

E-services: operating strategy—a case study and a method for analyzing operational benefits

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Abstract

The Internet's influence in creating e-services has been revolutionary for providers and their customers. Unfortunately, there has been a wide gap between inspiring applications of the Internet that help increase service customization while maintaining or even improving delivery efficiency, and downright flops in which companies that have made bold promises have failed to deliver on even a portion of their pledges. This paper provides an examination of e-services utilizing three approaches in order to provide guidance on how to fly rather than flop. First, we develop a model of the e-service customer retention. Second, we offer a case study of Sothebys.com to illustrate how a well-known, but not typically technologically adventurous, company can utilize e-services to expand its offerings and streamline its services. Finally, we offer a profiling technique for analyzing the benefits and challenges of e-services for particular industries. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: E-services; Operations strategy; Internet services

1. Introduction

Despite the fact that the Internet has been around since the 1960s, it was only a decade ago that the World Wide Web was born as a second segment of cyberspace. Only in the mid-1990s, when a flurry of Internet service providers began offerings of dial-up access, did e-services become widely available to mass consumers. In this paper, we will define e-services as

being “comprised of all interactive services that are delivered on the Internet using advanced telecommunications, information, and multimedia technologies.” Clearly, the Internet's influence in creating e-services has been revolutionary for providers and their customers. This paper examines e-services utilizing three approaches. First, we employ a model of e-service customer retention. Second, we offer a case study of Sothebys.com to illustrate how a well-known, but not typically technologically adventurous, company can utilize e-services to expand its offerings and streamline its services. Finally, we offer a basic methodology for analyzing the benefits and challenges of e-services for particular industries. This profiling method borrows from the product profiling method developed by Terry Hill for use in operations strategy (Hill, 1989).

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E-services provide a unique opportunity for businesses to offer new models for service design strategies and new service development. First, all service providers, whether they are traditional 'brick-and-mortar' or pure Internet players, now have more delivery channel options for competing. Second, many new services can be offered more economically with both greater geographic reach and product variety. Yet, to date there have been very conflicting results in e-services. Some services, such as airlines (Southwest Airlines, www.iflyswa.com, with online ticketing), stock trading (www.schwab.com) and office supplies retailers (Office Depot sold US\$ 850 million of goods online in 2000) have seized the benefits from the Internet revolution, while others have seemingly spun their wheels by spending millions without improving delivery or cost. Clearly, not all e-services have lived up to their billing: stories of e-service failures are rampant. Service startups have been hit hard by the harsh realities of competition, as have many of the traditional players that were not able to fully leverage the Internet. In early 2001, the crash of Internet pure players was significant and gathering force, with 210 companies having closed shop, with other notables such as Webvan soon following suit (Mullaney, 2001). Online customers are extremely finicky when services do not match their expectations. So much, so that, numerous companies learned (often the hard way) that e-service is less about hype and more about delivering on promise—in more interactive, convenient and personal ways. Robert Mann of Accenture Consulting in Atlanta reported that e-tailers did somewhat better at fulfilling orders during the 2000 holiday season than in the chaotic 1999 holiday season, with 92% of online purchases rated by customers as successful, compared with 25% failure rates from the previous year (Robert Mann of Accenture, 2000).

While there are a number of ways, in which bad business models can be separated from good ones, we argue that delivering effective e-services is not as simple as waving a magic wand; instead e-services must be carefully planned and implemented in order for e-services to become a valuable and strategic channel. One irony of providing e-services is this: as many companies have jazzed up their websites so customers can have instant access to services and as technology has become more powerful, the more complicated

it has become to customers. Yet, one of the biggest challenges of e-services is balancing the greater customization possible (which typically results in more complex websites) with a simple, accessible and easy to use web interface (Meister et al., 2000).

In this research, we provide some conceptual frameworks for advancing research and practice in e-service operations strategy. Developing conceptual frameworks is an important first step in the gradual process of theory building and theory testing (Glaser and Strauss, 1967). To date, there has been little rigorous development of conceptual frameworks and almost no empirical testing of such frameworks. While there are thousands and thousands of articles about electronic commerce, the vast majority of these articles are very shallow, primarily hype-oriented and lacking in theoretical or empirical justification. Therefore, we seek to develop a more grounded and rigorously developed set of frameworks for future validation and refinement. In particular, we show how two dominant paradigms of service operations strategy can be adapted to e-services. The first of these extends Heskett et al. (1997) concept of Service Profit Chains to develop an E-Services Customer Retention Model that links marketing and operations strategies to e-loyalty. The second model, building on the Huete and Roth (1988) product–process matrix for services, indicates that a third dimension of *proximity* provides a useful complement for conceptualizing e-services. The resulting product–process–proximity (or P³) matrix provides a conceptual foundation for understanding the added complexity of delivering world-class services in a multiple channel environment.

2. Towards an E-Services Customer Retention Model

Customer loyalty and retention is a qualitative indicator of profitability in services. As little as 5% increase in customer retention has been shown to improve bottom line profitability by 25–95% (Heskett et al., 1997). So, it is not surprising that e-loyalty has been found to be a critical, albeit intangible, economic asset in e-services. Reichheld and Schefter (2000) found that attracting new customers in pure play Internet businesses was up to 40% more difficult than in traditional brick-and-mortar services.

