

Internet Strategies

LEARNING OBJECTIVES

The material in this chapter prepares students to:

- Understand the operational advantages and disadvantages of doing business over the internet.
- Choose an appropriate distribution and inventory strategy for a brick-and-mortar retailer who will also compete on the internet.
- Select an appropriate customer service strategy for the internet.

In early March 2000, the NASDAQ composite index hit a record high of 5,049, largely because of Internet-based companies. The hype leading up to that time touted e-commerce as a vastly superior way to do business, a true leap forward, that would challenge every rule and assumption of conventional business. A year later, after NASDAQ lost 60% of its value, many of the firms that spearheaded the Internet frenzy had folded. According to the U.S. Department of Commerce, total retail sales in the United States in the 4th quarter of 2003 amounted to \$918 billion, with Internet sales comprising only \$17 billion, or just under 2%.

As the Internet “bubble” burst, many “pure-play,” or Internet-only firms, fell by the wayside. However, Internet strategies remain an important competitive strategy consideration—especially in the retail sector. Although still small when compared to the total economy, e-commerce retail sales¹ increased almost 220% from 1999 to 2003, far outpacing the annual 4% growth of retail in general. It is nearly impossible to find a large U.S. firm without an Internet presence to at least provide information. Further, the so-called “clicks-and-bricks” firms, or firms with a sales presence both on the Web and as a physical store, are now commonplace.

Operationally, Internet-based businesses face different structures, opportunities, and obstacles from those of traditional businesses. This chapter explores the inherently different ways to manage these different types of firms. Specifically, the operational

1. The definition of e-commerce sales is “sales of goods and services where an order is placed by the buyer or price and terms of sale are negotiated over an Internet, extranet, Electronic Data Interchange (EDI) network, electronic mail, or other online system. Payment may or may not be made online.” (Source: <http://www.commerce.gov>.)

difficulties inherent in the now dominant mixed traditional and Internet format are explained. The focus is on the B2C or business-to-consumer, retail context.

INTERNET MARKETING AND OPERATIONS ADVANTAGES

The strength of the Internet hype was based on several factors. Some basic expected effects of the Internet were supposed to produce the following:

- **Better products and services:** Especially software and games which could be interactive when on the Web. Maps that are not just references to streets, but can be queried for useful information, like the closest gas station to your current position.
- **More intelligent products and services:** A key example of building more intelligent services is Amazon.com, which is able to link past purchase behavior with current book publishing to automatically send e-mails to customers who are likely to purchase a particular item.

A potential advantage that most directly concerns operations and is responsible for much of the anticipated advantage of the Internet over traditional retail business, however, is lower prices for standard products. For many reasons, discussed in the next section, it is assumed that Internet-based firms can operate with a far lower cost structure than traditional brick-and-mortar firms. Further, it is assumed that it is far easier to comparison shop on the Internet. With physical stores, just comparing prices can be costly in terms of time and effort. Driving to, parking at, and shopping through a few retail stores may take all day, but comparing the book prices for the same book at Amazon.com and BarnesandNoble.com takes only a few mouse clicks.

Because of this ease of comparison shopping on the Internet and the far better prices that the format is supposed to deliver, it could be reasoned that key marketing concepts such as store brand identity, loss leaders, store displays, and store ambiance could become far less relevant, and low prices could become the key order winner for consumers.

For example, a traditional marketing tactic is to advertise prices below cost on a few items in a store—the loss leaders—to bring consumers into a store, hoping that they will then buy several more profitable items while they are physically in the store, because it is too inconvenient to comparison shop in many stores. However, a consumer can easily pick only the sale items shopping over the Internet, because a competitor is merely a click away.

In similar manner, the entire marketing thrust of a store might be rendered less vital. Stores attempt to meet a target market through the products they display for sale. Limited store space means only products that appeal to the main target market make it to the shelf. Theoretically, retail space is unlimited on the Internet. Consequently, an Internet presence can provide for an unbundling between image and products carried. For example, Amazon.com could carry every book possible, not just a certain subset.

Further, the ambiance of a store, composed of the store layout, juxtaposition of displays, music, scent, and other items, can create a shopping experience (see Chapter 6). When this experience is reduced to pixels on a 17-inch screen and sound from two small speakers, the potential effect of such marketing is muted.

In summary, the presumed cost advantages of Internet-based over traditional businesses, combined with the presumed comparison shopping advantages of Internet-based businesses, were supposed to overwhelm traditional, brick-and-mortar stores.

DIFFERENTIAL COST DRIVERS OF INTERNET AND TRADITIONAL FIRMS

These presumptions turned out to be incorrect on several fronts. The customer experience of a physical store is not just a comparison-shopping inconvenience, but a value-added feature. A customer can experience goods and services with all their senses—get the feel of fabric or the scent of a new perfume. This material, however, is discussed in depth in Chapter 6. Consequently, this chapter will focus on the presumed cost differences between Internet and traditional firms.

The main cost differences between Internet-based and brick-and-mortar firms include the following:

- **Bricks:** The cost of building and maintaining physical stores. As this is a more obvious cost, it will not be discussed in detail.
- **Taxes:** Federal legislation allowed Internet sales an advantage over traditional retail sales by exempting Internet sales from sales taxes. It is unlikely that this will be a sustained advantage.
- **Inventory and Personnel:** When working appropriately, Internet firms enjoy a large advantage over traditional firms in both the inventory and personnel required to run the operations of the firm.
- **Logistics:** Generally, Internet firms have a significant disadvantage versus traditional firms in logistics.

Inventory

The potential inventory savings in e-tailing is a prime example of the textbook “square root law” of combining normal distribution variances taught in nearly every statistics course. To review this statistical logic, consider N stores with independent and identically distributed demand. That is, each of the N stores, on average, has customers that buy the same amount, and their activity is not related to each other (a busy day at one store does not mean either a busy or a slack day at another store). Let us also assume that demand is normally distributed. The question is, how much inventory should be at each store?

Given the preceding assumptions, the stocking level for any given store is related to the service level the store wants to provide (a more detailed discussion of this topic can be found in Chapter 13). If the store wishes to make sure that, say, 95% of the order cycles do not have a stockout, it should stock $k = 1.645$ standard deviations of demand over the average demand, or $k\sigma$ units of “safety stock,” or stock that is not expected to sell, but is there just in case demand is heavy. Given N such stores, a specified service level of k standard deviations is achieved by stocking $k\sigma N$ units of safety stock.

