

Local Delivery Service Opportunities in e-Commerce

by

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Submitted to the Sloan School of Management

in partial fulfillment

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at the

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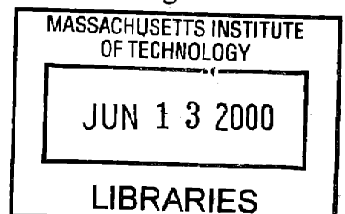
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ABSTRACT

This is a study of the *local package delivery* industry. This thesis shall consider only businesses that are engaged in delivery of goods and services that have been purchased online. Such companies may or may not be engaged in other business activities aside from delivery. *Local* refers to deliveries that are made between origin (pickup from warehouses or stores) and destination (drop-off) points that are within the same metropolitan area.

The overall objectives of this thesis are to show:

- There are significant pressures in this industry forcing a *vertical disintegration*, the process by which companies transform themselves from being an end-to-end retailer to serving only specific part(s) of the value chain. The early entrants in the market began as online grocery and replenishment retailers. Today, the focus is shifting towards becoming a delivery infrastructure for businesses and consumers.
- There will be significant business opportunities in serving the local delivery businesses resulting from the forced disintegration of the industry. One class of opportunities is to address the basic needs of local delivery companies such as providing the technology components for running fleet operations. Another class is the result of the fragmentation of the industry and the inclination of businesses to simplify choices for customers. New businesses will be formed through creative set of partnerships that counteract the impact of disintegration.
- For individual companies to succeed and grab investor attention, they will have to *revolutionize* rather than simply *evolve* their part of the value chain. Only innovative approaches to solving needs can have sustainable competitive advantage.

We begin by discussing the value chain for the local delivery businesses and the structure of this industry. Then, we shall proceed to analyzing various business drivers that are pushing the industry towards a vertical disintegration and a focus on service. Afterwards, we will talk about what vertical disintegration means to existing companies and future entrants and the outlook for the industry. We will end this thesis by discussing various forms of business opportunities that exist for companies that want to serve local delivery industry.

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1. OVERVIEW

1.1 Introduction

During the past decade, the Internet, the Web, and e-commerce have done much in revolutionizing industries one right after the other. Terms such as "communities," "disintermediation," and "business exchanges" that became jargons overnight are all testaments to the impact that e-commerce has had on many established businesses. Traditional industries have succumbed to the simplicity of the Web, ubiquity of the Internet, and the power of e-commerce stemming from sheer volume of users that it supports.

One such field is the local package delivery business pertaining to items purchased online.¹ Up to two years ago, this was a sleepy industry exclusive to visionaries such as Peapod and Streamline.com, who, as sometimes is argued, were too early in the market for their own good. The market was mainly dedicated to groceries and was ignored by shipping industry giants (UPS and FedEx) and investors alike.

However, much has happened in the past two years. There has been tremendous amount of private and public money flowing into this field. Table 1 summarizes various financial information for a sample of companies in the local delivery industry. Almost all companies in the table started operations less than three years ago or have recently revamped their operations to match current business environment (as was the case with Peapod). Same-day delivery is being regarded now as a critical infrastructure component for further growth of e-commerce.²

	Money Raised prior to IPO ³ (million)	Money Raised from IPO (million)	Market Cap at time of IPO	Market Cap as of May 20, 2000	Latest Annual Sales (million)	Latest Annual Revenues (million)
DeliverEToday	\$2	-	-	-	-	-
Food.com	\$80+	-	-	-	-	-
HomeGrocer.com	\$100+	\$264	\$1.76 b	\$616 m	\$21.6	(\$84)
Kozmo	\$90 +	\$200 ⁴	-	-	-	-
Peapod	N/A ⁵	\$64	\$280 m	\$52 m	\$73.1	(\$29)
Sameday.com	\$25.5+	-	-	-	-	-
Shoplinc	\$37.5	-	-	-	-	-
Streamline	N/A	N/A	N/A	\$70 m	\$15.4	(\$20)
Urbanfetch.com	\$10+	-	-	-	-	-
WebVan	\$350+	\$345	\$6.94 b	\$1.85 b	\$13.3	(\$144)

Table 1 - Various financial statistics on selected number of local delivery companies⁶

¹ Later in this section I shall provide a specific definition of what local package delivery means in the context of this thesis.

² "Online Replenishers Deliver," Evie Black Dykema, Forrester Research, Nov. 1999.

³ This column is an estimate based on news stories about the companies. The "+" sign is to indicate that the company might have had raised more money than what is listed in the table.

⁴ Kozmo is not a public company yet. This amount is Kozmo's target for its IPO.

⁵ N/A: Not Available.

The flow of capital, fueled by the Internet craze among investors, has attracted much attention and much hype. There is a battle among various competitors, each differentiating itself in details of operations and service selection, to control the *last mile* of e-commerce to consumers, both residential and business customers. Yet, as can be seen from Table 1, public markets for delivery companies have cooled down significantly in the past few months. Although part of this may be attributed to the general market downturn for technology stocks in May 2000, the waning enthusiasm for delivery companies began even before that.

The cool-down in investor attitudes towards this industry is certainly not for lack of its business growth opportunity. Table 2 lists projections by some leading research firms on the size of the online grocery industry alone. Considering the fact that online grocery industry is only 1-2% of the total food retail market, there is tremendous potential for growth. This is too big a market for investors to ignore. Moreover, the local delivery market goes beyond just groceries and may include books, video rentals, and business-to-business transactions, as well as others. Therefore, the actual size of the market is larger than those indicated in Table 2. The investors do see the potential in market but there is a high degree of uncertainty over which business models will be embraced by customers and will survive at the end.

	Supermarket Retail	Online Grocery & Food			
	1998	1998	2002	2003	2007
Forrester Research	\$449 b	\$235 m	\$5 b	\$10.8 b	N/A
Jupiter Communications	\$440 b	\$200 m	\$3.5 b	\$7.5 b	N/A
Andersen Consulting	N/A	\$120 m	N/A	N/A	\$85 b

Table 2 – Market size estimates for grocery and supermarket sales, both online and offline

1.2 Motivation

The motivating factors behind writing this thesis were the following.