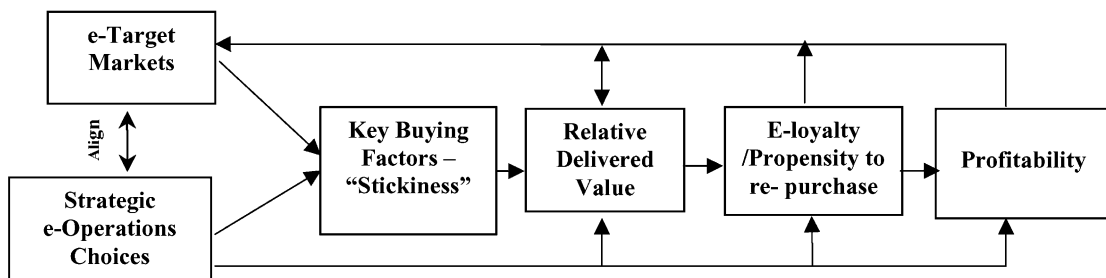
Therefore, we seek to develop an overarching model of e-loyalty.

A key tenet of operations strategy is that a service operations strategy must be aligned with the target market requirements. This tenet has been repeatedly demonstrated in models of manufacturing strategy (Hill, 1989; Schmenner, 1987; Skinner, 1969). Similarly, in a service operations strategy, customer order-winning, qualifying and retaining capabilities are jointly determined by integrating both marketing and operations perspectives in the strategic debate. Roth and Jackson (1995), linked alignment of competitive capabilities and business performance and further refined these perspectives in a theoretical manner. Service firms make deliberate choices regarding their structure, infrastructure and integration as part of their ‘intended’ (or planned) service strategies. The resulting ‘realized’ strategies are what actually deliver high or low customer perceived value.

The fundamental notion of a tight coupling between marketing and operations is no less important to effective e-services for two primary reasons. First, backroom operations processes, such as service supply chain management and call center design, give e-service providers distinctive capabilities for competing. Comparing operational improvements over the past year, Accenture Consulting, for example, reported that the average time to complete an order online went from 12 to 9 min. Delivery promises went from unrealistic 5 days with actual deliveries averaging 9 days to more realistic average ‘promises’ of 10 days with actual shipments averaging 6 days (Robert Mann of Accenture, 2000). Clearly, operations processes impact the basics of fulfillment, warehousing

and customer management and impact overall operating costs and service levels. Putting things into boxes and shipping them out, in a timely manner, as well as the ability to satisfactorily handle returns, is where operations can make or break customer satisfaction. Second, a well-coordinated operations infrastructure can provide unparalleled support for the ways in which e-services win orders and retain customers through multiple channels. In fact, it appears that the pendulum has shifted to multi-channel players—the so-called click-and-mortar players. In late 2000, a study by Media Metrix reported that traditional retailers ran 8 of the top 10 fastest-growing retail sites (Adamy, 2000). Many of these success stories were due to changes in operating structure—added call centers, order-tracking features, and better-run sites. Failures in order fulfillment are one of the primary reasons customers have for abandoning a particular website or the Internet altogether (Szymanski and Hise, 2000). The key idea is to use both channels seamlessly.

The E-Services Customer Retention Model in Fig. 1 illustrates this fundamental hypothesis: service operations strategy aligned properly with the Internet target market requirements determines the key buying factors and supports retention (Roth, 2001). A ‘key buying factor’ is defined as an “order-winning” characteristic of the service, that serves to attract targeted market segment customers to *complete the initial purchase* and to *extend the life of their relationship* (“stickiness”—is defined in terms of three dimensions: (a) the length of time that users spend on a specific site; (b) the proportion of browsing customers that actually complete a purchase and (c) the proportion of customers that return for subsequent purchases).



Source: Roth (2001)

Fig. 1. E-Services Customer Retention Model: hypothesized linkages between marketing and operations in Internet services.

In the E-Services Customer Retention Model, we hypothesize that e-loyalty is a result of the relative perceived value of the e-service to the target market customers for two reasons. First, contrary to conventional wisdom, current studies indicate that customers in many situations are actually more “sticky” in web space, so greater realized value would reduce the chances of their switching on a whim. One of the keys to effectively utilizing e-services is to move through the levels of stickiness so that customers spend more time on a company’s website, complete purchases with greater frequency and are more likely to return for repeat purchases. Second, highly perceived value is associated with delivering a consistent buying experience online. Consistency reinforces e-loyalty. Reichheld and Scheffer (2000, pp. 105–106) report: “chief executives at the cutting edge of e-commerce . . . care deeply about customer retention and consider it vital to the success of their online operations. They know that loyalty is an economic necessity; acquiring customers on the Internet is enormously expensive, and unless those customers stick around and make lots of repeat purchases over the years, profits will remain elusive.” These authors further report: “. . . the way the site is designed and marketed has a large impact on the types of customers it attracts . . . the mix of customer segments varies widely among web competitors within the same market; some sites attract a rich mix of loyalty-oriented customers and others primarily attract the price butterflies who flit from site to site seeking bargains.” (p. 110).

What is less understood is that online customers are not always homogeneous. Key buying factors may vary considerably by target market segment, and in turn will require different operational capabilities. For example, Olson and Boyer (2002) present an analysis of Office Depot customers that shows six market segments with significantly different characteristics. One of the reasons Office Depot has been successful with the Internet as a sales channel (US\$ 850 million in sales in 2000) is their ability to adapt their Internet strategy to different market segments. In Fig. 1, for example, each market segment has a unique set of key buying factors. Thus, our e-service customer retention model posits that the choice of the target market directly influences the customers’ perception of the service and indirectly through the choices about key buying factors for the market. Clearly, firms must

devise market strategies that affect customer expectations for a well-executed e-service. Notice also that operations strategy content notions of functional alignment and key buying factors are not captured in the traditional Service Profit Chain Model (Heskett et al., 1997).

We assume that the e-service has the “qualifying” characteristics that will cause a customer to visit the site in the first place, but continued relative perceived value, represented by the third link, is necessary for e-loyalty. Customers perceive value based on their actual experiences with the e-service encounter. Therefore, we define the e-service encounter as:

The e-service encounter is the initial landing on the home page until the requested service has been completed or the final product has been delivered and is *fit for use*.