However, a significant inventory advantage can be realized by replacing those N store locations with one central location. The variance of demand of the one central location is given by the formula:

$$\sigma^2 (\text{central location}) = \sigma^2 (\text{store 1}) + \sigma^2 (\text{store 2}) + \sigma^2 (\text{store 3}) + \dots + \sigma^2 (\text{store } N)$$

or

$$\sigma^2 (\text{central location}) = N \sigma^2 (\text{any one store})$$

So, the standard deviation is,

$$\sigma(\text{central location}) = N^{0.5} \sigma(\text{any one store})$$

If one could replace those N stores with a single warehouse linked to a Web site, only $k\sigma\sqrt{N}$ units of safety stock are necessary, rather than $k\sigma N$, hence the name *square root law*. To put some numbers to this general theory, consider replacing a chain of 1,000 bookstores with a Web site. Given a 95% service level on the latest Grisham novel that sells a mean of 15 books, standard deviation of 3, at each store (distributed normally), would mean $15(1,000) = 15,000$ books will be stocked to meet mean demand, and $1.645 \times 3(1,000) = 4,935$ books will be stocked just for safety stock in the retail chain, for a total of 19,935 books. Alternatively, 15,000 books will be stocked in addition to $1.645 \times 3(31.6) = 156$ books in safety stock, for a total of 15,156 in the Internet business.

However, this basic formula does not capture the true magnitude of the inventory benefits of an Internet-based facility. Retail demand for individual stock-keeping items often is characterized by a small mean demand with high variance, and often follows a different, more extreme, demand distribution than the normal distribution.² For example, 56% of dry goods at grocery stores average selling fewer than one unit per week (Kurt Salmon Associates, 1993), yet several units may be purchased in one day. These distinctions magnify the benefits substantially. For example, consider a book that sells an average of 0.5 per order cycle, with a variance of 6 in a 1,000-store system, with an appropriate demand distribution. To achieve a 98% service level (stockouts on 2% of order cycles), inventory of seven units should be stocked in each store, or 7,000 units chainwide. If those stores are replaced by a centralized inventory system, only 661 units are needed for a 98% service level.

Further, maintaining inventory record accuracy is a persistent problem for retailers (Fisher et al., 2000). Retailers hold more inventory due to the uncertainty of the actual inventory position. Record inaccuracy comes primarily from customer theft, customer misfiling, and shipment miscounts. The problems can be extreme, with one “very successful retailer . . . [who is] a leader in information systems” finding that store inventory records are inaccurate on 71% of their products (Raman, 2000, p. 100). This inventory inaccuracy also leads to the problem of “phantom stockouts,” in which goods may be in the store, but due primarily to customer reshelving, those goods cannot be found. One bookstore chain found that 19% of their stockouts were of this phantom type (Raman, 2000). Inventory accuracy is far less of an issue with a single facility that does not need to accommodate customers.

Personnel

The personnel required to handle customers in physical stores versus a Web site also favors an Internet business. The results are similar to the inventory situation: Fewer personnel are needed in a centralized system, such as a Web site or a telephone bank, than in de-centralized physical locations to provide the same level of service. The specific mathematics of personnel requirements are different, and are covered in the additional CD-ROM material to Chapter 14.

The basic reasoning why fewer personnel are necessary lies in the variability of serving customers and the variability of how customers want service. On average, a store may need five clerks, but on a busy day may need seven, so seven are hired.

2. The negative binomial distribution is cited as a typical retail demand distribution rather than the normal distribution (Agrawal and Smith, 1996, Downs et al., 2001). For a detailed explanation, see Chapter 13.

However, because only five are needed on average, employee utilization is $5/7 = 71\%$. When all stores are combined into one Web site, the high demand times from one area can correspond to the low demand times from another, so that for 1,000 stores that need 5,000 employees on average, only 5,500 may be needed for a peak time, or 91% utilization.

Logistics

A major cost advantage of the traditional system is in product distribution. The operational differences stem from the basic traditional versus Internet distribution strategies shown in Figure 3.1. Traditional retailers often employ what is called an “arborescent” distribution strategy with truckloads or train carloads proceeding from central warehouses to regional facilities, then regional facilities sending pallet loads to retail outlets. Conveniently, customers themselves provide the last link from the retail stores to their homes. The term *arborescent* describes the tree-like shapes of the diagram. Its flow always goes from fewer and larger facilities to more numerous and smaller facilities, with facilities not normally sending product to another facility at the same level.

Within the prototypical Internet strategy, which is also the prototypical catalog merchant strategy, central facilities send one-off products directly to customers. This structure is subject to a severe disadvantage in distribution costs. The cost per unit of product of shipping train car or full truckloads of goods to a few hundred different retail store addresses is trivial compared to the cost of delivering individual units to a few hundred million different customer addresses. Further, returned items—or reverse logistics—are a far larger problem for an Internet provider than a traditional retailer. Returned items at a traditional retailer are a small percentage of sales, whereas return items from Internet merchants can approach 30%. At a traditional store a purchaser is able to view and touch the actual item before purchase, whereas in an Internet transaction, a 6-inch visual item display on a computer screen may not accurately characterize the item. Also, many returned items stay in traditional stores and go back on the retail shelf, but a wrong size or color for an Internet merchant must be mailed back to the merchant and placed back in the right spot in a vast warehouse.

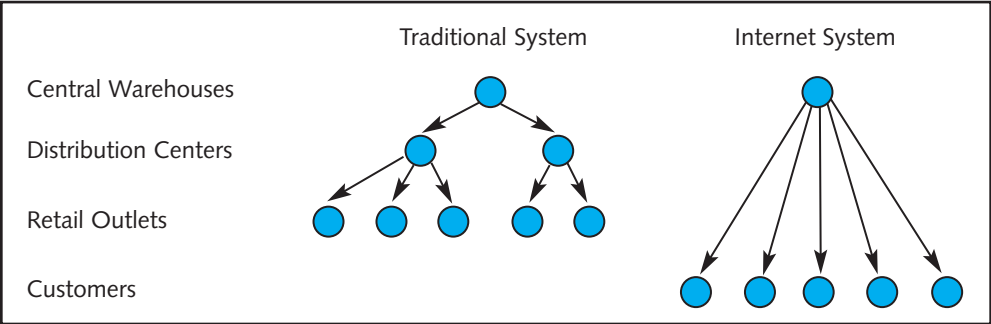
This description, however, presents a best-case scenario of the typical Internet warehouse. Consider, for example, that Amazon.com sells several different types of items stored in different warehouses located in different parts of the country. The interface over the computer appears seamless, but an individual order may need to be combined from several different warehouses to the customer—and customers typically don’t wish to pay multiple shipping charges.

