service system but also its environment and the pressures exerted on the system in its evolution.

Figure 1 shows a service system and its entities: customer, service provider, and service experience. The customer can be a person, a group, an organization or institution. A customer entity could embody the payer(s) as well as the person(s) who actually enjoy the

service experience². A service provider is the entity that is the primary purveyor of the service experience to the customer. As we see in section 2, the service provider could be part of a more complex service supply chain. We adopted the term “service experience” as a compromise among terms such as service object, service transaction, etc. We wanted the term to convey the notion that the service is intangible and the customer is the recipient who experiences the service usually for some duration of time.

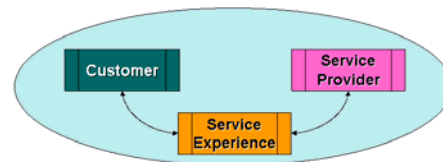


Figure 1. A Service System and Its Entities

The service experience is usually not provided as a free good. The service provider purveys an offer of service. That is, the service provider is ready to perform such and such service (with an implied use of resources) for a certain price. The customer with the intent to purchase such a service could enter into an agreement with the provider for the price and extent of the service experience. More details of the interactions between customer and the service provider during the duration of the service experience will be discussed in section 4.

The purchase of the performance is the basis of a value co-creation that is the fundamental *raison d'être* of service systems. The give and take from each side will, hopefully, result in a surplus at the end of the experience, be it monetary remuneration, satisfaction, better-

¹ An extensive list of references on this subject is available in (Spohrer & Kwan 2007.)

² For example, the parents who pay for a child's post-secondary education and the child together are the “customer” of the educational experience.

educated, softer skin, cleaner, healthier, more comfortable, amused, entertained, etc. This simplistic micro-economics-based depiction of value co-creation is intended to be just a first level view. Further decomposition is needed to form a representation that will do justice to more complex service transactions from service-level-agreements to trade in services in the global marketplace.

2. Relationship among Service Systems

We usually do not find many service systems that are singular and isolated (may be some informal ones). Most service systems that we encounter on a daily basis are more formal in nature and are connected to other service systems in forming a network (Figure 2).

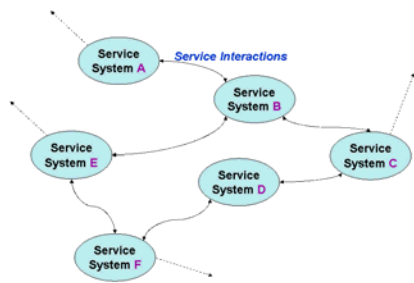


Figure 2. A Service System Network

In a world where specialization is the norm, service systems must depend on and interact with other service systems to provide for its own customers, and each dependency is a value co-creation by itself.

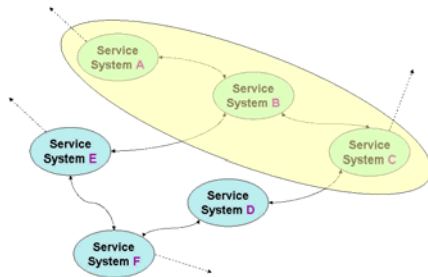


Figure 3. A Service Supply Chain

The primary nodes in this network of dependency essentially form the service supply chain of a service provider. A customer of service system A in Figure 3 enjoys an

experience which is the culmination of services provided by systems A, B and C. Take the example of a customer of a bank who uses an automatic teller machine (ATM) for a cash withdrawal transaction. The few seconds that he experienced before the cash is dispensed is the sum of many network and computer system latency, security checks and transmission delays. This might even include self-correcting routing of messages due to various forms of network and system delays and failures. The management and control of a customer's service experience is in effect a complex task of managing the service interaction of a service supply chain³. This is further compounded as more and more enterprises outsource their non-core service operations by taking advantage of a global labor arbitrage.

3. Service Systems Worldview

In explaining Service Science, Management, Engineering and Design (SSMED) and its emergence as a discipline, Spohrer & Kwan (2007) described the concepts of service systems, value propositions and governance mechanisms as the fundamental concepts that underlie the service systems worldview. The environment of this worldview and the stakeholders are depicted in Figure 4.

