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The duel
for the doorstep

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On-line vendors must offer customers complete satisfaction
or lose them to off-line rivals.

Santa delivered an important message to on-line enterprises last Christmas: get your back-office fulfillment right or pay the price in lost customers and sales. For while most World Wide Web sites are now slick enough to ensure a satisfactory experience for consumers at the point of purchase, few of the companies behind those sites can now execute the rest of the transaction with the same degree of efficiency. Unless this problem is put right, it will prove costly as the novelty of on-line shopping fades—and, with it, shoppers' forbearance.

Acquiring and retaining customers on-line means providing complete satisfaction from initial promise to delivery at the door.[1] This is not a simple,

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and certainly not a "virtual," proposition. Indeed, on-line fulfillment forces Internet companies to do far more than enter orders, pick the stock, package it, and ship—the standard drill in the brick-and-mortar world that electronic retailers are supposed to have left behind. Electronic retailers must also answer the queries of customers quickly and accurately (while learning their buying habits and preferences) and make good use of the data generated during transactions. Moreover, e-tailers must integrate on-line orders and returns with off-line ones, and do so in a way that makes household delivery of small orders economically viable.

Beware: Mishandling the fulfillment process is capable of seriously **damaging the reputation** of an established brand that goes on-line

Dealing with these challenges makes on-line fulfillment more difficult than its off-line counterpart. The fact that mishandling the fulfillment process can seriously damage an established brand's reputation raises the stakes even higher. Yet a few companies are getting it right. We analyzed some of them to pinpoint the common strategies that characterize their achievement.
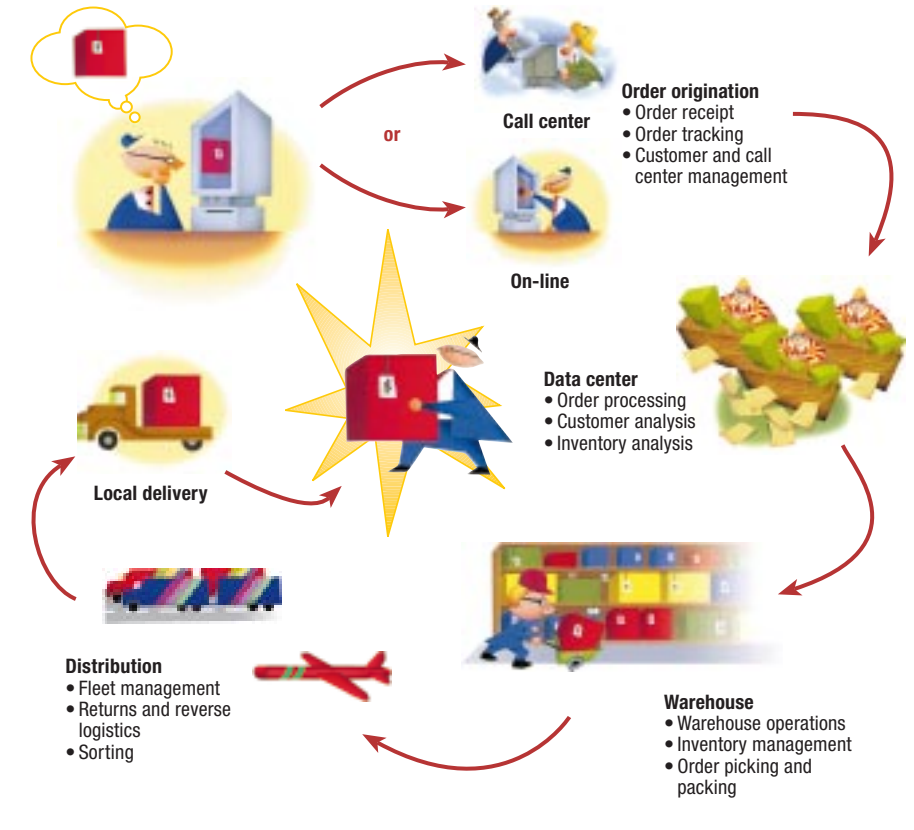
Fulfillment in the e-commerce world

In theory, fulfillment is simple: you deliver the product when, where, and how the customer wants it delivered. Making this happen, of course, is not simple. It can require elaborate command-and-control mechanisms linking everything from the receipt and processing of orders to warehouse operations to fleet management. Orders must be entered correctly, processed rapidly, sent to (and through) the appropriate warehouse areas, and then handed over to a delivery service. Returns must replicate the process in reverse—again with the speed, accuracy, convenience, and low cost that the customer expects (exhibit).