STRATEGIES FOR MIXED TRADITIONAL AND INTERNET RETAILERS

It would seem clear that a pure Internet merchant would choose the Internet system in Figure 3.1 and a pure retailer would choose a traditional system. However, as noted previously, the combined Internet/traditional retailer appears to be emerging as the dominant business model. The inherent difficulty for the combined back office is that these two systems cannot be integrated easily.

Distribution centers for traditional retailers require wide aisle widths, so forklifts can easily pass, and the aisle heights reach as high as the forks on a forklift truck will go. Because of these heights, the floors sometimes are laid with the aid of lasers to eliminate small imbalances on the ground that can magnify into a dangerous

FIGURE 3.1 *Traditional Versus Digital Distribution Strategies*



imbalance when loading cargo that is 40 feet in the air. They move product by the pallet load, where a forklift is most efficient. Packing materials tend to be “palletizers,” which rotate large pallets with multiple hundreds of pounds of goods to wrap them in plastic wrap, which is then treated to tighten it. Forklifts then load the wrapped pallets on to trucks for delivery to a few stores.

An Internet-based business, however, usually runs a pick-and-pack operation, where aisles are narrow—only wide enough to accommodate a person—and short in height since humans have to reach for items. Items are stored on shelves in open boxes, because one item at a time will be taken, rather than a pallet load. Packing is for individual items, usually for pickup by a firm such as UPS. These items, and a host of others, preclude directly combining pick-and-pack operations with those that focus on delivering pallet-loads of goods.

A general way to think about the operational choices involved is captured with the inventory and shipping options on Figure 3.2. For inventories, firms can make a strategic decision to share inventory between their Web and traditional retail business (Integrated) or keep inventories segregated. In terms of shipping to customers, a general choice must also be made between shipping in bulk or shipping single items as they are ordered. Those not familiar with bulk shipping of Internet-ordered consumer items may be unaware of this option, but it is used by several firms.

FIGURE 3.2 *Inventory and Shipping Strategies for Combined Internet/Traditional Retailers*

Traditional/Internet Inventory			
	Integrated	Cost Minimizer	Professional Shopper
	Segregated	Transportation Sharing	Dedicated Systems
		Bulk	Single-Item
Internet Shipping			

Firms apply several different strategies with no single strategy emerging as dominant. Some firms, such as JCPenney, fall in the Dedicated Systems category; corporate divisions are entirely separate, with separate warehouse systems for the retail side and the catalog/Internet side. The drawbacks of this solution include the excess inventories related to operating segregated systems and excess distribution costs. Approximately 60% of JCPenney's Internet customers pick up goods ordered online at a JCPenney-owned store rather than have them delivered to their home. Yet, those goods are still shipped from the Internet division warehouse rather than being pulled from the shelves of the store that hands over the product. Many other firms, such as Wal-Mart, Macy's, and Bloomingdale's, take this segregation strategy a step further by outsourcing all their Internet orders to third-party firms.

Another strategy that attempts to integrate back-office systems could be called the Professional Shopper strategy. According to Andersen Consulting, six retailers adopted this strategy (Andersen Consulting, 2000). Here, when an Internet order is placed, a store employee walks the aisles of a retail outlet and picks the order. The downside of this strategy is both the cost and filling an order completely. Cost-wise, Internet orders are doomed to be priced at retail plus shipping and handling. It also deprives firms of the basic inventory and personnel benefits of the Internet model already discussed. Further, due to the inventory accuracy problems discussed earlier, many orders may be incomplete. Even when the computer says two are on the shelf, no product may actually be there for the customer. A professional shopper cannot make the judgment for a customer as to whether that customer would like a close substitute or would prefer to do without the item entirely. This concern is real in some industries, such as the grocery industry, which averages 8%–10% stockouts. This strategy also limits the product breadth on the Internet to the same as in the retail store, negating one of the basic promises of Internet-based commerce.

Internet goods shipping can also take place in bulk. Although most Internet businesses package items one at a time and use a carrier such as UPS to deliver goods, others take a different approach. In the United States, Grolier and Fingerhut pick orders one at a time, but combine goods being sent to specific parts of the country on their own trucks. This option is more cost effective, but it is also more time consuming for the customer. When other businesses, such as Wal-Mart and Macy's, outsource their Internet business to these firms, these goods shippers have the opportunity to become Cost Minimizers.

Opportunities also exist for Transportation Sharing in firms such as JCPenney and 7-Eleven of Japan. Both firms serve as sites for customer pickup, so that individually picked Internet-ordered goods could arrive in the same transportation system as traditional goods. With more than 8,000 stores throughout Japan, a 7-Eleven is nearly always close by for picking up goods. Delivering goods to the so-called "last mile," or to the customer's home, is expensive, so transportation sharing systems show promise as a means to tackle this problem.

Both of the dimensions in Figure 3.2 are more complex than the figure can convey. Rather than being two discrete choices, they represent a spectrum of strategic choices as shown in Figures 3.3 and 3.4. Internet and traditional systems can share inventory at either the distribution center or retail store level; that is, the same distribution center that performs order fulfillment for the retail network can perform order fulfillment for Web orders. This level of integration gives the highest level of inventory cost benefit, but warehouses are typically not configured to do both store delivery and individual item pick.

FIGURE 3.3 *Inventory Segregation of Internet and Traditional Retail: Where Internet Order Picking Occurs*

High			Low		
Bulk distribution center	Break-bulk distribution center	Flagship retail store	Retail stores	Contiguous distribution center	Dedicated distribution center

FIGURE 3.4 *Options for Delivering Internet Orders*

Bulk Shipments		Individual Shipments	
Customer pickup at retail store/Retail store order pick	Customer pickup at retail store/Delivery from distribution center	Bulk from distribution center to general area/Individual delivery to home	Shipping direct to customer home

One choice between a completely segregated distribution center system and the integrated systems approach consists of contiguous Web and traditional retail warehouses. Inventory savings are realized through joint delivery of goods to the same location and the ability to stock the Web warehouse with a forklift from the other side of a wall, rather than with a truck from a supplier.