If customers’ perceive the e-service as offering high relative value versus other channel options, then they will be more likely to make repeat purchases. For example, one credit union in a recent study by Roth (2001) had a dramatic increase in its e-service channel because it provided a 0.25% loan discount when its customers made their applications online (versus using a loan officer). More importantly, the credit union also made the service more convenient by placing a computer kiosk in the lobby and directed customers to this service, which in turn, reduced customers’ overall wait times. In general, convenience and user-friendliness are now order-qualifiers for e-services. The more effort customers need to invest in making an online transaction, the more likely they will balk. Conversely, the higher the value that customers perceive, the more likely they are to make repeat purchases, thus generating profits for the corporation. Profitability links back to the e-target markets since more profitable firms are more likely to intensify and expand their online efforts over time.

3. The product–process–proximity matrix for services

As discussed earlier, integrated operations strategies influence the key buying factors directly, and thus, indirectly impact the delivered e-services. Clearly, from our discussion of e-service customer retention, the

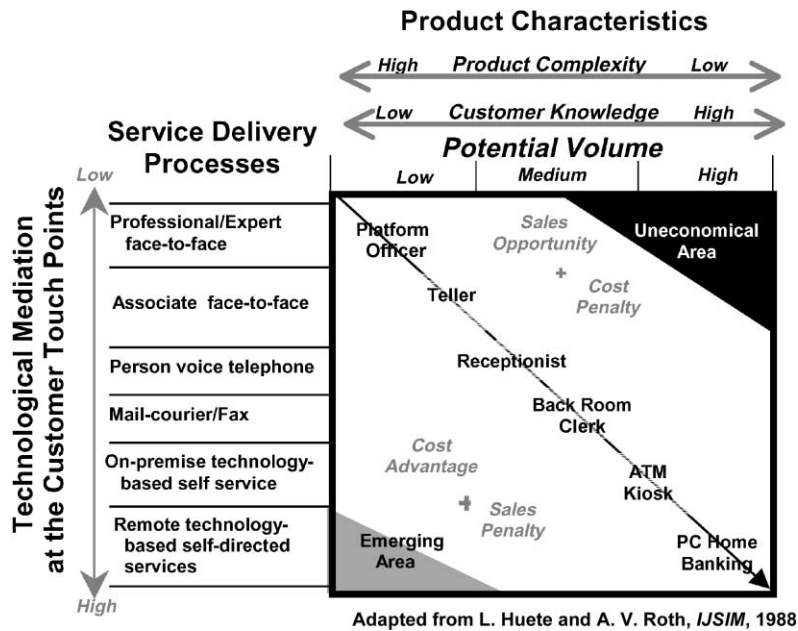


Fig. 2. Service strategy design matrix.

strategic operations choices regarding the fit between delivery processes and products must play an important direct role in the customer’s perception of the delivered services. A fundamental component missing from the extant literature is a framework for guiding research and practice in the design of multi-channel service operations strategies. Preliminary findings suggest that service strategies must account for (1) an array of channel options from traditional to e-services and (2) the impact of technological progress on the customer touch points. The service strategy design matrix shown in Fig. 2 provides a useful starting-off point for assessing trade-offs for multi-channel, service strategies. This service strategy design matrix is predicated upon the Hayes and Wheelwright (1979) product–process matrix, which is widely considered to be the dominant paradigm of manufacturing strategy. Huete and Roth (1988) have empirically validated the service strategy design matrix in a sample of retail banks.

In the service strategy design matrix, mediation at the customer touch points generally represents the relative degree of process automation used during the service encounter. Service delivery process levels range from face-to-face delivery of the services

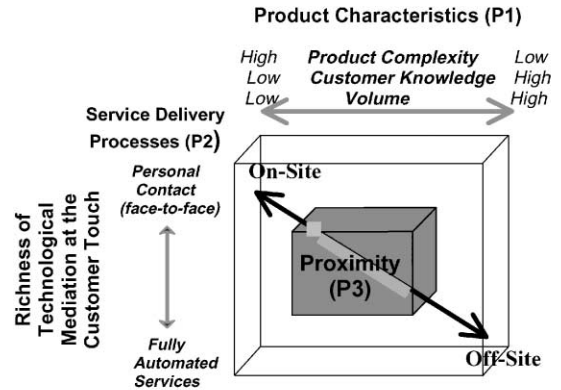
offered by highly skilled experts to fully self-service channels where the customer interacts totally with technology to receive the service. Note that with the Internet, face-to-face contacts can occur with the customer physically present or through virtual encounters. Technology services may be *provider-based* (e.g. diagnostic testing and an automated response systems) or *self-service* (e.g. car wash, ATMs and Price-line.com). For self-service technology-based services, back room operations—e.g. call centers, computer support capacity, maintenance and Kaizen—are obviously important operations practices and facilities.

Information-intensive service offerings, similar to manufactured goods, often seem to follow a life cycle going from stages of low volume, customized to high volume, standardized offerings (Huete and Roth, 1988). According to the service design matrix, routine banking transactions, such as withdrawal and deposits, are so highly standardized and of sufficient volume that they can be delivered efficiently through automation strategies. However, unlike manufacturing (Hill, 1989), service delivery processes and products should not be solely designed based on volume potential. Instead, a fundamental balance must be reached between customization of service offerings

and the use of automation to leverage economies of scale. The Internet fundamentally alters this relationship by providing economies of scope that greatly enhance the ability of service providers to customize without unduly increasing costs. Two other product characteristics that are critical to developing effective service strategies include: (1) product complexity and (2) customer knowledge level regarding the product offering. Historically, more complicated banking products, such as mortgage products or brokerage advice, typically have less potential for standardization and are traditionally delivered by professional encounters in a face-to-face manner, which historically meant that the customer and provider are physically co-located. Take for instance a home loan application. It is likely that the first time home mortgage applicant may benefit from sitting with a loan officer to work out the many nuances of the mortgage. In contrast, customers that have gone through the mortgage process may be more apt to use technology channels.