➤ *Shipping and delivery of goods purchased online is a pain:*

Two of the most annoying features of e-commerce for consumers are the delivery of goods and the cost associated with it. In a recent study by Ernst & Young, 53% of people surveyed in the U.S. named high shipping costs as their major online shopping concern. This was also a major cause for abandoning shopping carts. In a survey of 8,900 online shoppers on the topic of sales tax on online purchases by Forrester Research, 67% said that shipping cost is more important to them than sales tax.⁷ In yet another survey, Andersen Consulting found late deliveries and high shipping costs were number 2 and 3 in the list of things that annoyed holiday shoppers this past year.⁸ Aside from the sometimes high cost of shipping relative to the purchase amount, the delay in getting a purchased good, which can take anywhere from a day (for overnight shipping) to a week (for ground delivery), does little to encourage impulse buys.

⁶ Information in this table was gathered from Quicken.com, Yahoo.com, Lexis-Nexis, and Dow Jones Online Publication Library.

⁷ "The Net-Net on Net Taxes," Mark A. Mowrey, The Industry Standard, March 27, 2000, p. 61.

⁸ "Top 10 Things that Irked Holiday Shoppers," Business Week E-Biz, February 7, 2000, p. EB 12.

- *The existing delivery infrastructure established by UPS, FedEx, and others is inadequate to address the consumer market:*

The most extensive package delivery infrastructures in the U.S. belong to UPS and FedEx and were built with businesses in mind. Business delivery is inherently different from residential ones. Business deliveries are more predictable and allow scheduled routes. They usually involve dropping multiple packages per visit. Businesses are also more willing to pay a premium for deliveries. Consumer delivery is a more difficult operation to setup (Appendix A). It is also not obvious what residential consumers consider a desirable and *convenient* service. Finally, as we shall see later, consumers demand a lot but are reluctant to spend much on deliveries.

- *When there is pain and inefficiency, there is business opportunity:*

The pain in shipping and the inadequacy of the existing delivery infrastructure both at national and local levels create business opportunities for companies to enter. Evidence to that is the number of startups entering this market in the past few months and the recent activities by the better-known companies in this industry such as WebVan and Kozmo (to be discussed later).

1.3 Purpose

This thesis is a study of the *local package delivery* industry. The following considerations apply:

- This thesis shall consider only businesses that are engaged in delivery of goods and services that have been purchased online. Such companies may or may not be engaged in other business activities besides delivery. Examples of these activities are inventory management and actual sales of items online.
- *Local* refers to deliveries that are made between origin (pickup at warehouses or stores) and destination (drop-off) points that are within the same metropolitan area. As such, this is different from the more general term *residential delivery* which refers to national and global package delivery from anywhere in the world to residential addresses.
- Within the context of this thesis, we shall consider businesses that allow deliveries of purchased goods within 24 hours of receiving an order. That is, these businesses have operational models that enable them to service a delivery within 24 hours. It is, however, possible that the delivery will take longer because either the customer schedules the delivery for a later time or the earlier delivery time-slots offered by the company are filled up.

The overall objectives of this thesis are to show:

- There are significant pressures in this industry forcing a *vertical disintegration*, the process by which companies transform themselves from being an end-to-end retailer to serving only specific part(s) of the value chain. The early entrants in the market began as online grocery and replenishment retailers. Today, the focus is shifting towards becoming a delivery infrastructure for businesses and retailers. At the same time, these companies will rely more and more on business partners to deliver complete solutions to customers.
- There will be a number of new business opportunities in local delivery business resulting from the forced disintegration of the industry. Companies entering the market will focus on individual parts of the value chain and its service and technology requirements. They will then proceed to create a band of partnerships and innovative services that create value to end customers, whether they are businesses or home consumers.

- For individual companies to succeed and grab investor attention, they will have to *revolutionize* rather than simply *evolve* their part of the value chain. We shall discuss some examples that will illustrate the difference.

1.4 Outline

The outline of this thesis is as follows:

- We begin by discussing the value chain for the local delivery business and the structure of this industry.
- Then, we shall proceed to a discussion of various business drivers that are pushing the industry towards a vertical disintegration and a focus on service.
- Afterwards, we will talk about what vertical disintegration means to existing companies and future entrants. Specifically, we shall discuss how there are business opportunities for companies to bring innovation into this industry.
- We end this thesis with a quick discussion of the outlook for this industry.

1.5 A Note on Research

This study required extensive research into existing companies, the industry as a whole, technology issues, and consumer behavior. A variety of methods were used to assemble the information presented in this thesis. They were:

- Most of the factual data were gathered from major publications (online and offline), newspapers, and financial analysts reports. The main sources of information were online databases by Lexis-Nexis and Dow Jones Publication Library.
- I conducted several interviews with former and current managers of online delivery companies to obtain firsthand look inside their vision, their operations, and their business priorities. Refer to Appendix B for more detail.
- A number of interviews with MIT and Sloan faculty members (in Operations group and Intelligent Transportation Systems department) as well as professors from outside MIT were carried out. These interviews were done to gain insight on operations and technical issues that delivery companies face today as well as a glimpse of innovations coming out of academia that may be useful to such companies.
- A number of focus group interviews with peer students from Sloan were conducted to collect information on consumer behavior and attitudes and their needs regarding delivery of their purchases. Refer to Appendix C for more detail.

2. INDUSTRY ANALYSIS

This section provides a quick analysis of the local delivery industry. To assist us in the analysis, we first need a framework. We begin with a high level view of the value chain for selling goods online and delivering them locally. Then, various players in the local delivery industry are categorized according to extent of their coverage of the value chain and their delivery time window. Finally, in the context of this structure, we shall discuss the current state of the industry.

2.1 Value Chain

Figure 1 is a high level representation of various business processes that must take place to process a customer order all the way back to ordering goods from suppliers. The following are brief descriptions of each part. Note that although the value chain is shown as a linear set of processes, in practice some processes occur concurrently or out of order, such as marketing.