The choices for delivering Web-based orders can also be represented in a spectrum between bulk delivery and the last-mile delivery to customer homes. At one cost extreme, if customers pick up orders at the same retail establishment that orders were kitted from—a traditional call-in option used for years, and an option used by some Internet grocers now—the inventory was essentially delivered in bulk from the distribution center, and no additional delivery charge is needed.

CUSTOMER SERVICE AND THE INTERNET

Not only are businesses adapting distribution and inventory strategies for the Internet, but the rapid growth and development of e-commerce Web sites are significantly changing the face of customer service management. Today, companies that wish to integrate an Internet presence must perform customer service functions through multiple channels, including in-person, traditional mail, phone, Web sites, live online chat, and e-mail. The cost advantages of Internet transactions over traditional media are impressive. (See Table 3.1.) Although businesses are able to reduce their costs through self-service channels such as automated phone systems and their Internet sites, customers do not necessarily respond positively to these changes. Reports indicate that customer satisfaction with most services declined in the last five years. Companies dropped the ball when it came to satisfaction as they applied technology to handle calls and other Internet transactions more cost-efficiently without considering customer satisfaction issues in the process. Customers grow increasingly frustrated with automated phone systems and look to Internet services to address their pent-up demand for better customer service. But, much to their dismay, they often face new challenges with Internet sites. Many find the sites difficult to navigate, abandon their shopping carts before purchasing, have difficulty understanding new service concepts such as auction sites, encounter long response times and misunderstandings with e-mail queries, and attempt to solve problems with new e-businesses that have inadequate service delivery systems.

TABLE 3.1 *Cost of Service Transactions*

Process	Unit Cost	% of Telephone Cost
<i>Traditional Means</i>		
Letter	\$12.45	451%
Telephone	2.76	100
<i>Web</i>		
Billing query—fully automated (occasional operator intervention)	0.27	10
Billing query through customer online account	0.14	5
Query that requires agent response back to customer	1.38	50
Operational update available through online access	0.14	5
Operational query that can have automated response (occasional operator intervention)	0.27	10

Additionally, many companies were caught completely unprepared for the tidal wave of e-mails they received after posting an e-mail address on their ads or products, as illustrated in the case discussed in Service Operations Management Practices: If You Build It, They Will Come. For most sectors, e-mail volume has grown faster than the staff hired to deal with it. After adding Internet customer service, Cisco found that the number of customer service transactions increased dramatically along with the need for staff; Amazon.com logs 20,000 customer service problems each day and uses real people to answer each individual e-mail.

Current measures of Internet customer service show dismal results. In terms of e-mail responsiveness, even though 47% of all e-mail inquiries receive a response within 24 hours, 37% never receive any response (Voss, 2000). The online shopping experience encounters similar problems. Two-thirds of all online shoppers abandon their shopping carts and the majority claim that the transaction was not completed due to lack of information. Finally, 90% of online shoppers claim that they would prefer some type of human contact (Durr, 2000). Currently only 1% of all e-retailers offers some type of live support (phone or live interactive text chatting), but this figure could rapidly increase as Web sites worldwide potentially sacrifice \$3.2 billion in annual sales because they are not doing enough about customer support. Service companies venturing onto the Internet need to start by asking themselves the following questions about their Internet presence:

- Will customers buy anything or get all the information they need on the site?
- Will customers return?
- Will customers understand the business concept?
- Will the business be able to handle outbound and inbound (returns) volume?
- Will customers prefer self-serve or some kind of human contact?
- Will the Internet customer service be in-house or provided through a third-party vendor?
- What are the metrics and goals for customer service?

To address these questions, the next section covers the fundamentals of Internet service design.

SERVICE OPERATIONS MANAGEMENT PRACTICES

If You Build It, They Will Come

Wasatch Brewery in Park City, Utah, introduced an ad campaign for its beers tied into Utah's location for the 2002 Olympics. International periodicals covered their controversial introduction of Polygamy Porter and campaign slogans such as "when one is not enough." The brewery's Web site posted an e-mail address encouraging people interested in buying T-shirts

and other merchandise to contact them. Soon after the press coverage, the business received hundreds of e-mails every day requesting merchandise. Unfortunately, the brewery never anticipated this kind of demand and was caught without a system in place to deal effectively with this volume of Internet sales or e-mail response.

INTERNET SERVICE DESIGN

Several key strategic design choices must be made when developing good customer service on the Web. They include product characteristics (customization level, complexity, customer knowledge, and capacity), process characteristics (technology and task), and touch points (customer, employees, and system interaction). Each of these decisions affects the final outcome measured by performance metrics (customer satisfaction, loyalty, market, and economic indicators) as shown in Figure 3.5.

Product

The product itself sets precedence for what type of activity will happen on the Internet site and the service design. First, the service provider must define the intent of the site. For example, a cell phone company must provide sales and information or troubleshooting services. A restaurant may use the Web as an information source (like the Yellow Pages) by providing only the current menu, reviews, and directions. On the other hand, the restaurant may want to extend interactive capabilities to build relationships with its client base and offer capabilities for making reservations, voting