Taking these three product characteristics into account, the service strategy design matrix shows a region of “natural matches” along the diagonal of the matrix between the types of processes and services. Notably, mismatched (or off-diagonal) services incurred design trade-offs. For example, delivering high volume, standardized products through labor-intensive service processes provides more sales opportunities (e.g. cross-selling or bundling products), however, a cost penalty is also incurred. On the other hand, delivering the same products through automation yields a cost advantage but at the expense of a potential lost sale, especially for cross-selling other products during the service encounter.

One of the most compelling features of the Internet is that it encourages an expansion of the region of “natural” matches between products and process characteristics, and in turn, makes mass customization more economical. Because of the Internet, it is now possible to deliver “off-site” highly personalized services—even “virtual” face-to-face encounters—more efficiently. It is important to note that the third dimension of the P^3 matrix may seem to be binary rather than a continuum (i.e. either on-site or off-site). However, this would be a serious oversimplification since it is possible to design several in-between configurations. For example, Kozmo.com started as an



Source: Roth (2001)

Fig. 3. P^3 service design matrix: product–process–proximity.

Internet pure player with no existing facilities, yet needed a place for customers to return movies that had been rented and delivered. Kozmo’s solution was to partner with Starbucks to place return boxes in coffee-shops. While Kozmo has certainly not been an archetype of success, it does illustrate that there is a continuum of on-site versus off-site product placement possibilities. Thus, the relative potential of the Internet has shifted the diagonal leftward, enabling mass services. This effect is similar to that seen with flexible manufacturing technologies such as FMS (Goldhar and Jelinek, 1983; Meredith, 1987). Thus, in Fig. 3, we propose that the “place” of the service encounter is a necessary third dimension to address the trade-offs between service strategies and new service design. This P^3 matrix provides a conceptual typology that is useful for evaluating trade-offs in multi-channel service strategies.

Notice that the P^3 matrix differentiates between “distant” (or off-site) services that are more traditional, such as mail order, and new online services as well as between on-site and off-site, or virtual, face-to-face encounters. Recall that up until recently, face-to-face delivery processes required the service encounter to be conducted by co-locating the customer and the providers, typically with the customer coming to the provider. Now, however, with the Internet, geographic and physical co-location is no longer necessary. Clearly, it is possible to have face-to-face, remote customer encounters that emulate physically co-located ones.

In summary, we propose that Roth's P³ matrix captures three key strategic design choices that are required for developing a world-class service in the Internet era: (1) the characteristics of the product offering characteristics; (2) the level of automation in the delivery process itself and (3) the place (or relative physical proximity of customers and providers, such as on-site or "virtual," off-site encounters). Clearly, there are trade-offs in the nature and level of enabling information and communications technology to be deployed along each of the three dimensions, adding to the complexity of the multi-channel service strategies. An important area for future research is to determine the dominant positioning in each channel that best captures its economic and market benefits. Another area of future research is the choice regarding how to staff for e-services. Decisions concerning whether customer support will be provided through e-mail, live chat, or both in delivering e-services is a strategic element of the operations design. Among other things, this decision impacts the number and skill levels of customer service representatives and the nature of the quality control procedures. Finally, the P³ matrix also provides conceptual support for new service development strategies as well (Fitzsimmons and Fitzsimmons, 1999; Froehle et al., 2000). An e-service design for customer support, for example, may be designed to span from text communications to live operator, virtual face-to-face chat.

The Sothebys.com case presented in Section 4 presents an example of how an organization that at first seems ill-suited to pursuing an Internet-based business model, finds ways to expand and tap into new income streams by developing a new value proposition for an established customer base. This case illustrates the importance of careful tailoring of e-service strategies and the matching of many elements of the P³ matrix.

4. Sothebys.com: a case study

After 255 years in the fine-arts auction business, Sotheby's decided to take half of its auctions online.³ At first glance, taking the auction of fine-arts,

antiques, and valuable collectibles online does not have obvious economic benefits. In fact, Sotheby's online strategy has increased costs by US\$ 40 million annually. Only when Sothebys.com's total strategy is examined does the economic rationale for taking auctions online become clear. While costs have risen for goods that Sotheby's provides to the auction site, they have dropped significantly for goods that Sothebys.com "Associates" provide to the site. Associates are carefully selected fine-arts, antique, and expensive-collectible dealers who have been invited to offer objects ("lots") for sale on the Sothebys.com site.

Sothebys.com is an example of an organization that suffers from the diseconomies of scale caused by the logistical and customer-support requirements of auctioning goods it provides online, and benefits from the economies of scale generated by auctioning goods Associates provide online. As such, Sothebys.com illustrates both extremes of the *scalability continuum*, a framework that shows what effect the need for non-information elements of service, such as customer support and logistics, has on the economics of a firm engaged in e-commerce.

Fig. 4 presents the scalability continuum, showing four categories of e-commerce services with different degrees of scalability. A pure information service, for example, an online newspaper, deals with few physical-service issues, such as customer support or logistics. Thus, its scalability is high. Commodity items with standardized handling issues, such as books or toys, have less scalability because they require more complex logistics and possibly some human customer support. Airline tickets are simple to handle (thanks to e-ticket usage), but because customers' needs can be complex and sometimes unpredictable, they may require customized solutions that only travel agents can provide, reducing scalability further. At the far end of the scalability continuum are services like Sothebys.com (for goods it provides). The auctioned items tend to be unique, requiring customer support to sell, and awkward, requiring customized logistics to both sell and ship.

