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Redefining the Fundamental Dimensions of Intangible Service Encounters Through Electronic Commerce

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Abstract

Electronic commerce is the exchange of goods and services using computers and associated networks as the operating infrastructure (Kalakota and Whinston, 1996). The focus of this paper is to explore the effect electronic commerce could have on marketing services. Past research has drawn a distinct line between goods and services. Zeithaml (1981) identified characteristics unique to services and generalizable across service organizations. Four characteristics discussed in this paper are intangibility, heterogeneity, inseparability, and perishability (Zeithaml et al., 1985). Each of these dimensions can be related to one or more service related problems. Automation of service related activities could fundamentally solve these types of problems. This paper explores the fundamental changes in these characteristics when marketing services are viewed from an electronic commerce perspective.

Introduction

Electronic commerce is the exchange of goods and services using computers and associated networks as the operating infrastructure (Kalakota and Whinston 1996). The extensive use of computers and information technology is creating increasing numbers of opportunities to automate service encounters via electronic commerce. Several issues are raised when organizations become able to use these technologies to be more productive and cost effective. For example, what situations arise where is it beneficial to automate service encounters when operating in an electronic commerce environment? What effect does operating in an electronic commerce environment have on the four dimensions of service?

Marketing services have been defined along four dimensions: intangibility, inseparability, heterogeneity, and perishability (Zeithaml et al. 1985). This paper examines how fundamental dimensions of marketing services with intangible actions are affected when examined within the broad scope of electronic commerce. Lovelock's (1983) understanding of the nature of the service act, which differentiates service acts as tangible or intangible actions, is used to argue the viability of automating intangible services.

Dimensions of Service

Marketing literature uses four dimensions of service to distinguish between goods and services from both an organizational perspective (Zeithaml et al., 1985) and a consumer perspective (Zeithaml, 1981; Hartman & Lindgren, 1993). *Intangibility* is a dimension often cited as having no tangible quality. Customers cannot evaluate a service prior to consumption, cannot see or touch a service during consumption, and cannot save or store the service after consumption (Shostack, 1977; Bateson, 1979; Lovelock, 1981). A second dimension of service is the *inseparability of production and consumption*. When services are sold, production and consumption occur simultaneously (Regan, 1963). This distinction infers that the customer must be present for the service encounter. The third dimension of service is *heterogeneity*, which takes into account the potential for a high degree of variability in the service encounter (Zeithaml et al., 1985). Both producers and customers are human beings and their behavior varies from day to day. The fourth dimension of service is *perishability*, which is grounded in the theory that services cannot be saved or inventoried for future use (Thomas, 1978). The unused potential perishes upon production/consumption of the service.

Each service dimension presents a number of marketing problems and corresponding solutions have been suggested (Zeithaml et al., 1985). However, the proposed solutions *control* these marketing problems, but do not *solve* them. It is our contention that an automated service encounter provides a fundamental paradigm shift that is more effective than the strategies outlined by Zeithaml et al.

Automating Service Encounters

The potential of service encounters in the electronic commerce arena is just being realized on an aggregate level (Kalakota and Whinston, 1996). Information technology is a key factor that allows an organization to improve its level of customer service (Ives and Learmonth 1984; Ives and Mason, 1990; Jackson and Humble, 1994). That is not to imply that every service should or can be automated. The effect of automation can vary based on the type of customer and the service setting (Bednar et al.,

1995). Further examination of this premise would appear to be a potentially fruitful research area. In addition, there needs to be an effort to incorporate information technology in a manner that personalizes the encounter. Berry (1995) stresses the point that the customer should not sacrifice any quality resulting from the process of converting a manual service to an automated one. It becomes apparent that one must carefully examine where automation can become an effective service mechanism and what types or categories of service could benefit most from automation.

Before specific services can be identified as being conducive to automation, a broad view of service classifications should be reviewed to obtain an aggregate view of service automation (Silvestro et al., 1992; Dotchin et al., 1994). This paper uses Lovelock's (1983) understanding of the nature of the service act to bring focus to the types of service that could be conducive to automation (Table 1). Focusing on both people and things for intangible actions, one can see that these types of services possess a strong potential to be automated. The remaining discussion focuses on intangible services as candidates for automation.

Dimensions of Automated Service

Once a service has been automated, we can examine how fundamental service dimensions have been affected. The effect of automation as a solution to the problems discussed by Zeithaml et al., (1985) are presented in the following paragraphs.

Transforming Intangibility to Tangibility

The *inability to store services* is addressed by existing technologies. If an organization automates a service process, it has the ability to store the service on a storage medium (e.g., magnetic disk). For instance, Amazon.com (book retailer) has service procedures (e.g., book suggestions, distributing an accurate receipt of the transaction) automated via the World Wide Web. The *Service protection* issue is addressed through the use of application software used in automating or delivering service. Although software patent and copyright law is complex (Lemley 1995), organizations have the right and ability to patent software thus altering the legal implications that exist with manual services. Automation also offers a solution to the inability to *display or communicate services* associated with intangibility of services. Automation provides the customer with the opportunity to evaluate a service before they make a purchase decision. For example, a financial service organization can create copies of its online trading software on compact disks and distribute it to potential customers for evaluation purposes. The final problem entails difficulty in *setting prices*. The pricing of an automated service could parallel the methods used to assign price to software packages. Nascimento and Vanhonacker (1988) conducted a study to explore the optimal pricing methods to use when assigning value to reproducible customer products (e.g., service automation software).