FIGURE 3.5 *Service Design Model*

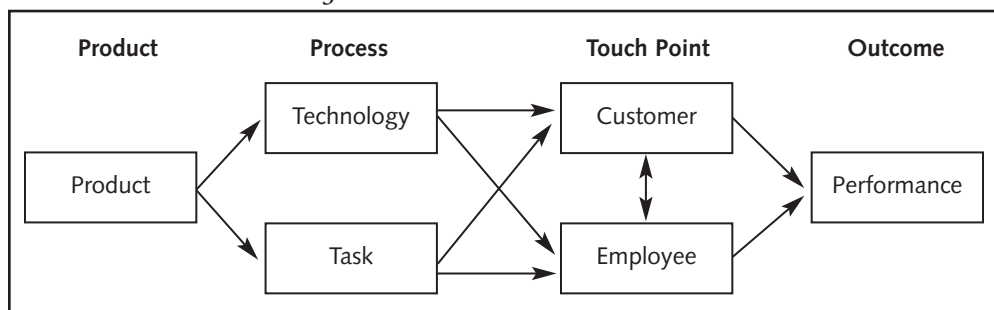
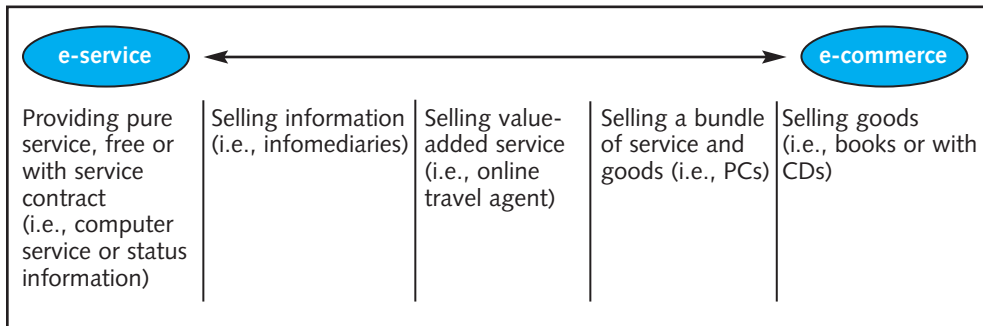


FIGURE 3.6 *Range of Internet Services*

on favorite menu items, or viewing streaming video of its sushi bar. Thus Internet services can fall between pure e-service and e-commerce as shown in Figure 3.6, depending on the product offering. The corresponding Internet service design depends on the product's customization level, complexity, customer knowledge, and expected volume of interactions.

For certain services, it is important to convey a highly customized environment for each customer, and the customer must interact with a real person to close a sale. For example, Post Ranch Inn in Big Sur, California, uses its Web site to show pictures of the property and provide basic information such as room rates and amenities. Because of its highly unique lodging, however, customers must speak to an agent so the agent can fit the customer needs to an appropriate room. Car sales sites use phone agents to try to close deals and match clients to available models at dealerships in their geographic area.

Businesses expecting high volumes of customer service inquiries look to the Internet to alleviate some of the demand on phone and on-site transactions. Because of the available technologies, many Internet services can provide mass customization for this volume business. Businesses with sensitive material, such as financial services and banking (Fidelity or Bank One), use personalized pages to create trust. Those trying to create customer loyalty and increased sales with certain customer groups (Dell, eBay, or Amazon.com) create customized environments to stimulate impulse spending and suggest matching products using the customer's previous purchases or stated interests. In this case, the personalized pages provide only information that the customer (or customer segment) needs to see.

Product complexity and customer's product knowledge are both variables that influence the amount of customer interaction and Internet service design. When customers need to troubleshoot computers, software, or cell phones, the Internet site can provide in-depth service manuals/help sites for this equipment. Generally experienced users can decipher these manuals and self-serve, but the average layperson requires additional interaction with a service representative. For high-volume services, it is important to make the self-help as user-friendly as possible to capture the widest range of customers with varying degrees of product knowledge.

Processes

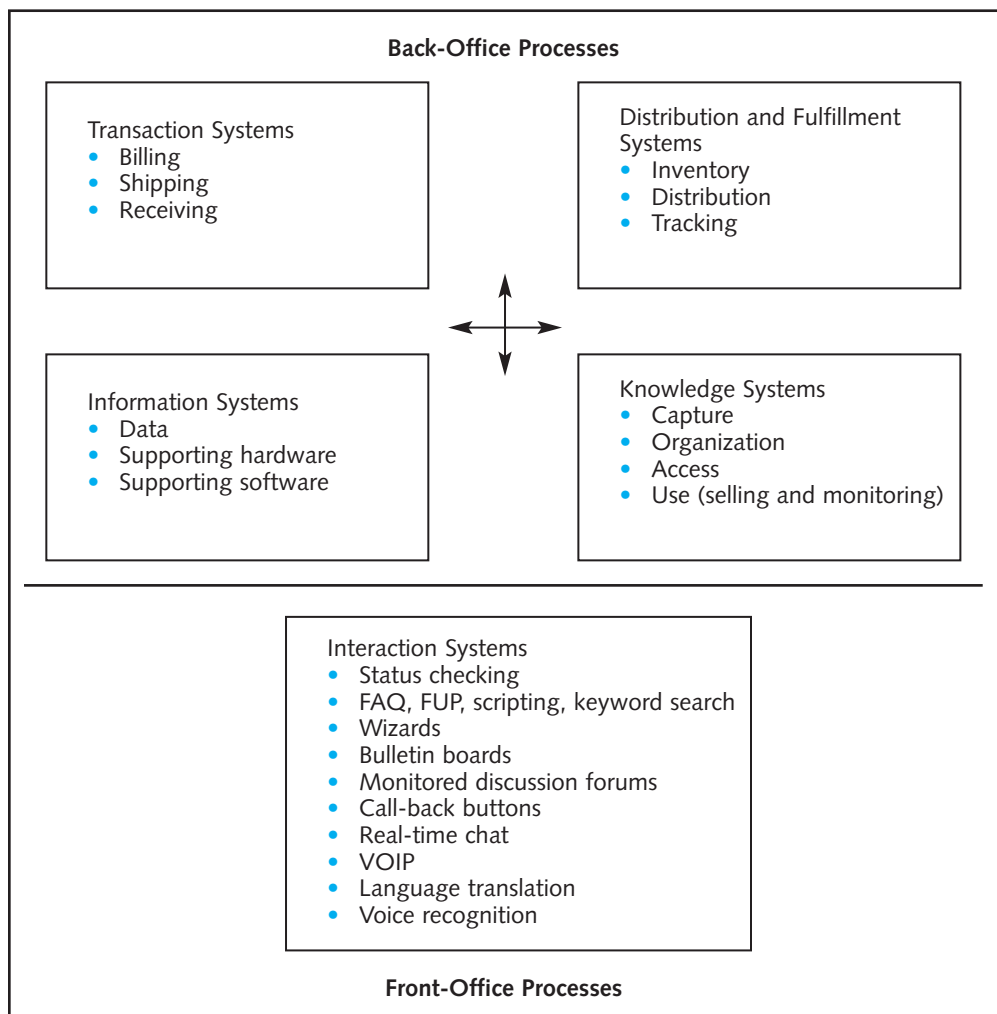
From a service operations perspective, two key design elements must be considered under processes: technology and task. Technology supports both front- and back-office operations. Here, we will restrict our discussions of task to the customer service support activities.