E-commerce has made this a tougher proposition because it places greater demands on fulfillment services: instead of moving truckloads of goods from warehouse to retail outlet, individual shipments must be made to individual households. This difference requires sweeping changes in the way suppliers and warehouses operate. Wal-Mart, for example, has an outstanding distribution network and an unsurpassed inventory management system for products that can be stacked on pallets and shipped to stores. But it has no experience in delivering one product at a time. For this reason, Wal-Mart's on-line venture has negotiated an outsourcing arrangement with Fingerhut, one of the largest US catalog retailers.[2] To please all customers all (or almost

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[2] Fingerhut was acquired last year by Federated Department Stores, still more evidence of the growing demand for proven fulfillment expertise.

Making fulfillment happen

Call center

or

Order origination
• Order receipt
• Order tracking
• Customer and call
  center management

On-line

Data center
• Order processing
• Customer analysis
• Inventory analysis

Local delivery

Distribution
• Fleet management
• Returns and reverse
  logistics
• Sorting

Warehouse
• Warehouse operations
• Inventory management
• Order picking and
  packing

all) of the time, e-commerce must use the vast, expanding universe of customer data created in the "big bang" of its inception. Privacy issues aside, information about customer-purchasing patterns captured on the Web makes it possible to generate more accurate forecasts of return rates, bad debt, and capacity requirements. Since on-line customers enter their own shipping information, it is possible to reduce errors, which can bedevil 4 percent of shipments, and thus to boost profit margins.

Four challenges

Every on-line fulfillment operation, large or small, faces four main challenges: controlling customer data, integrating on- and off-line orders, delivering the goods cost-effectively, and handling returns.

1. Controlling customer data

As outsourcing arrangements proliferate and delivery services become more expert in using information technology, retailers risk losing their lock on

consumer data. This knowledge, ranging from the socioeconomic status of customers to their buying patterns and preferences, helps intermediaries and shippers reduce costs, but they can also use it to compete with retailers.

Federal Express, for example, is fast transforming itself into an information company as it acquires data that would have immense value if it were to become a so-called infomediary.[3] Peapod, the on-line grocery store, generates enough consumer data to market information to clients such as Coca-Cola and Kraft Foods, for which it also designs virtual stores and on-line promotions. Recently, Peapod agreed to help Sara Lee Corporation design and carry out research initiatives in the packaged-meat and bakery categories.[4] Such agreements are a key part of Peapod's overall revenue strategy. As the company's chief executive officer, Bill Malloy, puts it, "The information we capture on Internet grocery-buying behavior is one of our biggest assets."

> Intermediaries and shippers could eventually take advantage of the customer information they amass **to compete with retailers**

In an economy where knowledge is revenue as well as power, retailers must consider how to strike a balance between the efficiencies offered by the outsourcing of fulfillment and the confidentiality that keeping data in-house preserves.

2. Integrating on- and off-line orders

From an operations perspective, the easiest route for companies with a foot in both the real and the virtual worlds might be to enter electronic orders manually into the off-line order management system. This option makes most sense when the volume of on-line orders is too low to justify large investments in IT. When the volume of orders is higher, companies must decide how much integration they need.

In a totally integrated system, Internet orders would be automatically transmitted through a processing center and transferred to the shipper's manifest. Savings of up to 30 percent are possible if the cost of long-distance telephone calls, data entry, teleserve operations, and error correction is reduced or eliminated and the cycle time between order and delivery is cut signifi-

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[3] *See* John Hagel III and Jeffrey F. Rayport, "The new infomediaries," *The McKinsey Quarterly*, 1997 Number 4, pp. 53–70.

[4] According to Peapod, the Web-based research will develop "insights into topics such as optimal product assortments, virtual point-of-sale displays, using targeting technology to customize products and promotions, and optimizing the on-line and off-line marketing mix to build sales."

cantly. An integrated system with full ERP (enterprise resource-planning) capabilities, for example, can ensure that surges in demand don't retard key fulfillment operations such as data entry, inventory, and packing. For one leading on-line retailer of textbooks, aggressive marketing at the start of the new semester created a spike in orders that resulted in delays of more than a week.

Although the problems of rapid growth are complex in themselves, the lack of a fully integrated order management system compounds them. To date, no leading retailer has made the transition to total integration and automation of on-line and off-line orders—a failure that reflects not only the complexity but also the expense of the task. In the future evolution of the Web, however, integration will become essential for building effective customer service and package-tracking systems.

3. Delivering the goods cost-effectively

At present, every single transaction challenges e-tailers to deliver the goods quickly, cheaply, and conveniently. The existing model for home delivery works well for letters and flat packages but not for e-tailing's high volumes and wide variety of package shapes and sizes. But this is largely a technical and logistical problem, and it will be possible (though perhaps expensive) to solve it by developing new sorting and scanning equipment and by deploying larger delivery vehicles.