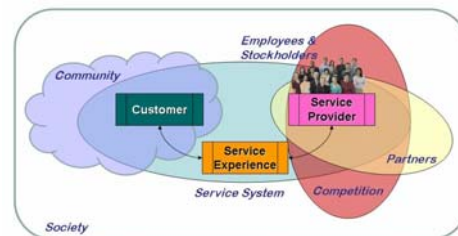


Figure 4. Stakeholders in Service System Worldview

The customer is a member of a community which is a part of society as a whole. The service provider is part of a going concern with, likely, employees and stockholders. The service provider works with other partners (as in Figure 3) which might or might not be part

³ Although we have seen many attempts at delineating how service is different from physical goods, drawing from parallel concepts such as supply chain management in a manufacturing environment is unavoidable.

of the competition⁴. All of these exist in a society with rules of law and order administrated by some authoritative figures or entities.

Not shown in Figure 4 but are lurking in the environment are entrepreneurs and criminals. Entrepreneurs are waiting to create opportunities to come into the picture as competitors or partners. Criminals await the opportunity to take advantage of any of the unsuspecting stakeholders while avoiding the detection of the authority.

The environment depicted in Figure 4 forms an ecosystem with living parts participating in symbiotic relationships. The viability of the service system within this environment is sustained by value propositions which are economically sound and thus palatable to the decision makers (be they customers, stockholders, partners or employees) since they have choices (competition). The value received by a party could range from instantaneous (e.g., entertainment, online purchase, etc.) to being enjoyed over a period of time (e.g., gainful employment, return on investment, automobile maintenance service, etc.). Some service systems provide service to the customer over a long period of time where there are many episodes with service interactions (e.g., Neuner & Jones 2007 described a health care provider’s role through a customer’s “health journey”.) The service system (assuming it is not criminal) is further protected by the governance structure of the society’s law and order. Figure 5 summaries these concepts.

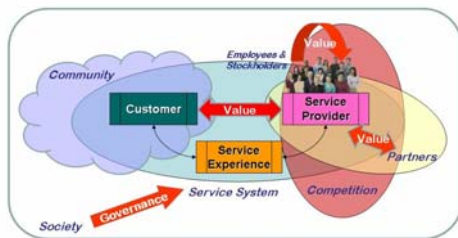


Figure 5. Value Proposition and Governance

4. Service System Details

⁴ Increasing in a globally connected world, some partners and competitors could well be the same entity.

In this section, we will highlight some of the details of a service system sketched out as interactions among the entities in Figure 6. The framework being described here is intentionally general and non-trivial in nature. We believe that the framework can be used to describe specific service systems as instantiation of this general scheme.

A customer plays different roles in his interaction with the service provider as he goes from the initial to final stages of his service experience⁵. The progress in this sequence is marked by different contacts with the front stage elements of the service system such as employees, sales staff, web site, phone recording, etc. As indicated in Figure 6, the contact with these front stage elements make up the customer’s service experience. These front stage elements are supported by various back stage elements of the service system such as employees, suppliers, computer servers and applications, etc. In Figure 6 we delineated some of the sub-systems of the enterprise that support each of the steps in the sequence of interactions. Note that we have put the customer relations management (CRM) sub-system as the back bone of the back stage support. It is an important element to maintain information about the customer and employ it effectively to enhance the service experience.

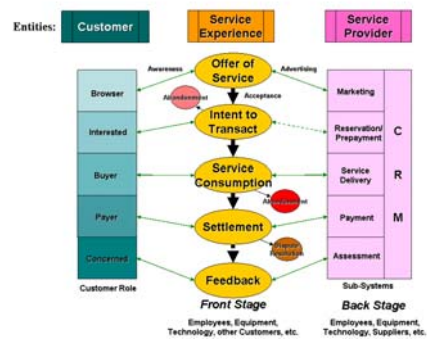


Figure 6. Service System Details (1)

Initially, the customer could have a self-awareness of a need for a particular service or could be made aware of it by (the marketing functions of the) purveyors through advertising, word-of-mouth and other means. We have put

⁵ Another view of this sequence can be found in Spohrer, Vargo, Maglio and Caswell (2008) where they proposed an Interact-Serve-Propose-Agree-Realize (ISPAR) model of service system interaction episodes.

“other customers” in the front stage part of this framework because recent technological advances have made customer feedback and recommendations easily accessible online and is now playing very powerful and effective roles in affecting customer decision making⁶ (this is represented as the Community⁷ in Figure 4 and 5). In either case, the customer could browse through various offerings from competitors (e.g., yellow pages, newspaper advertisements, brochures, online shopping guides, etc.) before deciding on accepting an offer from a particular service provider. The decision will be based on the customer’s evaluation of the value proposition embedded in the offer. This could be as simple as offering service for payment by the hour to a complex service level agreement between an enterprise which wants to outsource its network support and its outside service provider⁸. Here we use the term “offer” in an informal sense. The acceptance of the offer means that the customer likes the offer and proceeds to being interested with the intent to transact (e.g., going into a shop in the mall, go to a web site by clicking on a URL link from a recommendation site, making a hotel reservation, etc.) The customer is not obliged or bounded to actually buy the service and can abandon (leave/cancel) the sequence at this point. In some cases, there might be some penalty consequence for cancelling a reservation at this juncture.