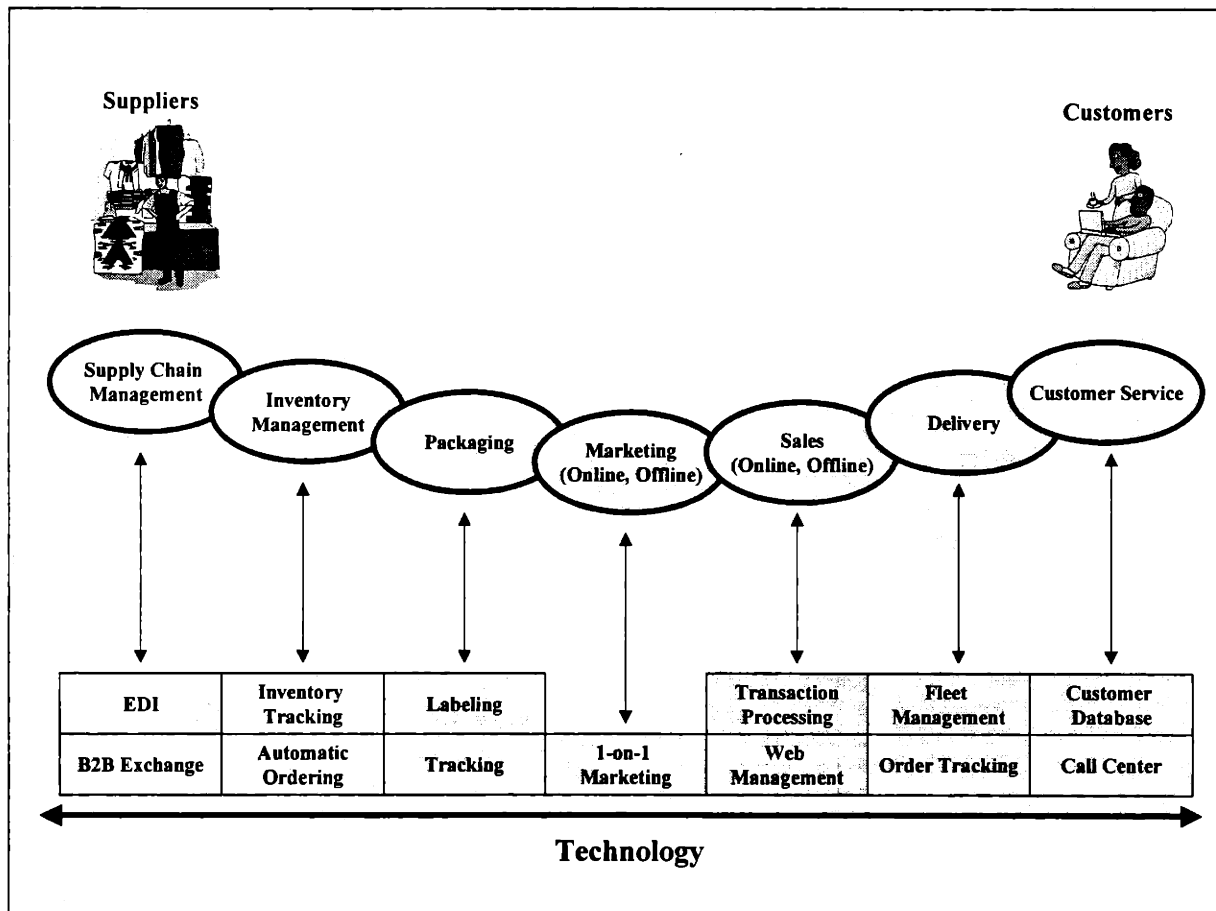


Figure 1 - Value chain

SUPPLY CHAIN MANAGEMENT⁹

This refers to all business processes involved in managing relationship with suppliers of the goods sold online. Such relationship includes timely replenishment of inventory, tracking supplies en-route to warehouses, arranging payments, negotiating prices and bidding.

INVENTORY MANAGEMENT

This is the process for managing inventory at local and central warehouses. Functions include restocking inventory, managing storage (shelving), and instituting efficient order fulfillment processes on the warehouse floor. As more and more goods are sold online by a business, inventory control becomes much more critical to the scalability and survival of the business.

PACKAGING

Packaging the goods for shipment usually occurs as part of inventory management process. However, I have separated it out to make the point that once the local delivery industry breaks up vertically, every part of the value chain, including seemingly insignificant processes such as packaging, should be considered as a possible service opportunity. For instance, if a delivery company decides to serve local *ma & pa* stores to become their residential delivery infrastructure, aside from delivering the goods, the company may also consider other value added services such as packaging the goods for these stores.

MARKETING

This refers to all marketing activities related to positioning the products available for sale on a company's website. Note that marketing activities may take place online or offline or both. Offline activities are marketing through traditional media such as TV and newspapers. Online marketing refers to those activities taking place over the Web such as online advertising or email marketing campaigns.

The distinction between the two is quite important. Companies go to great lengths to strike partnerships that match their marketing capabilities with others and fill up gaps. For instance, Starbucks with around 3,000 stores worldwide has a great physical presence in local markets and a captive target market the majority of which do daily runs to a Starbucks coffee shop. Kozmo recently signed a 5-year partnership with Starbucks for which Kozmo gets promotional rights within Starbucks stores for \$150 million. Primarily an online company, Kozmo has gained access to Starbucks customer base through this deal.

SALES

This is the actual process of selling the products. Similar to marketing, this can be done either online or offline in a store. In the context of thesis, we will talk mainly about online sales.

DELIVERY

This refers to the process involved in delivering the goods locally to customers. This includes scheduling deliveries, picking up the goods, transporting them to their destinations, and managing the transportation fleet.

⁹ Supply Chain Management is different from Logistics. Logistics means different things to different people. Generally, it covers a broad range of services including supply chain management, inventory management, and delivery operations.

CUSTOMER SERVICE

This refers to the process of answering customer questions, addressing their complaints about the service, and managing the relationship with them.

TECHNOLOGY INFRASTRUCTURE

It was not long ago when business and technology were used to be delegated to separate organizations within a company and were kept apart. E-Business has revolutionized how management views technology. Today, technology is intertwined with business activities and cannot be separated out. In the past, technical infrastructure could have been considered as a distinct part of the value chain for any industry. Today, it underlies every step of the value chain.

The above businesses processes all have technology implications. Figure 1 illustrates this notion by drawing a sample of technology components for each part of the value chain underneath their business counterparts. For instance, selling products online requires technical infrastructure to support displaying inventory over a website and performing financial transactions. Delivering the goods requires technology to schedule deliveries, route the delivery vehicles, and track orders.