Table 1. The Nature of the Service Act (Lovelock, 1983)

What is the Nature of the Service Act?	Who or What is the Direct Recipient of the Service	
	People	Things
Tangible Actions	Services directed at peoples bodies * Health Care * Exercise Clinics * Haircutting	Services directed at goods and other physical possessions * Janitorial Services * Lawn Care
Intangible Actions	Services directed at people's minds * Information Services * Education	Services directed at intangible assets * Banking * Insurance * Legal Services

By analyzing how service automation solves the problems associated with the intangibility service dimension, one could conclude that automated services software constitutes a static product that customers can evaluate prior to purchase. Anyone who has seen a software demonstration has seen this aspect of service encounters. Therefore, one can begin to make an inference that the automation of a service transforms the service dimension from intangible to tangible.

Transforming Inseparability to Separability

Automation allows the service provider the ability to *produce* service software once and provide the customer access at their convenience. An example is the creation of computer-based training. Customers are consulted as to the type of material that should be presented which is similar to the information gathering phase of a Joint Application Design methodology (Flaatten et al., 1992). The customer can simply interact directly with the software, not the service provider. Another problem of inseparability is the *difficulty in centralizing mass production of services*. Depending on the volume a service generates, an organization can mass-produce automated service software to meet any level of demand. Amazon.com provides a good illustration of this concept. The Web-based storefront can handle varying levels of demand. The ability to separate the service provider and the customer at the time of the service encounter supports the conclusion that automation can fundamentally alter the inseparability dimension.

Transforming Heterogeneity to Homogeneity

Automation, because of its fundamental characteristics, addresses the problem of heterogeneity directly. It takes away the human element thus achieving an acceptable level of *consistency and standardization*. This is not to say that service automation cannot be designed to be user-friendly, but the software will always operate at a preset level of service quality. One should realize that taking away the human element from a service encounter via automation is not always in the customers or organizations best interest, as was pointed out by Bednar et al., (1995). However, for those service situations that can benefit from automated software, heterogeneity will be replaced by homogeneity as a dimension of service.

Transforming Perishabiltiy to Persistence

If an organization were to mass-produce automation services software, it could be inventoried and distributed to meet different levels of demand. Automation addresses the problem of high demand much more effectively than insufficient demand. In this case, service software that is not utilized in optimal fashion could cost the organization money, at least in opportunity costs. However, the main point is that automation of a service encounter allows an organization to virtually inventory a specific service process and distribute it as needed, thus establishing an element of persistence to the service dimension.

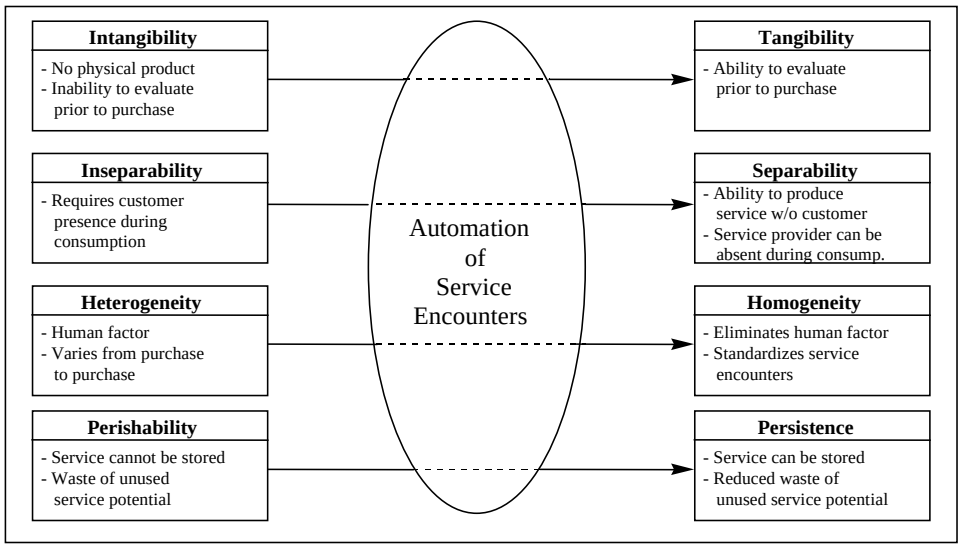

Figure 1. The Effect of Automating Service Encounters on the Fundamental Service Dimensions

Conclusions

Before we can determine the effect of automation on the service dimensions proposed in this paper, empirical research must be conducted to add credence to the concepts presented. Research should be conducted from two perspectives: the customer and the organization. From the customer's viewpoint, one must determine if automation is *perceived* by the customer to have the altering effect that has been proposed in this paper. Similarly, if an organization does not recognize its service automation software as having tangible value or if they have no strategy to place this type of value on it, the effect on the service dimension has no practical use. Once an organization determines that its service automation software is a proven company asset, a new set of factors comes into play. As mentioned earlier, this asset has to be managed accordingly *within* the organization. In addition, software must be constantly re-evaluated in an effort to take optimal advantage of technological advancement. Finally, organizations must design a strategy to integrate service automation software into the electronic commerce arena. As organizations and academicians learn more about the effect of service automation, more effective strategies can be employed to take optimal advantage of information technology.

References

References available upon request from the first author (jdwells@tamu.edu).