When a customer is committed to purchase the service (becoming a buyer), the service provider can then start to provide the service to

be consumed. This will last until the end of the service (as purchased) and then the buyer will have to settle the bills and pay for the service. An example of this is a customer buying items online with the help of a shopping cart software application. At any time the customer can abandon the process and quit without having to settle⁹. There are also situations where the customer has to pay first before the initiation of the service. There will also be situations where the customer is not satisfied with the service experience and decides not to settle. This will create a dispute which might or might not be able to be resolved by the governance rules in play¹⁰ (see Figure 5.)

The last stage in Figure 6 refers to an optional feedback process where the service provider can receive evaluation of the service experience from the customer. This feedback can be solicited or unsolicited, company-confidential or available for scrutiny by the public.

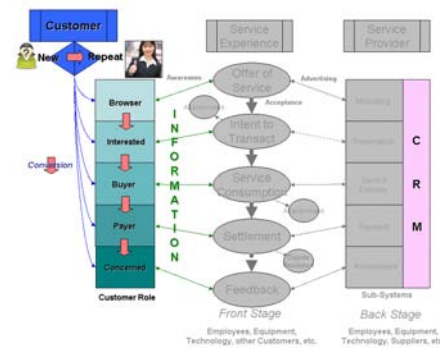


Figure 7. Service System Details (2)

Figure 7 expands on the roles that the customer could take on in the service experience sequence. The Figure is designed to convey the following concepts: 1) service providers want to convert new and unknown customers into repeat and known customers who value their services; 2) service providers want to convert

⁶ Palladini and Flannery (2007) described how Vans, Inc. and North Face, Inc. actively solicit customer feedback and participation in their product designs. Many companies including Nike and Amazon.com encourage customer participation in creating online contents.

⁷ Kozinets (2007) described how some enterprises take advantage of the community in getting feedback and help in design of products. This is sometimes referred to as “crowdsourcing” (see annotation in this reference.)

⁸ The Boeing Company is an interesting case where it does not sell its jet engines per se but offers airline companies a complete birth-to-death service and maintenance contract for engines that it produces. This is an example of “servitization” or “service encapsulation” of products (Howells, 2003).

⁹ In a recent Online Customer Experience Survey, 51% of respondents said they abandoned their shopping carts (Sullivan 2006). See also (Chau et al 2007).

¹⁰ It is increasingly difficult to resolve conflicts resulting from services delivered online where the governance structure is not clear (in terms of geographic, national, corporate and legal sense.)

customers from the early (undecided) stages to later stages (paying and returning); 3) the service experience is information driven; 4) a customer (even new) could jump into the process at any stage; 5) CRM and other technology and information systems could play enhancing roles in the process; 6) abandonment and dispute resolution are parts of the customer's service experience. Their causes and effects should be analyzed and managed.

5. Evolution of a Service System

In the previous sections, we described a framework of service systems and its environment. In this section, we consider the dynamism of the environment and discuss its evolutionary effects on service systems.

Table 1. Factors Affecting the Evolution of Service Systems

<p>External Factors</p> <ul style="list-style-type: none"> - technology changes - economy shift - culture - globalization - environmental changes <p>Characteristics</p> <ul style="list-style-type: none"> - external and macro-level factors - mostly uncontrollable factors - disruptive, long-term effect - evolutionary factors to provoking a major step in service innovation - adapt or perish
<p>Internal Factors</p> <ul style="list-style-type: none"> - community pressures (e.g. CSR) - dynamic change of customer needs - industrial needs of multi-skilled employees (T-shaped people) - market competition - laws and regulations <p>Characteristics</p> <ul style="list-style-type: none"> - stakeholder-related factors - continuous and gradual effect on service system evolution - internal and micro-level factors that have immediate impact on service innovation - impact on each entity of service system worldview (respective roles of customer and service provider, and service experience) - needs vigilance on these factors to find new opportunities in the market. -

We may classify the factors affecting the evolution of a service system into two categories based on whether they are inside or outside of the boundary of the service system. In other words, the factors may be classified as internal or external (with respect to the service system worldview, Figure 4), controllable or uncontrollable, short-term or long-term, and micro-level or macro-level as summarized in Table 1.