4.1. Online auctions

Internet consumer auctions are anticipated to generate US\$ 19 billion in gross revenues by 2003 (Forrester, 2000). E-Bay, the largest of the online

³ This paper draws extensively on other work by Roger Hallowell including "Sothebys.com," Harvard Business School case study no. 800-387, and "service in e-commerce: findings from exploratory research," Harvard Business School note no. 800-418.

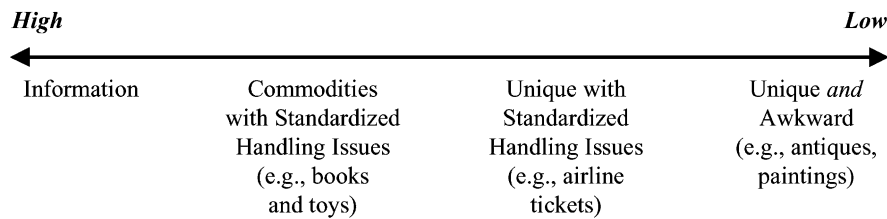


Fig. 4. The scalability continuum.

auction businesses, allows anyone to post items on its site, and anyone else can bid on them. In contrast, Sothebys.com provides a marketplace with rigorous entrance requirements for sellers and buyers. Craig Moffett, president of Sothebys.com, points out part of the logic behind going online:

You don't have to touch a lot of what we're selling to appreciate it. Think about stamps and coins, for example. For other types of things, we can provide much better photos online than we could in catalogues. We'll provide two or three shots of a single painting, and even let you see the frame. Catalogues don't do that, and lots of people buy paintings and jewellery from auction catalogues—in fact, 30% of what we sell in live auctions goes to buyers on the telephone or leaving left bids.

Moffett believes that the potential market of buyers is enormous, noting that there are 8 million millionaires in the US.

Sotheby's holdings continues to conduct live auctions for very expensive items (over US\$ 10,000) and for those consignors uncomfortable with the Internet auction medium (in practice, price points are blurred).

4.2. Auctions on the Sothebys.com site

While Sotheby's live auctions offer relatively little customer support because of most bidders' familiarity with Sotheby's processes, online auctions require considerable customer support. The ratio of "interactions with Sotheby.com's customer support center" and "lots sold" is 5:1 for lots placed on the site by Sotheby's. Approximately one-half of those interactions involve questions about the use of the website. The approximate cost per interaction is US\$ 10, indicating that customer-support costs increased considerably as a result of the Internet strategy.

4.3. Physical lots—drawbacks and limitations for virtual auctions

The process of getting sellers to consign lots to Sotheby's online auctions is identical to the process used for live auctions. Once consigned, however, lots for online auctions are handled separately in a process that is more labor-intensive.

Every item is digitally photographed at no charge to the seller. On average, four photos are taken. Photo instructions come from the specialists (Sotheby's world-class experts on the items being auctioned). The photographs are edited and uploaded into a database. In contrast, most lots for live auctions are not photographed, and Sotheby's charges sellers for the photography services it does supply. Thus, materials handling costs (in this case related to photography) increase for these lots consigned to Sotheby's and sold on the website.

Wrapping and boxing, which Sothebys.com outsources, are complex operations because of the delicate nature, and non-standard, often awkward shape of most of the items auctioned. It requires the time of 8.5 full-time-equivalent warehouse employees, plus a pricing agent. There are 23 different types of "standard" containers. Custom-made crates are required for objects with unique dimensions or paintings worth over US\$ 10,000. Packing materials include bubble wrap, gray foam, tissue paper, and unprinted newsprint stock. An executive estimates that 50% of the cost of shipping a painting comes from packing and materials.

Another executive compares shipping in traditional versus online auctions: "in traditional auctions, slightly more stuff was shipped than was taken away by hand. In the dot com auctions, 100% of the items are shipped." Both managers and observers agree that logistics requirements (and, consequently, both

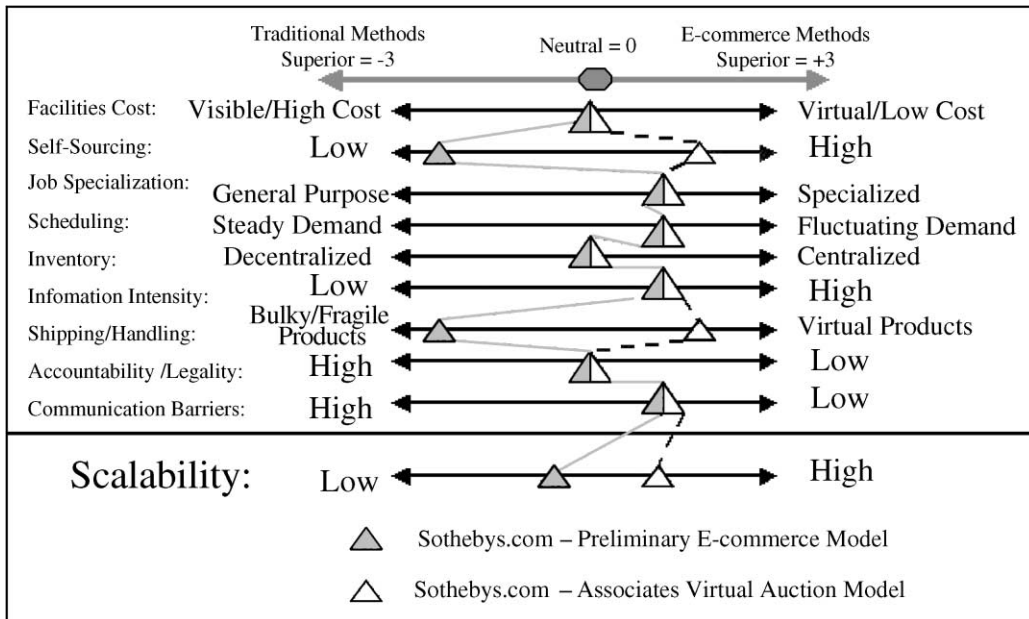


Fig. 5. E-operations profile.