2.2 Industry Framework

It is easier to discuss the local delivery business in the context of a framework. The most important dimension of such a framework for our discussion is the depth of coverage in the value chain by the companies (Figure 2). We shall use the following definitions for this dimension:

- *Full Coverage*: This refers to those companies that go end-to-end. They market and sell products, they provide fulfillment operations, and they deliver the products to consumers.
- *Logistics*: By this we shall mean those companies that are service-providers for delivery and inventory management of the products. Their customers are businesses that are responsible for the supply, marketing, and sale of the products that they sell but do not want to own their own delivery and warehousing operations.
- *Delivery*: These are companies that focus solely on delivering goods. They do not own any distribution facility nor do they own any of the goods themselves.

Service Level	Express Delivery	Food.com		Kozmo PinkDot UrbanFecth.com
	Same-Day Delivery	DeliverEToday.com	SameDay.com	HomeGrocer.com HomeRuns Peapod Streamline.com WebVan
		Delivery	Logistics	Full Coverage
Value Chain Coverage				

Figure 2 - Industry framework

There are a number of other attributes that we can include in our framework. For instance, we can further breakdown the companies according to the types of products and services that they deliver: Perishables and groceries (Peapod), entertainment (Urbanfetch and Kozmo), dry cleaning (Zoots). The second attribute that I will use, however, is based on the service commitment of these companies: whether they do deliveries within an hour (Express) or later in the day or week (Same-Day). Note that Same-Day delivery companies, as noted before, have the ability to deliver goods within 24 hours but only for a limited number of customers. Customers choose timeslots and once the same-day slots are filled up, customers must choose deliveries later in the week.

2.3 Local Delivery Industry Today

RETAILERS WITH DELIVERY OPERATIONS

Most of the local delivery companies started out as online retailers with delivery capabilities. All the early entrants were online grocers: Peapod, Streamline.com, Shoplink, HomeRuns, HomeGrocer, and WebVan. Later entrants began to address other markets such as entertainment (Kozmo, UrbanFetch.com) and dry-cleaning (Zoots). The common attribute among these companies is that they are all online retailers of goods and services. That is, they cover all processes in the value chain from supplier relationship management through delivery, sales, and marketing. They own their inventory.

The sheer number of entries in this market has created intense competition. Most have similar business models that differ in details of operations and product selection. Some sell only perishables and replenishments, others rent videos and sell snacks and books. Some serve metropolitan areas and require someone at home or office to receive the packages. Others focus their service in suburban areas where they can install boxes and leave the packages in the boxes (Streamline.com and ShopLink). Some deliver higher-end products (UrbanFetch.com), others focus on low priced, high churn items (Kozmo).

Accordingly, the operational models range from simple and cheap to complex and very expensive. A company like HomeRuns has operations that are manual in most respects, but simple to rollout. Kozmo keeps costs low by sometimes hiring bikers to deliver the goods in congested areas such as New York City. As a result, these companies have lower capital needs for expansion and, therefore, can rollout their services more easily across the country. Kozmo, less than two years old, already serves 8 geographical markets.

On the other side of the spectrum is WebVan who is spending \$1 billion in its expansion into 26 cities. That translates roughly to \$35 million per distribution center. This huge cost is the result of high level of automation in the facilities: 5-mile long conveyor belts and robots will be used to fulfill orders within the warehouses. The goal is to setup operations for high volume of orders.

Some delivery companies are maintaining their focus on grocery business. Peapod and HomeRuns have shown no indication that they will do anything besides groceries. These companies have already turned their attention to cost cutting measures to boost margins and improve their existing business rather than expanding their services into other areas.

In contrast, WebVan and Kozmo, two of the best-known companies in this sector, have slowly begun to enter into partnerships that will eventually turn them into more than just grocery or video and snack delivery companies. Kozmo recently announced that it would begin warehousing and delivering Amazon's bestsellers locally. Prior to this announcement, Amazon had taken a 31% stake in Kozmo. Similarly, WebVan has closed its own deals with Eve.com (Dec. 1999) and Gymboree (April 2000), further expanding not only its product offerings but also its customer list to include other retailers.

INVENTORY MANAGEMENT & DELIVERY PROVIDERS

As we shall see later, there are strong business drivers that are pushing the local delivery businesses to become more of service providers than end-to-end retailers. A new breed of delivery companies is entering the market. They serve only business clients. That is, they do not sell products themselves. They perform deliveries as well as ancillary services such as inventory management.

These companies do not own any inventory. Instead, within their own distribution centers they manage others' inventories. Their value proposition is that by not selling anything, they are not competing with retailers. Therefore, they can service them better than someone like WebVan who has to worry about its own retail operations. A recent startup in this space is SameDay.com, formerly called Shipper.com. This is an Idealab! company that provides a range of e-commerce distribution and fulfillment services including online storefront management (as part of its shopping mall service) and product delivery.

It will not be long before this market gets crowded. Clearly, with Kozmo and WebVan starting to serve more and more businesses, they will position themselves more squarely against SameDay.com. Furthermore, the size of global value-added warehouse and distribution services market was estimated to be \$14.4 billion in 1998.¹⁰ This is a huge market, one that both UPS and FedEx along with a host of other larger logistics players have already entered. The local delivery companies that play in this market go in direct competition with logistics divisions of UPS and FedEx.

PURE DELIVERY PROVIDERS

These companies act as delivery arms for retailers. They mainly provide fleet operations to pickup orders from local warehouses owned by retailers and deliver the goods to destination points. They neither own nor manage other retailers' inventories. An example is DeliverEToday.

The target market for these companies are brick-and-mortar retailers such as national chains that have their own online and offline operations and their own inventory of goods, but do not necessarily want to do their own deliveries. DeliverEToday is striking deals with national retailers to become their local delivery arm. The orders that are placed before 3pm by online consumers are delivered that same night.

Another newcomer is Food.com. Formerly, Food.com was an online website that enabled its customers to order food from restaurants and have it delivered somehow. But recently, Food.com acquired Takeout Taxi as its own delivery infrastructure and tapped into the \$126 billion takeout delivery business.¹¹ The most interesting move by Food.com, however, has been the relationship it formed at the time of Takeout Taxi's acquisition with Blockbuster Video (March 2000).¹² This partnership clearly hints at Food.com's intention to become more than just a food delivery company.