Technology

The five basic process technology systems that any Internet service should consider when dealing with the customer service side of the business are shown in Figure 3.7. The back-office technologies cover all the supporting processes such as transaction, distribution and fulfillment, information, and knowledge management systems. The front office requires the interaction technologies that may overlap with the back-office information systems.

In the previous section, we covered the distribution and fulfillment processes so here we limit discussion to the remaining systems. When designing an Internet presence, the *transaction system* provides a key ingredient because this process covers the money and product flows (billing, shipping, receiving, and returns). Once customers pay for the goods or service, they want to receive their product. And, if the product or service is unsatisfactory, they are equally interested in convenient return and payment credit. Billing security or the ability to have secure credit card transactions over the Internet, accurate status on product availability and receiving, prompt shipment

FIGURE 3.7 Internet Service Processes



with tracking, and a convenient return and payment credit represent critical customer concerns. Ideally, both the customer service representative and the customer should be able to monitor the whole transaction cycle. A good example of this process can be found on the Amazon.com site (Figure 3.8). Much to the dismay of many e-commerce businesses, product returns are much larger than at their bricks-and-mortar counterparts at 30% compared to 5%, respectively. Many e-services subcontract the return cycle to third-party vendors to reduce reverse supply chain costs and tracking. These vendors perform these functions for less cost due to transportation and other overhead sharing, which creates economies of scope and scale.

The information system processes cover data management, the hardware and software systems, and integration of all the other systems that support front- and back-office operations. New customer service applications and hardware entering the market influence the interaction processes. Although current Enterprise Resource Planning (ERP) systems provide seamless integration of many of the other business processes, these new applications can be challenging to integrate.

The knowledge system process involves the capture, organization, access, and use of knowledge. The main focus of the knowledge system is customer relationship

FIGURE 3.8: Amazon.com's Internet Order Tracking

amazon.com | [VIEW CART](#) | [WISH LIST](#) | [YOUR ACCOUNT](#) | [HELP](#)

[WELCOME](#) | [MADELEINE'S STORE](#) | [BOOKS](#) | [APPAREL & ACCESSORIES](#) | [ELECTRONICS](#) | [TOYS & GAMES](#) | [HOME & GARDEN](#) | [TRAVEL](#) | [SEE MORE STORES](#)

[Your Account](#) > Where's My Stuff? > Open and recently shipped orders

See more [GO](#) [Need help using this page?](#)

Track Packages
You may track most shipped packages (depending on the carrier used for delivery) by clicking the corresponding yellow "Track your package" button below. For any items that have not yet shipped, please use our delivery estimate as a guideline.

Completed Orders

Order Date: Jul 19, 2004
Order #: 103-4344969-7619013
Recipient: Madeleine Pullman

Items shipped on Jul 19, 2004:
Delivery estimate: Jul 23, 2004 - Jul 27, 2004
1 package via UPS Ground [Track your package](#)

- 1 of The Root Cause Analysis Handbook: A Simplified Approach to Identifying, Correcting, and Reporting Workplace Errors
- 1 of New Service Development and Innovation in the New Economy

[View order](#)

[Order Summary](#) > Shipment Tracking

UPS

Ship Method: UPS Ground
Tracking Number: 1ZA7815W0323856147
Status: IN TRANSIT
Shipment Date: Jul 20, 2004
Destination: Boulder, CO, United States
Order ID: 103-4344969-7619013

Date	Time	Location Service Area	Checkpoint Details
Jul 22, 2004	04:06:00 AM	BOULDER CO US	OUT FOR DELIVERY
Jul 22, 2004	03:15:00 AM	BOULDER CO US	ARRIVAL SCAN
Jul 21, 2004	10:38:00 PM	COMMERCE CITY CO US	DEPARTURE SCAN
Jul 21, 2004	03:39:21 PM	COMMERCE CITY CO US	LOCATION SCAN
Jul 21, 2004	01:31:00 PM	COMMERCE CITY CO US	ARRIVAL SCAN
Jul 20, 2004	10:20:00 AM	HERMISTON OR US	DEPARTURE SCAN
Jul 20, 2004	09:45:00 AM	HERMISTON OR US	ARRIVAL SCAN
Jul 20, 2004	06:04:00 AM	PORTLAND OR US	DEPARTURE SCAN
Jul 20, 2004	01:56:53 AM	Roseburg OR USA	SHIPPED
Jul 20, 2004	01:02:00 AM	PORTLAND OR US	ARRIVAL SCAN
Jul 19, 2004	10:00:28 PM	US	BILLING INFORMATION RECEIVED
Jul 19, 2004	09:12:00 PM	ROSEBURG OR US	DEPARTURE SCAN
Jul 19, 2004	06:10:24 PM	ROSEBURG OR US	ORIGIN SCAN

management (CRM), but it can also be used for new product development, quality monitoring, and improvement. Using the information gained through CRM, companies can choose how they interact with their customers. It allows them to build better relationships with customers than previously possible in the offline world. Amazon.com is the most visible Internet presence with its CRM program. Their system determines customer preferences and segments and automatically sends promotional e-mails and banners to the targeted customers about their interest areas. Well-managed knowledge systems permit firms to choose to whom they wish to offer specific services and at what quality level. As a selling tool, these systems encourage repeat customers and higher revenues per transaction at low interaction costs. Additionally, the knowledge management process monitors the customer interactions via Internet, phone, e-mail, and other channels to identify quality problems, problem resolution, sales strategies, and other patterns that could improve product and service offerings.

On the front office side, the customer interaction process is supported by a number of technologies. These interaction systems have exploded over the last three years with media for enhancing the customer experience. Simple phone interactions with customer service agents evolved into multiple options and supporting technologies. *Agent Supporting Technologies* include enhanced scripting capabilities such as Wizards, which create templates for customer interaction, and rapid search enhancements for Keywords, FAQ (Frequently Asked Questions), and FUP (Frequently Used Phrases). Additionally, *Content & Quality Supporting Technologies* provide agents with programs that automatically check for spelling, grammar, correct company identification, and “marketing image” language (for agents covering multiple vendor groups), e-mail-intelligent systems that route and track inbound mail, and translation software to interact with different language customers. *Customer Supporting Technologies* offer systems that help customers find information by themselves through searching enhancements, status checking, monitored discussion forums, and bulletin boards. The discussion forums and bulletin boards allow customers to answer queries for each other, and these methods help create a loyal community. *Interaction Technologies* cover all enhancements to real-time communication such as interactive voice response (IVR) in which a caller interacts with integrated database with digital or speech recognition; automated virtual representatives (vReps), computer-generated images on the Web site that answer customer questions in real time using natural language; voice over Internet phone (VOIP), the ability to communicate verbally through computers instead of phone line; call-back buttons; and, real-time chat, the ability to communicate in written text over an Internet site.