Making contact with the recipient is a trickier problem but one that must be resolved if the full potential of "e-impulse" orders is to be realized, for an impulse purchase loses its power to gratify if the product or service takes too long to appear. Most e-tailers ship orders within 48 hours, and they are also making greater and greater use of two-day shipping services, thanks to price competition engendered by the two- to three-day Priority Mail offering of the US Postal Service. In upscale urban areas, new delivery networks promising same-day delivery are continually refining the value trade-off between speed and cost. But since each missed delivery (the "dark house" problem) adds as much as a full day to the fulfillment process, spanning that "final mile" to the home can take longer than traveling the rest of the fulfillment loop.
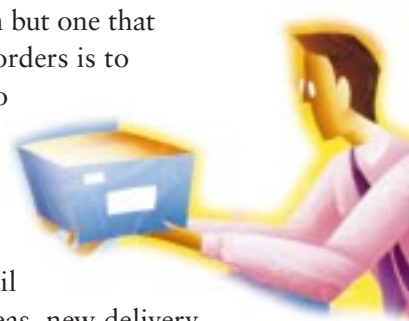
4. Handling returns

The problem of returns is encapsulated in an old saying in the book business: "gone today, here tomorrow." Nordstrom, Bloomingdale's, L. L. Bean, and

other companies have built their sterling reputations partly on the ease with which customers can return defective or unwanted merchandise and the graciousness with which it is received. E-commerce retailers, with their emphasis on convenience and customization, must match this standard of service. At present, they do not.

To begin with, few e-commerce retailers (or mail order companies, for that matter) design their packaging for easy returns. Customers often have to find new packing materials, call to arrange credits and refunds, and physically take packages to delivery services. Each step represents an inconvenience that, however minor, can combine with others to create negative feelings about the vendor: consumers will remember the lost Saturday morning spent at the post office far longer than the 20 minutes spent making an on-line purchase. The hassle of returning an item that was, in the first place, just an impulse means that the next such purchase may not be made at all.
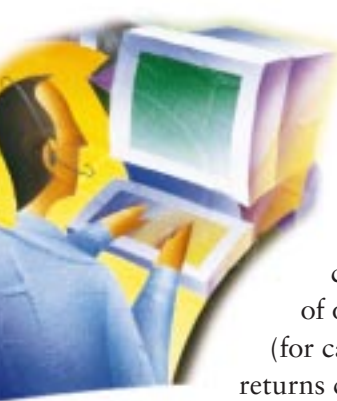
Even if a convenient solution for returns were developed, e-commerce retailers might discover that impulse sales carry hidden costs. Recent reports indicate that the value of on-line retailer returns constitutes 11 percent of all revenue (for catalog sales it is 9 percent), and the cost of processing returns constitutes a significantly higher percentage of operating costs.[5] As retailers and delivery services address the convenience problem, the return rate is likely to increase sharply, with a corresponding impact on operating margins. The implication is that fulfillment costs must be driven down to preserve profitability.

The mix-and-match market

Faced with these challenges, e-businesses tend to fall into one of three categories: outsourcers, selective builders, or integrators. Outsourcers turn over fulfillment to experienced third parties to maximize their speed to market. Selective builders, often traditional companies having great depth but little breadth of competence, exploit their existing strengths and outsource "commodity" operations. Integrators, relying on the value of in-house control, build their operations to manage every aspect of a transaction.

Outsourcers

All fledgling e-businesses recognize that they are in a race to market, and many are willing to pay a premium for "instantly on" and reliable back-end

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[5] There is no reliable measure of unwanted purchases that consumers couldn't be bothered to return.

operations. Most have yet to reach a scale—about 8,000 to 10,000 packages a day—that would justify building in-house fulfillment capabilities.

Thus an enormous market opportunity exists for fulfillment providers, such as call-center specialists, warehouse operators, systems integrators, and logistics and delivery providers. A number of companies are eager to offer end-to-end service. UPS, for example, is building a web of strategic alliances with software providers and systems integrators. (Federal Express has for several years invested $1 billion annually in e-commerce fulfillment, in the process becoming the world's biggest writer of software code after the leading software businesses.) Federal Express and UPS are aggressively expanding their logistics divisions to capitalize on the 20 to 30 percent annual growth rates of the logistics industry. Both companies are positioning themselves as turnkey partners that free e-tailing management to focus on marketing, acquiring customers, and the "front end."