TRADITIONAL PLAYERS

Missing from the above are the leading package delivery companies, UPS and FedEx. Up to now, these companies have done little more than observing the local delivery market. Both companies have established brands and a huge presence in local markets. With its 500 aircrafts, 157,000 vehicles, and 1,700 facilities, UPS is a giant in the delivery business. UPS is considered to be ahead of FedEx in residential markets with its vast fleet of trucks. However, recently FedEx begun building up its residential presence by leveraging the delivery network of RPS, one of its recent acquisitions.

Both companies have shown great propensity to acquire delivery infrastructure companies to expand their services inside and outside the U.S. Combined, they have done more than 30 acquisitions and

¹⁰ "United Parcel Service: An Investment for the Next Millennium," Morgan Stanley Dean Witter, Dec. 23, 1999.

¹¹ "Food.com delivers dinner to your door," Greg Sandoval, CNET News.com, April 20, 2000.

¹² "Food.com to purchase leading meal-delivery service," Information Access Company, March 27, 2000.

investments in the past 10 years alone.¹³ Both UPS and FedEx seem to be waiting for the local delivery market to develop and for trends to become clear. It is conceivable that as the market matures, they will foray into the market either through direct investments in existing players or through establishing their own services. For example, recently, when Peapod was facing financial distress, there were reports about UPS being interested in buying part or all of Peapod.¹⁴

A potential hurdle for UPS and FedEx entering the local delivery market is that both companies have established logistics service divisions providing a wide range of logistics related solutions (such as fleet scheduling software applications) to business customers including local delivery companies like Streamline.com (a customer of UPS Logistics). If UPS and FedEx enter the same market as some of their own customers, they will alienate these clients. Therefore, their decision to enter the market has to be weighted against potential loss of revenues from the customers they will be competing against.

¹³ UPS, having established its own venture arm (1997) and an incubator program (2000) is more experienced in that respect.

¹⁴ "Struggling Online Grocer Peapod Gets Bridge Loan, Seeks Equity Investment," Dow Jones Business News, April 4, 2000.

3. BUSINESS DRIVERS FOR CHANGE

In this section, we shall discuss the business drivers that are forcing the local delivery industry into a vertical disintegration.¹⁵ Next three chapters talk in more detail what vertical disintegration means. Here, it suffices to say that vertical disintegration is the process by which established companies begin relinquishing those parts of their business functions that become non-core to their business. Instead, they devote their resources to specific parts of the value chain. In other words, companies behave more as service organizations: servicing other parts of the value chain. In turn, they partner with others to fill-up gaps in their services and create complete solutions for end-customers.

3.1 High Cost of Covering the Whole Value Chain

Delivery companies are inherently expensive to build. They require large capital investments in building distribution centers and delivery fleet, and hiring the drivers and personnel to run the local operations. Expansion requires duplicating operations of a distribution center in other locations, something that is usually as costly as building the first distribution center (minus the technology development costs). Anyone that wants to enter the delivery business must have easy access to large sums of capital.

Aside from high cost of building the infrastructure, there is also the issue of creating a brand. Delivering a package and handing it off to someone in person has high impact on building long lasting relationships with customers. Companies such as UPS and Streamline.com go to great lengths to ensure a good personal experience in every delivery by training their delivery professionals to dress, groom, and behave in specific manner. Because of high degree of personal interaction and because deliveries sometimes are made to residences at odd hours such as in the evening, *trust* becomes quite important. A component of trust is building brand awareness in every market, another costly proposition. The heavy inflow of capital into the Internet economy has made brand building a very costly component of creating new delivery businesses.

The above are two significant contributors to fixed costs of delivery business. If the company is also in the business of retailing, then there are also cost of managing relationship with suppliers, holding inventory, and doing sales. But the type of cost that is generally of concern in delivery business is the variable cost that determines margins for each delivery.

Businesses generally do not publicly disclose their cost structure since it is viewed as competitive information. Therefore, it is difficult to determine with high certainty the cost structure of the delivery companies in existence today. Based on research, an estimate for the cost of delivering *groceries* is around \$7 to \$12 per delivery with average order size between \$80 and \$100. The cost for companies such as Kozmo that deliver non-perishables is lower and is in the range of \$4 to \$6 per delivery. A major reason for the cost difference is that groceries need special care in transportation and handling such as refrigerated trucks and warehouses, something Kozmo and UrbanFetch do not have to deal with. Another reason specific to Kozmo is its reliance on cheaper means of delivery such as bikers in heavily congested areas like New York City.

The major components of variable cost are the cost of operating delivery vehicles (leases, insurance, fuel, maintenance) and the cost of delivery professionals, all calculated per hour of operation. Therefore, variable costs are driven by the number of packages delivered per hour per driver. Kozmo claims to make an average of 3 deliveries per hour per route in Manhattan, the densest area of their operations. Most likely, Kozmo makes less than 2 deliveries per hour per route in other areas. Their goal is to increase that

¹⁵ For more information on impact of e-commerce on distribution channel configurations, refer to Forrester Research report "Distribution Reconstructed," by Bruce D. Temkin, April 1999.

number nationally to 4 deliveries per hour per route. Online grocers such as HomeRuns and WebVan average around 4 deliveries per hour per route. In contrast, it is said that UPS averages around 12 deliveries per hour per route.

To lessen the impact of cost per package on margins companies can do the following:

- *Improve efficiency of internal operations:* An obvious way to improve costs is to improve internal operations and processes. Some delivery companies spend great deal of time reviewing details such as how drivers unload their trucks and finding ways to make the processes more efficient. Some such as WebVan rely heavily on technology and invest significant amount of money in R&D to build automated warehouses.
- *Increase frequency of package delivery:* Variable costs consist of driver, delivery vehicle, and other expenses related to operations. The more packages are delivered per hour per delivery professional, the more these costs go down per package. Therefore, companies strive for building more density into their routes. They need to grow their customer base within each region quickly to achieve a critical mass that drives the cost per package below the delivery charges and product margins.
- *Increase dollar value of average purchases:* To increase margins, companies strive to increase the dollar value of each order they deliver. That is, they encourage customers to purchase a larger basket of goods, all to be delivered at the same time. This holds true even if the delivery company does not sell the goods itself. Grocery companies have low margins, with industry average around 8%.¹⁶ But their average purchase is \$80-\$100. Express delivery companies such as Kozmo enjoy higher margins. In case of Kozmo, it is around 40%. But average purchase is less than \$15.