Task

When customers interact with an Internet service, their communication is generally task-specific. The task could be a simple inquiry or information search, purchase intent, problem solving, or complaint. Companies would like customers to perform all these tasks online without human interaction because it costs a fraction of traditional overhead. But, it is important to recognize that certain tasks or certain customer groups respond more favorably to real-time interactions. Most customers require speed, accuracy, and relevant information for all tasks. As we mentioned previously, 90% of all customers would prefer to interact with a human being. So how should the service provider reconcile the trade-off between customer preferences and cost? A look at the task and technology options that best satisfy the customer is the first step.

For example, sales are generally enhanced by live interaction. The agent can quickly focus on the customer needs and up-sell to more expensive products or additional services or accessories. Using live chat, an agent can actually communicate with up to four customers simultaneously due to time lags in writing and viewing text and Internet pages. Reviews of live chat show an increase in sales and customer satisfaction with e-services. Comparing live chat to unassisted Internet sales, Camera World realized 25% sales closure versus 3%, HomeTownStores.com experienced a 30% sales increase, and Consumer Financial Network's customer satisfaction index increased 5%. Similarly, simple inquiries can turn into sales opportunities more readily with real-time interactions.

Another important task is dealing with complaints. Complaints tend to be personalized. Generally, the customer can choose to e-mail the company, call on the phone, or use real-time Internet interaction. Without question, e-mail offers the least effective vehicle for customer complaint resolution. Normally e-mail is fraught with miscommunication and time lags. In addition, companies ignore nearly one-third of all e-mails. Customer anger with the company can escalate quickly, and those customers often tell every one of their friends and an Internet chat community about their negative experience with the company. The best vehicle for complaint resolution is verbal real-time interaction with a skilled agent. Good customer service agents listen to the tone of the client and can quickly deescalate anger and frustration.

Finally, it is important to give customers options for contacting the company instead of forcing them to self-serve. This way, they can choose the technology that they feel best fits their task. Experienced users and self-servers can use all the automated aspects of the Internet site, while the "high touch" users can interact with a real person.

CUSTOMER CONTACT CENTERS

Companies may address this new customer service demand via Web and call center integration, places where the customer can access a real person via a variety of means. These expanded call centers are known as customer contact centers (CCC). The customer contact center usually offers 24/7 support for multiple touch points with multimedia support. At a minimum, CCCs must now cover phone and e-mail with more advanced centers supporting online chat, bulletin boards, chat rooms, I-telephony, and other options. Similar to trends in call center management, the leading CCCs are outsourced or hosted by third-party vendors.

Traditional call centers employ a large number of agents to handle relatively few accounts. Thus the management benefits from cost saving labor-scheduling models that match labor supply to variable daily and weekly demand. These models assume that all employees perform the same general task of answering different types of phone calls with stochastic demand and service length and assume call center employees focus on one customer at a time and that all customers are responded to in real-time with minimal queue time.

The new multitouch point centers service a large number of accounts with a small number of agents. Depending on the account needs, vendors offer a variety of pricing and "pick and choose" service options.

OUTCOMES

We discussed the relationship between the various resources (employees, technologies, and processes) and the needs of the customer and clients. Ultimately, companies

need to answer the following question: What are the issues that most affect both delivery of superior customer service and the bottom line? Clearly most companies want to maximize customer service, loyalty, and sales closure. Because Internet services are relatively new, only informal rules of thumb guide operations strategies. For example, "E-mails should be answered within 24 hours." Other important measures of performance include the following:

- Employee satisfaction
- Customer satisfaction
- Response time between chat or e-mail
- Form (greeting, language, offering additional help, proper template use)
- Employee knowledge of topic during interaction
- Customer regard
- Intention for repeat encounter

To ensure desirable outcomes, several important relationships must be considered. First, the outcomes should be measured. Every Internet service needs access to metrics such as average e-mail response time and the time for problem resolution. Second, it is important to match the employees to the task, support employees with training and technologies to improve their efficiency and effectiveness, and allow customers to choose low or high touch for their interaction with the company. Finally, global quality measures such as repurchase intent and customer satisfaction with the Internet presence should be constantly monitored for potential problems and continuous improvement.

Summary

Internet service providers must consider back-room supply chain management as well as front-room and Web site interaction with customers. In this chapter we covered emerging models for distribution and inventory in hybrid clicks-and-bricks services organization as well as the operations management issues found in the front room, the interaction with the site, and customer service support. Many Internet services perish during their first few years primarily from lack of a holistic understanding of the entire operation. Too much emphasis on the Web site or portal with too little emphasis on the supporting supply chain and customer service has caused the demise of many initially popular companies.

Review Questions

1. What are the myths and realities about Internet marketing and operational advantages?
2. How do the primary distribution systems and inventory costs differ between "bricks" and "clicks" firms?
3. Describe the four different strategies for mixed and traditional retailers.
4. What are the differences between "bricks" and "clicks" warehouse design?
5. How do the process characteristics of technology and task interact to affect customer service?
6. In what ways does a customer contact center differ from a traditional call-in center?

Selected Bibliography

- Agrawal, N., and S. Smith. 1996. Estimating Negative Binomial Demand for Retail Inventory Management with Unobservable Lost Sales. *Naval Research Logistics*, 43, 839-861.
- Andersen Consulting. 2000. Who Does the Best job of E-Fulfillment? *Logistics Magazine* (November), 59-66.
- Downs, B., Metters, R., and J. Semple. 2001. Managing Inventory with Multiple Products, Lags in Delivery, Resource Constraints, and Lost Sales: A Mathematical Programming Approach. *Management Science*, 47(3), 464-479.
- Durr, W. 2000. Turning Browsers into Buyers Using Your Call Centers. *Call Center Solutions*, 19(3), 68-70.
- Fisher, M., Raman, A., and B. McClelland. 2000. Rocket Science Retailing Is Almost Here. *Harvard Business Review*, 78(4), 115-124.
- Kurt Salmon Associates. 1993. *Efficient Consumer Response: Enhancing Consumer Value in the Grocery Industry*. Author.
- Raman, A. 2000. Retail Data Quality: Evidence, Causes, Costs, and Fixes. *Technology in Society*, 22, 97-109.
- Voss, C., 2000. eService Key Trends. Working paper, London Business School, London, England.