First, there are environmental factors that are disruptive and cause service systems to evolve. They may include technology change, economy shift, culture, globalization, and environmental change among others. For example, new technologies have changed our way of life and make many market transactions become electronic-based ones. Electronic commerce takes place everywhere on earth in real time without traditional person-to-person contacts. Economy shift is another factor. Moving to a new economy with a service focus has increasingly forced developed and developing countries alike to put enormous emphasis on service innovation in order to find new drivers to create the next stage of economic growth. Culture is also an important factor in the evolution of service systems. Service experience is a function of culture that may differ by regions. For example, in the United States, self-service system is common and is even thought of as a time-saving, convenient and pleasant transaction experience to customers. However, in other parts of the world, it is considered a low grade medium of transactions, and traditional person-to-person services are considered safer, more reliable, more comfortable; and hence more preferred. Globalization is another factor. Globalization facilitates outsourcing and off-shoring to move some of one's business activities to suppliers. Free trade agreements among countries are now accelerating the movement of goods, services, and even working personnel from one part of the world to another more easily and cheaply. Also, environmental change such as global warming may affect service systems such as tourism. The factors mentioned above are considered external factors that have long-term impact on the evolution of service systems. Also, they are largely uncontrollable factors beyond the boundary of a service system, and they are powerful enough to make a disruption on the service system's environment. The sustainability and hence the survival of service systems is dependent on whether the service provider (and the service

industry) is cognizant enough to recognize these factors and respond with innovations to adapt to the new reality. Otherwise, they are doomed to be relegated to extinction.

Second, there are internal factors that can continuously improve service systems. They are more immediate factors that affect the gradual evolution of a service system, and may be thought of as pressures from the stakeholders of a service system such as community, customers, stockholders, employees, partners, competition, government and legislation. Here the stakeholders should be treated as the licensors allowing the service providers to do businesses in the market. They have their respective interests and ethical needs, which influence each entity of a service system and the system as a whole. For example, the community provides the physical infrastructure and markets that service firms use and operate in (Clarkson, 1995; Hillman & Keim, 2001; Kassinis, 2006). Increasing the community would set expectations of corporate social responsibility (CSR) which would greatly impact on the ethical dimensions of the activities of service providers. As the owners as well as investors, the stockholders are heavily demanding profitability and sustainability of the service providers, which induce them to improve efficiency and effectiveness in their service activities. The relationship with partners is another factor. In the context of service system network, the partners complement a service provider, and their positive relationship and complementary interactions would facilitate the value co-creation process. Moreover, dynamic change of customer needs, industrial needs of multi-skilled employees (T-shaped people), major competitors' move, and emergence of new competition in the market can affect the respective roles of service providers and recipients as well as all the aspects of service experience. Likewise, government and legislatures also influence the way service firms do businesses as they promulgate relevant laws and regulations (*ibid*). Important thing to keep in mind is that these stakeholder-related internal factors should be considered as facilitators to enhance the quality of a service system rather than imposed constraints. The challenge of trying to satisfy various stakeholders' needs is a driver to new opportunities for service markets, concepts and innovation.

6. Conclusion

In this paper, we addressed a general framework of service systems and its evolutionary process. Depicting a service systems worldview, we could articulate the components of a service system, environment and their interactions. Also, we provided the details of a generic service system that could be expanded to describe any specific service system. This general scheme specifies the respective roles of customer and service provider, and various stages of service experience with interaction between the service provider and recipient. Finally, we discussed environmental factors as well as internal factors affecting the evolution of service systems. In order to make service systems sustainable and enhance their quality, service providers should be able to respond rapidly and adaptively to environmental changes, and they should be willing to accept internal pressures as the constructive motives of finding new opportunities for service innovation.

As a conceptual work, this study would contribute to academia as well as practitioners in the following aspects. First, it provides the general scheme of a service system which may be easily applied to any service system. Using the details, service providers can construct their own service systems, and define their corresponding roles of interacting with customers to improve the quality of service experience. Second, this paper addresses the issue of how service systems evolve. Specifying internal and external factors affecting the evolution of service systems, we highlight the areas of further attention both for disruptive and gradual service innovation.

We hope this particular study would serve as a practical framework for the design, management and analysis of service systems, and be a stepping stone to extend on-going discussion on SSMED and service innovation among service industry leaders and academics.

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