costs and operational complexity) for the auctions themselves and for shipping purchased lots increase as a result of taking auctions online. This statement is supported by the US\$ 40 million annual increase in costs for the company as a whole, costs that are not fully explained by increases in marketing, website, and customer support. These increases in costs explain the reduced scalability Sotheby's-sourced lots create for Sothebys.com (see Fig. 4). The specific operational elements causing the costs to increase are detailed in Fig. 5.

4.4. Dealer (Associate) lots—an improved strategy for virtual auctions

Given the drawbacks associated with Sotheby's taking physical possession of lots and the requisite logistics, it became clear that a different approach was needed. Thus, Sotheby's developed an alternative approach wherein they would act as information managers and a branded outlet rather than physically handling goods. An important element of the Sothebys.com business model was the formation of a network of fine-arts, antiques, and collectibles dealers (the Associates) authorized to sell on the website.

Since Sotheby's guarantee effectively extends to lots sold through all media, its specialists select Associates carefully for their reliability and expertise. Describing the site from an Associates perspective, one Sotheby's executive comments, "it's as if were giving that antiques dealer on a dirt road in New Hampshire who has an 18th-century grandfather clock a Madison Avenue address for free."

Sotheby's expected between 500 and 600 Associates to sign up. By March 2000, there were 4769 Associates (although many had yet to place lots for auction on the site). Managers identified approximately 11,000 potential Associates in the US and 38,000 in Europe and Asia. Managers believe there is "a virtually inexhaustible supply of art and antiques in our price ranges." This suggests that if executed appropriately, the Associates network represents a significant opportunity for Sotheby's.

When Associates sell on the website, Sothebys.com never touches their goods and thus incurs virtually no variable costs. The Associates are responsible for all inventorying, cataloguing, provision of shipping estimates, packaging, and shipping. These costs, many of which are related to materials handling, are thus born by the Associates (see Figs. 4 and 5 for illustrations

of the effect of materials handling costs on scalability). Associates are charged nothing to electronically upload descriptions and photos of their items onto the website, but the premium charged to buyers accrues to Sothebys.com. The variable cost of an Associate sale on the site is close to zero, with a buyer's premium of 10% on an average US\$ 2000 hammer price (sale). This leaves a large gross profit for Sothebys.com.

By creating the Associates network, Sothebys.com has transformed itself from a firm with extremely low scalability (actually negative, given the increase in variable costs associated with the greater logistics and customer-support requirements of the Internet strategy), occupying the far left of the scalability continuum, to a business that is *information-intensive*, occupying a position on the far right of the continuum. In effect, for items provided by Associates, Sothebys.com does not auction physical goods in the traditional sense. Instead, it provides branded information about the availability of authenticated fine-arts, antiques, and expensive collectibles, and creates a highly policed electronic marketplace for their sale. This explains Sothebys.com's ability to reposition itself on the right end of the scalability continuum (Fig. 4) by pushing its operations to the right-hand side of the scales on the e-operations profile (Fig. 5).

4.5. Results of online sales

By the end of its first month in operation, Sothebys.com was already selling more lots than all other fine-arts-related auction sites combined. A total of 1000 Associates had listed at least one lot, and 500 Associates were actively selling on the website. Dealers actively selling offered an average of 10 lots for auction at any time. In the first 3 months of operation, the volume of dealer lots on the site doubled. Break-even analysis suggests that the Internet strategy will be profitable in the near future if the volume of Associate lots increases to levels that management thinks can be easily reached.

4.6. Lessons from Sothebys.com

The lessons from the Sothebys.com case are important for managers of pure Internet companies as well as for managers of "bricks and clicks" firms, combinations of Internet and traditional businesses. First, not

every business should take itself to the Internet. This is not to say that the vast majority of firms should not have an Internet presence. However, for many businesses, the Internet should serve primarily as a vehicle for communicating the organization's value proposition, possibly providing some simple communication functions, and little else (Gulati and Garino, 2000).

This recommendation flies in the face of the admonition of new economy experts who argue that everything can and should take place on the web, and that companies not working to "digitize" their business model will inevitably lose to those that do. The scalability continuum suggests that organizations with information-intensive services will benefit from taking them to the web completely; while businesses delivering services with high customer support and logistics needs may see their costs rise when they put them online. This is the situation Sothebys.com faces for the lots that it supplies to the website. Thus the Sothebys.com case encourages the inference that managers should take a contingent view (Lawrence and Lorsch, 1967; Thompson, 1967) of the Internet based on the nature of the services they offer.

The second lesson from the case is that a business may need to reinvent its value proposition to succeed on the Internet. Sothebys.com does not earn profits by auctioning lots consigned to it by sellers, as Sotheby's does in its live auction business. In contrast, Sothebys.com earns profits by creating a marketplace for the sale of fine-arts, antiques, and expensive collectibles and by policing that marketplace thoroughly. In effect, Sotheby's has found a way to create a new value proposition that, while related to its traditional offering, is inherently more information-intensive.