CASE STUDY

PeopleSupport.com

PeopleSupport.com provides multitouch-point customer support for companies with an Internet presence (henceforth referred to as the “clients”). Using innovative chat technology, PeopleSupport.com gives customers the option of contacting a service representative directly via online chat, e-mail response, or traditional telephone support from their clients’ Web sites. With the interactive chat option, customers click a “chat” button and are seamlessly connected via personal chat to an eRep (an online representative) who has the ability to “push” Web content, optimizing the interactive nature of the Internet. This live assistance function allows for crucial questions, potential objections, and various concerns to be addressed in real-time. If customers choose the e-mail option, PeopleSupport.com has the expertise to handle clients’ inbound e-mail management needs including intelligent e-mail routing, escalation processes, and overflow or seasonal e-mail management programs. The e-mail response function blends e-mail routing and auto-suggest functions (searches for certain words in the customer email and provides suggested responses) with the ability to provide a personal touch to each reply. Currently, the company’s business is 60% e-mail, 30% chat, and 10% phone interactions.

There are three ways that PeopleSupport.com generates revenue from clients. First, clients can choose to pay per session. Any time there is some interaction between the eRep and the customer, it is considered a session. Second, clients can pay per minute (measured by the length of chat, e-mail, or voice). Finally, clients can pay hourly for their own designated eReps. The dedicated model requires 12 to 16 employees per week to handle a 24/7 schedule. This method is usually appropriate for high volume companies (toys at Christmas) or complex product or information companies (cell phone troubleshooting).

PeopleSupport.com represents many different clients. A partial list of clients is shown in Table 3.2. The typical client uses PeopleSupport.com to handle all their Web-based customer service for e-mail and chat. The client and his or her PeopleSupport.com sales representative develop training materials, frequently used sentences, and other employee support materials. The average employee training time can take from three days for simple sites and products to more than three weeks for technically sophisticated products such as cell phone customer service. The company employs several hundred full-time-equivalent employees, approximately half of whom are dedicated to a specific client. The remaining employees are members of teams that represent between three and fifteen different clients at any given time.

Given this structure of multitask teams (an individual can do e-mail, phones, and live chat simultaneously) and multiclient mix teams, the company is able to keep level staffing patterns rather than the staggered shift schedules usually seen in call-center centers. For example, Vendor M’s customers are predominately teenagers who use the live chat from hours after school until midnight, while Vendor C’s customers call for car part information from early morning through traditional business hours.

CASE STUDY

TABLE 3.2: *Vendor Types*

Vendor	Products/Services	Touch Points
Vendor A	Technical software products	E-mail
Vendor B	Cell phone	E-mail & chat
Vendor C	Car parts	E-mail, chat, & phone
Vendor D	Car sales	E-mail, chat, & phone
Vendor E	Cooking products	E-mail, chat, & phone
Vendor F	PeopleSupport.com demonstration	E-mail, chat, phone, & Voice-IP
Vendor G	Movie studio merchandise	E-mail & chat
Vendor H	Shopping network	E-mail, chat, & phone
Vendor I	Toys	E-mail & chat
Vendor J	High end clothing	E-mail & chat
Vendor K	Retail auction site	E-mail & chat
Vendor L	Beauty products	E-mail & chat
Vendor M	Teenage info & products	E-mail & chat
Vendor N	Audio books	E-mail & chat
Vendor O	Financial services	E-mail & chat

Vendor E's customers (cooking products) generally use both live chat and phone support from 8 A.M. until 3 P.M. and then again during the after dinner hours.

Supporting technologies help those employees covering five to eight different businesses simultaneously. These technologies include appropriate scripts, frequently used sentences (FUSs), and frequently used paragraphs (FUPs) for a client's Web site. For example, the high-end Italian clothing client expects formal and respectful language interactions while the teenage surfing product client expects informal "surf culture" language appropriate for that product category. According to one eRep:

"FUP/FUS works best because you portray how the company wants to be represented rather than in your own words. This also eliminates typing out the same answer over and over again. However, they don't work with very specific answers and when you don't want to sound like you are a robot."

This type of contact center with multiple customers and contact points has many advantages over a traditional call-in center because of the ability to create a more balanced employee schedule, offer more interesting and varied work to employees, and offer clients revenue generating rather than cost producing activities. On the other hand, the role of a contact center employee is much more complex than an in-house, call-center employee, thus hiring activities; team design and support; and employee scheduling, training, measuring, and monitoring are crucial to the client and customer experience. Many employees prefer to use the live chat function rather than the phone interaction as indicated by one employee:

CASE STUDY

“Customer service over chat is easier than phone. When customers are irate, it’s easier to let it roll off your back. If you don’t know the answer to a chat question, you can ask someone next to you which is hard with phone calls. About 75% of our work relates to complaints.”

But the conflicting nature of covering multiple vendors and tasks is pointed out by another employee:

“If customers are looking for particular pants and they can’t find them, we’re supposed to sell them another type. But, I often forget because we’re so used to dealing with complaints that it’s hard to switch modes. The clothing and teenage products companies could benefit from more selling, but these companies don’t give any incentives to the eReps and we get limited feedback or no feedback on our job performance from the clients. It seems like both companies aren’t really interested in selling the product, just dealing with the complaints.”

Questions:

1. Given the mix of clients currently using PeopleSupport.com, what kinds of employees (background and skill set) do you suggest that the contact center hire and which clients and tasks should they “bundle together” versus using a designated eRep?
2. What types of customer satisfaction measures should be monitored and rewarded given that customers contact the center for problem resolution, Web site help, or sales support? How could they actually measure these items? Which contact technologies are best for each customer purpose?
3. What are the advantages and disadvantages of using scripting in customer contact centers? How would you address these disadvantages?