The above provide strong incentives for companies to increasingly outsource some of their operations and to instead become a service organization, focusing on just few areas of the value chain:

- To improve efficiency, companies will be forced to devote their resources to core operations and instead outsource those processes and functions that do not provide differentiation. HomeRuns invested in building its own fleet optimization software application. But that application is in need of an upgrade now that the company is more mature. But HomeRuns most likely prefers to allocate its limited technology staff to other projects. It will not be long before HomeRuns looks to someone to provide a complete fleet optimization solution. In contrast, Kozmo views fleet management as a competitive factor in its one-hour express service, so much so that it has invested heavily in building its own software application from the scratch.
- To increase route density and increase average purchase dollar amount, companies would want to expand their reach and their product selection. How else, then, a WebVan that spends about \$35 million to build 300,000-400,000 sq. foot fully automated distribution centers with 5 mile conveyer belts keep its warehouses full of products with high turnover rates? They will invest in partnerships that will give them access to new base of customers and new product sets, such as Kozmo's deal with Amazon and WebVan's deal with Gymboree and Eve.com. Such relationships begin to change the nature of delivery businesses from being end-to-end retailers to service-providers to other businesses.

3.2 Customer Demand for Flexibility & Control

The business models for local delivery companies and the capital investments in them are both rooted in Internet economy. Although a truck or a van delivering a package to someone's house may conjure up images of a tired old industry with not much room for innovation, the truth is far from it. This is an

¹⁶ "Return of the Milkman," Rusty Weston, UPSIDE Magazine, April 1, 2000.

industry ripe for innovations, driven by the same principles as pure e-commerce companies. One such principle is that e-tailers spend significant resources to grab as much market share as possible early. In case of local delivery companies, as we saw above, this trend is driven by the economics of the business and the critical factor in their survival: build density into delivery routes.

Another business driver stemming from the Internet is related to customers and their expectations from online purchasing. There are two critical elements here:

- Switching cost for customers are low
- Customers have high demand for flexibility and control from their online shopping experience

Lets start with the switching costs. Online, it is easy for a customer to browse multiple sites and compare attributes of service such as price and availability of brands. There are also a number of sites such as BizRate that arm customers with additional information such as on-time delivery track records or reviews by other customers. Inherently, it is easy for customers to shop around and switch vendors as necessary.

The response by local delivery companies has been to institute features into their services to make it less desirable to switch. Streamline.com for instance installs a storage box outside residences and it charges a fee for it. All delivery companies that sell their own products to consumers allow users to create shopping lists for repeat purchases. One online grocer interviewed claimed that the first grocery purchase by a visitor might take more than an hour to prepare. But once the shopping list is created, the next purchase can take as little as 10 minutes to complete.

It is possible that psychologically these can induce some customer loyalty. However, in practice, there is nothing to prevent users to try other services for their shopping and delivery needs. The switching costs are simply too low.

It is this low switching cost that leads to the other critical element rooted in Internet nature of local delivery companies and that is *customer expectations*. Online vendors constantly look for ways to add value to consumers' online shopping experience. NetFlix.com, an online DVD rental store, does not just rent videos. It allows customers to rate movies and recommends movies to customers based on their rating profiles. Similarly, companies such as Streamline.com do not just deliver food. They also provide dry cleaning service, for instance. Kozmo strikes distribution deals with Starbucks' of the world to make it easier for its customers to return movies that they rent. HomeRuns delivers the groceries to customer's kitchen counter even if they live in a high-rise.

The competition among vendors for improving service has created high expectations from consumers with regards to their online experience. Users are flocking to the Web for its promised *convenience*. But it is arguable what *convenience* means to each person. In my focus group studies, some defined *convenience* as the ability to do research before they go to a physical store and purchase it somewhere in their neighborhood. Others defined it as the ability to order something and get order delivered to their kitchen counter. What was certain though is that most viewed the delivery part of their online shopping experience as a *hassle*.

Consumers do not necessarily value speed in delivery. They do not necessarily demand to receive their orders in one hour, unless if it is food. They demand control. They want the delivery to occur at a time specified by them so that they can be home to receive the package. They do not want to miss deliveries and have to go to a UPS center to pick it up.

Few years ago, a major railroad transportation company rolled out a service by which its business customers could track their payloads as they were being shipped across the country in real-time. An executive in an interview said that the tracking feature was the most popular feature of their service. Even when the payload was not moving for hours, customers would still check to see the progress. The lesson from this story, the focus group study, and other similar examples from e-tailers' experience is that

customers demand flexibility and want to be in control of their online experience. They want to know where their orders are and when they will receive it.

The above translates into providing exemplary service. Local delivery companies will be forced by this business driver to focus more and more on the range and quality of services they provide consumers. But improving service, especially when resources are limited, takes attention from other parts of the business. E-commerce companies' solution has been to partner and outsource functions of their business as much as they can. Local delivery companies will also have to do the same to retain customers.

Note that this focus on quality of service becomes even more paramount as delivery companies begin to service other e-tailers. The consumer experience encompasses both the purchasing of the goods and the delivery. When a company such as Amazon utilizes Kozmo to deliver some of its products, Amazon's customers will take Kozmo's quality of service into account as their overall shopping experience with Amazon. Therefore, it becomes even more critical for WebVan, Kozmo, DeliverEToday, Food.com and others to maintain high standard of service when they partner with business customers.

3.3 The Need to Move Quickly

Another Internet-based business driver is to move quickly because online business environments change fast. Indeed, as mentioned before, there used to be only few delivery companies, all specializing in groceries. In just two years, there have been a handful of entrants each claiming to have found the *best solution to the last mile problem*. And the scene is changing constantly.