The third lesson, the case provides is that a bricks-and-mortar firm wanting to take its business to the Internet may want to consider its capabilities (see Wernerfelt, 1984; Teece and Pisano, 1994). The capabilities that an organization has in its core bricks-and-mortar business should also serve as capabilities in the new online business. If possible, the online business should provide a way to increase leverage from those capabilities. Sotheby's greatest capability is its stable of specialists, who have the ability to determine the authenticity and value of the items it accepts for auction. The volume of work specialists can perform is limited since they can only evaluate so many objects in a given period of time.

Note that specialists are, according to Sotheby's managers, very difficult to acquire, requiring 20 years to train and develop.

The Sothebys.com strategy helps to leverage these specialists in a unique way. By using them to determine which dealers are appropriate as Associates, Sotheby's effectively takes advantage of their personal contacts in similar lines of work. In this way, Sotheby's specialists spend considerably less time per object sold via the dealer network, because they trust the opinion of the dealers they have selected. Thus, the Internet strategy leverages Sotheby's greatest capability in a way that would be impossible without the ability to auction the objects digitally (Associates would be unwilling to physically send their lots to Sotheby's in New York or London for traditional auctions in any substantial volume).

5. Profiling e-operations

The Sotheby's case illustrates how what at first glance appear to be disadvantages associated with an e-services model can be transformed into a much more attractive model. By carefully analyzing the areas where an electronic business model offers operational improvements and areas where operational challenges or disadvantages occur, Sotheby's was able to refine its e-services model to improve customer service and expand markets. Fig. 5 presents an e-operations profile of the Sotheby's situation by highlighting specific operational components. This profiling method draws on the product profiling procedure developed by Terry Hill for use in operations strategy analysis (Hill, 1989). Fig. 5 applies the basic concept of product profiling to e-commerce by adopting nine operational decision areas where e-commerce can either offer improvements over traditional methods or introduce new challenges. These nine operational decision areas have previously been discussed and illustrated using a case study format (Boyer, 2001).

The concept of an e-operations profile is to compare several operational areas where e-commerce can either be beneficial or taxing. For example, Fig. 5 shows that the degree of self-sourcing for Sotheby's preliminary e-commerce model was very low. By self-sourcing, we mean the degree to which an organization can encourage its customers to do some of the work of

providing a product/service for themselves. Utilizing the Internet to sell items that would sell for less than US\$ 10,000 does not help Sotheby's since these items are not high margin items and the costs of the employees that evaluate, catalog and handle items is very high due to their unique skills. In contrast, by developing an alternative model wherein Associates auction off items on a virtual basis, Sotheby's switches much of this work to its Associates, who in effect become its customers. In a similar manner, using Associates as sales agents also greatly improves shipping aspects and accountability/legality issues. By using Associates to virtually sell items but physically handle them, the difficulty and responsibility for handling these bulky and fragile items becomes their responsibility.

The concept of e-operations profiling is to provide a quick, visual means of capturing key operational differences between traditional and e-commerce methods. As highlighted above, each of the nine dimensions seeks to portray broad differences in a specific operating characteristic. Two dimensions (self-sourcing and shipping) have already been described within the context of Sotheby's; the remaining dimensions are briefly described here. Facilities costs can be greatly reduced for some businesses when business is conducted online because of the ability to reduce or remove physical interfaces with customers. However, in many situations there are disadvantages to being virtual, such as greater customer confusion when seeking to return merchandise or interact with the business and the lack of a visible brand and market presence. Another potential advantage of e-commerce involves the ability to pursue *job specialization*. In many cases, businesses can greater differentiate and specialize their workforce because of the dis-intermediation effect of not requiring real-time, face-to-face interaction with customers. Similarly, *scheduling* becomes easier in many e-commerce situations because employees can be matched with aggregated demand rather than dealing with wide fluctuations in demand at individual locations. Clearly, there are many situations where job specialization and scheduling do not improve as a result of e-commerce initiatives.

One of the largest potential benefits is the ability to centralize *inventory*. Rather than holding inventory at numerous distinct locations, Internet-based business can centralize their inventory at a few distribution centers. For example, Webvan projected that its

centralized distribution centers for groceries would have 24 inventory turns per year versus 15 times per year for a conventional supermarket (Anders, 1998). Unfortunately for Webvan, this advantage was easily negated by losses in other areas—most notably vastly increased shipping costs. The final two dimensions from Fig. 5 to be explored are tightly intertwined: *information intensity* and *communication barriers*. E-commerce can be highly valuable in situations where the information that needs to be conveyed between consumer and producer is fairly complex or detailed, such as in the sale of airplane tickets. However, the benefits can be easily negated by perceived or real communication barriers. Thus, e-commerce is most beneficial in situations where the information to be exchanged is fairly standardized and the provider of the information takes pains to create as intuitive a process as possible. For example, online airplane ticket sales have greatly increased over the past 4–5 years, but not in situations where a traveler is not doing a fairly straightforward round trip. When someone is trying to visit two or more cities in one trip, exchange frequent flyer tickets or some other “non-standard” transaction, it is still easier to make these arrangements through more traditional outlets such as travel agents or the telephone.

The ultimate outcome measure for an e-operations profile is the scalability of the overall e-commerce model (i.e. we incorporate the scalability continuum shown in Fig. 4). Each of the nine dimensions shown in the top-half of Fig. 5 is assigned a score ranging from +3 (indicating that e-commerce provides a substantial advantage along that dimension) to –3 (indicating that traditional business methods are superior). If neither e-commerce nor traditional methods are superior, a dimension receives a rating of zero (neutral) because neither approach is superior. We can think of scalability either as a summation of the scores on the nine operational features in the top-half of Fig. 5 or as a weighted summation of these features. As shown, the changes in Sotheby’s e-service model with respect to self-sourcing and shipping transform the overall scalability from a losing proposition to a much more promising possibility.