Huge investments in e-fulfillment IT have made FedEx the world's leading writer of software code after the principal software businesses

Dozens of specialist firms are teaming up to create highly flexible fulfillment networks. AppNet, a major Internet professional-services firm specializing in interactive marketing, has launched Dot.Com Solutions, a comprehensive set of services promising to get dot-coms up and running in three months while giving the dot-coms' supply chain operations Internet capabilities. (Ford, Baxter Healthcare, and NEC are clients.) Meanwhile, KB Toys' KB Kids site uses software from eGain for e-mailing customers the status of their orders. KB Toys outsources its fulfillment to Keystone (a subsidiary of the catalog company Hanover Direct), which has the capacity to process 20 million packages a year, complete with call-center operations and specialized gift wrapping and personalization services. Moreover, Web purchasers can look into KB Toys' back-end systems to check the availability of products. From start to finish, it took the company about seven months to build the site and the fulfillment processes, and they were operational in time for the holiday season.

Selective builders

E-businesses of sufficient size and experience tend to build their own facilities. Ten thousand orders a day would support an investment of $70 million in order-processing systems and a warehouse of one million square feet. Delivery capacity is even more sensitive to scale, requiring household penetration rates of 10 to 15 percent in each neighborhood delivery zone before a company can justify developing its own.

Amazon.com, which shipped about 400,000 items a day during the 1999 holiday season, is in the middle of a $300 million, 3.5-million-square-foot expansion of its distribution and warehousing system. When the project is finished, the company will have the ability to control most aspects of its transactions with customers and the flexibility to introduce new products. Retailer Dayton Hudson chose another strategy: acquiring the catalog house Rivertown Trading to help jump-start Target stores' on-line venture.

Integrators

Some e-businesses must control the entire chain of operations. The success of Peapod's grocery venture, for example, depends on developing relationships with customers. To honor its commitment to deliver orders in no more than two hours, Peapod has had to develop Chicago and San Francisco fulfillment centers (which stock more than 12,000 different grocery products) and a network of 150 delivery vans and 1,400 employees.

The choice

An on-line company's choice of strategy depends on four main variables: the nature of the customer's interaction with the product and seller; the current capabilities of the business; the capabilities that are (or will become) "commodity" operations, in which competitive advantage cannot be sustained; and the trade-off between time and control.
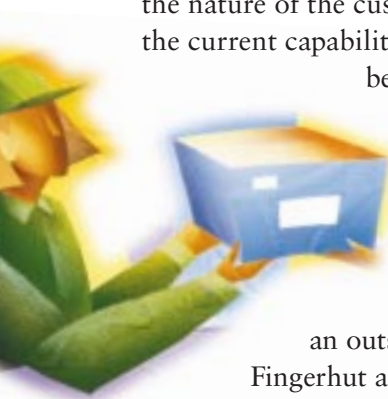
Apart from a sophisticated inventory control system, Wal-Mart, for example, had few of the skills needed to go on-line. This suggested an outsourcing strategy and led the company to engage Fingerhut and other third-party allies. Of course, Wal-Mart retained its unrivaled ability to warehouse, allocate, and pack massive volumes of day-to-day goods, which gave it a distinct competitive advantage over its upstart on-line rivals. In fact, this core strength in inventory control could form the basis of a more aggressive fulfillment strategy that would make Wal-Mart into a "selective builder" of proprietary purchase and customer support capabilities.

Indeed, it isn't at all far-fetched to imagine Wal-Mart creating in-house fulfillment centers with optimized pick-and-pack operations, integrated ordering systems linked to its existing inventory controls, and on-line customer service equal to that of its retail stores. The company's current dependence on outside warehouse operators such as Fingerhut would

then be temporary, and Wal-Mart would have truly remarkable market power to negotiate delivery pricing with the likes of Federal Express, UPS, and the US Postal Service.

If 1999 was the year when e-commerce reached mainstream US consumers, it was also the year when dot-coms faced the magnitude of the fulfillment challenge: on-line retailing involves nothing less than building a national and scalable sales-and-distribution channel. The dot-coms rely on their fulfillment operations to satisfy and delight the customer. The only physical contact with the customer is the moment of truth on the doorstep.

The ability to deliver the goods rapidly, accurately, reliably, and cheaply—and the reputation for having that ability—are already beginning to distinguish on-line retail leaders from the rest of the pack. In this competition, scale will become increasingly important, for companies will need large order volumes and deep reserves of capital to develop sophisticated fulfillment networks using a combination of proprietary and outsourced solutions.

In the rush to construct facilities to control the electronic and physical contact points between vendor and customer—and thus to meet or exceed customers' expectations—there is a paradox: the virtual selling arena is proving to be at least as material a proposition as the old-fashioned world of department stores. Dot-coms should take heed. Most of the hard work and expense of fulfilling customer demands still lies ahead. *M*Q