To respond, Internet companies use partnerships, sometimes without discrimination. This enables them to avoid diluting their resources by allocating them to projects that may become obsolete in few months due to changes in business environments. Indeed partnership is a cornerstone of e-businesses today. Companies such as Yahoo! have developed processes around partnerships to be able to absorb hundreds of small and large deals in span of few months.

As the landscape for local delivery business changes and as the capital flow slows down because of investor uncertainties, delivery companies will become more aware of their nimbleness. If a company attempts to take care of all aspects of its business internally and cover the whole value chain, it becomes both expensive and difficult to reallocate resources in response to changes in business environment. Delivery companies will begin to exercise more discretion in choosing which processes to do internally and which ones they need to relinquish control over through partnerships.

4. VERTICAL DISINTEGRATION

I have used the term *vertical disintegration* several times. Here I shall define what is meant by it and why it is bound to occur in the local delivery industry.

4.1 Drivers for Value Chain Breakdown

I use the term *vertical disintegration* to mean the process by which companies begin to reduce their coverage of the value chain and refocus their efforts on specific areas where they already have significant competitive advantage. Through disintegration companies achieve higher concentration of resources on high impact business projects and avoid diluting their efforts and their brand on parts of the value chain that will not help them achieve their objectives.

The ultimate goal of all delivery companies remains to be the control of the *last mile* to customers. To achieve it, companies need to move away from being *retailers* and become *service providers*. To see why, let's summarize the points discussed so far. As we saw earlier, the main economic driver in any delivery business is *route density*. Each delivery company has certain costs per hour such as truck leases and driver wages, which, incidentally, are the biggest components of variable costs in delivery business. The more deliveries are made, the less the cost becomes per delivery.

To reduce the impact of cost on operations, what most companies do are:

1. Increase route density by expanding the customer base within each neighborhood that the company covers
2. Increase the frequency of orders by increasing number of packages delivered per order, which in turn increases the dollar value of the order. This is achieved by enlarging product and service selection that the company delivers, appropriate to the target demographics for the company.
3. Increase operational efficiencies

As a matter of fact, most delivery companies today are in their growth stage. Similar to other Internet-based businesses, local delivery companies are more focused in growth and grabbing market share than they are in reducing costs through operational efficiencies. This is not to say that these companies are not concerned with their operations flow. They are, but it is not the biggest priority. Therefore, most companies are focused on items 1 and 2 above.

4.2 Prospects for Staying as e-Tailer

To do number 1 and 2 above, the companies have two basic choices. The first is to do the sales and marketing of the end-products themselves. That is, be an e-tailer with a delivery arm. As we mentioned, most local delivery companies (all delivery companies that started two years ago and before) indeed started as such. The choice was a logical one. At the time, there were gaps in the value chain. Without an established brand comparable to UPS and FedEx and without having proven the viability of being a local delivery business, these startups had little chance of convincing retailers such as Barnes & Noble, Gap to let them be a quality delivery choice for their customers.

Even on technology front there were issues. Companies like Kozmo and HomeRuns had to build their own fleet scheduling software internally because the off-the-shelf packages available to them were inadequate and not mature enough to address their operations needs.

As an end-to-end retailer, to increase customer base and product selection, these companies must:

- Increase their investments in sales and consumer marketing efforts, a very costly proposition in today's environment: Lots of capital in hands of many startups has raised the bar for doing an effective job at consumer marketing and standing above the advertising clutter.
- Add to their existing products and services like Streamline.com's dry-cleaning service: Similarly, WebVan recently began selling books on its website in addition to groceries.

The choice of being an end-to-end retailer has the big advantage that the company retains control of customer relationship throughout all phases of the process: Marketing, sales, and delivery. That's no small benefit to ignore. However, there are numerous disadvantages to doing so, the most important of which is that there is no competitive edge to be gained by owning your own delivery infrastructure in competing with other retailers.

There are three factors to consider:

- Operating a delivery infrastructure that covers both business and residential parts of a good-size metropolitan area is not cheap. The company must have access to lots of capital and must have good stream of cash flows to fund growth and to keep the existing operations running.
- Based on focus group interviews, consumers are not willing to pay much for same-day delivery of the goods they buy online (Appendix C). In the minds of consumers, same-day delivery service is a substitute for the experience of going to a local store and purchasing the item there rather than a substitute for UPS or FedEx shipping. Therefore, companies that sell goods online and offer same-day delivery of purchased items will have a difficult time charging customers for the deliveries. In fact, most companies today do not charge for delivery, especially if the order goes above certain dollar size.
- Today's B2C market environment for commodity type products is quite competitive. There are too many websites selling books, CDs, and similar items, all driving margins down. Unless a company has established a trusted brand such as Amazon, it is hard to see how it can make big money in B2C commodity market.

Therefore, if owning your own delivery infrastructure requires lots of funding from operating cash flows but you cannot get the cash flows from the delivery charges and you cannot garner good margins on your products and services in commodity markets, then the infrastructure becomes a burden on the business instead of being a competitive advantage.

Furthermore, by staying as a retailer and increasing product offerings and marketing efforts, the delivery companies will become more and more in competition with super-stores such as Wal-Mart and Amazon. But these retailers can establish their own same-day delivery network quite easily through partnerships as Amazon has done in the past. Amazon's investments in both HomeGrocer and Kozmo indicate Amazon's intention of moving its inventory out in local markets and using existing delivery companies to move its goods to its customers. A company like WebVan will be always stuck with its own delivery operations, regardless of whether their model of expensive and fully automated distribution centers is a good one or not. They cannot switch delivery methods as easily as Amazon can by just changing delivery partners.

4.3 Partnerships & Shared-Service Model

The second method of expanding customer base and increasing product and service selection is to do so the same way that most other Internet-based businesses do: through partnerships. Partnerships are faster and generally cheaper ways of adding products and customers than trying to do it yourself internally.

Companies would not have to spend management resources in building supply relationships, although arguably they will have to spend time managing their partnerships. They do not have cost of carrying inventory. They can invest dollars that would have otherwise gone to consumer marketing efforts into their delivery operation, their core competency.

Partnerships in this market also make quite a lot of sense. There are many e-tailers that have stores in local neighborhoods such as Barnes & Noble, Circuit City, and Home Depot. Against pure online operations such as Amazon, it is to the advantage of these businesses to leverage their physical stores into their online operations as much as they can. For example, when purchasing an item through Circuit City's website, consumers have a choice of having the item delivered to them or picking the item up from a local Circuit City store.