The e-operations profiling tool can be applied in several different ways. It can be used to compare multiple approaches to incorporating e-business methods into an existing business, as with Sothebys.com.

Alternatively, the tool can be used to compare traditional operating methods with e-commerce methods to determine the overall viability of e-commerce for a given business. Then an appropriate strategy can be developed to determine the scope of electronic business tool application within a given corporation.

The major benefit of this profiling approach is not the creation of a completely “objective” profile, rather it is the process of creation and the related discussion between interested parties. This technique facilitates a thorough exploration of operational issues associated with e-services and provides a quick visual overview. Thus, while individuals may differ in their perceptions of the exact ratings along each dimension, the goal is to highlight dimensions where there are benefits that can be exploited and challenges that can be minimized.

6. Directions for future research

In conclusion, the integration of operations with marketing in developing and executing an e-services strategy contributes to e-loyalty and profitability. Several exemplary service companies which have achieved world-class status through operations have been successful introducing e-services as an extension of their traditional brick-and-mortar operations. Nordstrom serves as an example of both enviable traditional services and e-services. Dominos Pizza seamlessly incorporated e-services into its service delivery system design. The Sothebys.com case provides a detailed examination of how companies can strategically design their e-services to maximize the advantages of a new service channel. Clearly, the design of e-service strategies ultimately influences performance. The models of e-service customer retention, e-service strategy design and e-operations profiling provide ways to examine the impact of the Internet on three levels of the supply chain: at a macro level across organizations, at a strategic level and a tactical level. A careful review of each of these models and examination of a business’ operating characteristics and market is a critical component for succeeding with e-services.

The objective of this paper has been to present some preliminary frameworks for analyzing e-services. The frameworks presented help clarify the decisions and

actions that businesses need to address in order to harness the potential of the Internet to simultaneously expand markets while increasing efficiency. However, there are numerous existing questions that require further inquiry in order to find best practices regarding e-services. We close with a brief discussion of outstanding questions organized into three categories: inter-organizational, strategic and tactical.

6.1. Inter-organizational questions

Since the ability to link various organizations, suppliers and customers in a quicker, more accurate and complete fashion is one of the central benefits of e-services, the investigation of the linkages between organizations is of critical importance. For example, Sothebys.com strategy works (at least in theory) because logistics costs are transferred from Sotheby's to the Associates. While the Sothebys.com case raises numerous important issues for examination, Sotheby's underlying strategy of transferring logistics costs to Associates, who are both suppliers and customers, is unlikely to be highly replicable for other businesses. This is similar to questions in the late 1980s and early 1990s regarding whether just-in-time inventory practices really saved money throughout the supply chain or simply transferred costs upstream to suppliers. Another important question regards the types of inter-organizational partnerships that should be formed—should organizations keep electronic interfaces as barriers or should they work to tightly integrate systems? In what situations are alternative approaches most appropriate? Other important questions are listed as follows.

- To what degree should organizations rely on branding to maintain their market versus charging access or membership fees?
- What skills/capabilities need to be retained within a given organization and which ones can be outsourced or partnered?
- When organizations outsource key processes (such as Sotheby's allowing Associates to handle goods to be sold at auction) what are the best methods to monitor and maintain appropriate quality levels?
- What degree of linkage (tight, loosely coupled or loose) is most appropriate between organizations following different e-service strategies?

- What are the best ways to support and educate customers to develop stickiness or loyalty to a particular site or organization?

6.2. Strategic questions

A second critical set of questions focuses on the strategic intent underlying the application of e-services. How does an emphasis on reducing cost, increasing quality or increasing flexibility affect the value of e-services? For example, how do the different strategic goals of a Sotheby's and an e-bay translate into different website designs and operational structures? Other important questions are listed as follows.

- In what situations should e-services seek to deliver products using electronic mediation versus focusing simply on providing information but not products?
- What are the key features of a good e-service strategy?
- How should organizations segment markets and tailor their delivery methods to cut across several approaches to maximize perceived customer value?
- What is the relative value of loyal, repeat customers versus opportunistic, sporadic customers? How do businesses build loyalty among their online customers?
- How does type of product, industry and overall business strategy affect the choice of an effective e-service strategy?

6.3. Tactical questions

The third critical set of questions focuses on the tactical details of making e-services work. The popular press has been filled with numerous examples of what happens when Internet startups bungle inventory, shipping, returns or any other aspect of order fulfillment. Thus, we need to examine logistics for e-commerce firms, asking if they are different from those employed by established firms, such as catalogue retailers?

- Are there ways to extend the economic benefits associated with moving *information* efficiently via the Internet to the movement of goods and more tangible services?
- What are logistics best practices for goods and non-information-intensive services sold via the Internet?

- What are different design options for the on-site versus off-site delivery of products/services as illustrated in the P³ matrix?
- How can the e-profiling approach be utilized to evaluate and design e-service offerings?
- How can e-services be seamlessly integrated as part of an organization's overall product offering?
- What types of learning curves exist for customers, corporations and suppliers of Internet sales technologies? In particular, how does level of customer adoption and experience affect perceived value?

While e-services have suffered some serious flame-outs and failures, we believe that fundamentally there is a high degree of value-added. Thus, businesses will continue to offer new and improved products online. The questions and research topics listed above provide a rough starting point for future research to help maximize the value of e-services. This list is certainly not inclusive, but does start to illustrate the challenges and opportunities that must be addressed. The conceptual frameworks (including the P³ matrix and e-profiling) and the illustrated case study of Sothebys.com are intended to lay a foundation for further exploration, refinement and adaptation of e-services strategies in operations management.

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