With a local delivery infrastructure in place, retailers will be able create a competitive edge for themselves by giving their online and offline consumers the choice of same-day delivery of items they buy from physical and virtual stores. Therefore, such retailers have business incentives to partner with companies such as WebVan. It is this likely threat from brick & mortar stores that is perhaps driving Amazon to move so quickly into the local delivery market through its investments.

The most important aspect of partnerships in this industry, though, is the ability to defray high costs of infrastructure among multiple clients. Historically in business world, whenever there has been a need for an expensive infrastructure, there have also been companies that made a living out of owning the infrastructure and *leasing* it out on subscription or transaction basis. A relatively old example is time-share models for mainframes.

Creating a network of customers around a single infrastructure has become quite common in Internet economy. A great example is the search engine market. Just about all early entrants in this market, with the exception of Yahoo!, owned its own search infrastructure. But as business shifted towards being a *portal*, Lycos' and Infoseek's of the world realized that although having a search engine on their site was still a necessity, it did not differentiate them from others much. The core competency instead became their ability to aggregate content and services for the masses.

The shift in the industry away from being a search site resulted in business opportunities for companies such as Inktomi. Inktomi built a search infrastructure that could do a better job of searching and indexing the web than most other search engines could. Inktomi, then, sold its search engine as a service to portals. The value proposition was simple: Inktomi was to focus mainly on building the best search engine infrastructure possible. By joining Inktomi's search service, companies would gain access to great search results, but the cost of infrastructure was being divided among more and more customers. So it would be cheaper to use Inktomi's service than to build or maintain a search infrastructure by yourself.

Moreover, Inktomi's model allowed smaller websites to offer the same sophisticated search that major portals were offering because the cost of search through Inktomi's networked model was low.

The analogy of this example to delivery companies is quite straightforward. It suffices to say that local delivery companies can spread the cost of their delivery infrastructure among more customers the more partners they sign on.

The main issue with partnerships for delivery companies is from game-theory point of view. The most puzzling aspect of recent partnerships struck by WebVan and Kozmo has been the subject of *trust* among partners. Both WebVan and Kozmo are considered to be retailers as they sell products and services directly to consumers. Both sell books today.¹⁷ Both, as we have seen above, have economic incentives to expand product lines and they may choose to do so themselves as WebVan has done with books. So

¹⁷ As mentioned before, WebVan recently announced that they will be selling books on their website. The move is not surprising as Louis Border, the founder of Border Bookstores, is also a founder of WebVan.

how is it that they can strike partnerships with other retailers such as Gymboree and Amazon?¹⁸ What type of assurances do the partners of these delivery companies have that they will not be competing head to head soon? How can Amazon be sure that while Kozmo delivers books to Amazon's customers, it will not be inducing Amazon's customers to purchase books from Kozmo's website directly? How can Gymboree be sure that WebVan will not compete with it by selling toys on its website in future and that the partnership is a stop-gap solution for WebVan? After all, Wal-Mart sells toys in its stores, so does Amazon. If WebVan wants to go down the path of becoming a large superstore, how can it have meaningful partnerships with the likes of Gymboree? It should not be surprising then to see Stuart Moldaw, the chairman of Gymboree, join DeliverEToday's board of directors recently. This can be read as a move to hedge risks to Gymboree as far as delivery of its products are concerned. We can see similar hedging by others. Amazon has investments in both HomeGrocer and Kozmo.

Game-theory suggests that the only way trust can be established between these types of partners is if local delivery companies divest from their retailing activities completely. Unless delivery companies stop selling directly to consumers, they will be competing with the same retailers that they need as clients of their delivery services. WebVan's foray into book business immediately alienates any bookstore from using WebVan's delivery services, thus reducing WebVan's potential consumer reach. Additionally, this creates an opportunity for new entrants such as DeliverEToday and SameDay.com to target booksellers and book chains such as Barnes & Noble and become their delivery arm.

4.4 Vertical Disintegration

Local delivery companies started out as retail and delivery operations. The above discussion argues for them to divest from retail activities and instead focus on becoming just pure delivery and logistics infrastructure companies. This is what is meant by *vertical disintegration*. This is the opposite of *vertical integration*. This is the process by which companies decide that their core competitive advantage is not what they started out with and that retailing adds excess baggage to their operations. In fact, it becomes a competitive disadvantage. All business drivers addressed above are pushing local delivery companies towards such disintegration.

¹⁸ WebVan has also announced partnership with Gymboree through which WebVan will deliver toys purchased on Gymboree website.

5. INDUSTRY OUTLOOK

The arguments in the last section describe the forces that will eventually drive the local delivery companies towards a service model, as illustrated in Figure 3. But not everyone will follow suit. In the following, we will discuss the reaction of the industry to the above forces and its outlook.

In the context of our discussions, we can place the companies into three categories:

1. Companies that are staying their existing course and will retain their focus on just one type of product and service
2. Companies that are in a state of flux and transition
3. Companies that are entering the market now

Service Level	Express Delivery	Food.com	←	Kozmo PinkDot UrbanFecth.com
	Same Day Delivery	DeliverEToday.com	←	HomeGrocer.com HomeRuns Peapod Streamline.com WebVan
		Delivery	Logistics	Full Coverage
Value Chain Coverage				

Figure 3 - Industry move towards providing services and away from retailing

5.1 Singularly Focused Companies

These are companies that will stay the course of their original business model and will show little flexibility to deviate from it. They will continue to retain focus on the mix of products and services they had set out to do at the beginning and will not introduce new offerings.

Examples are Peapod and HomeRuns. These companies consider themselves as *online grocers*. As such, they will continue refining their business processes to deliver just grocery and replenishment items. Interviews have indicated that management of such companies is internally focused on improving costs of operations to increase margins rather than introducing new products and services that can fundamentally change the behavior of their consumers and create new business opportunities.

But the odds are against these companies succeeding on their own. They will simply not reach the density of orders needed to achieve economies of scale by just selling groceries and replenishments. Furthermore, when someone like Kozmo or SameDay.com decides to deliver groceries for local supermarkets, HomeRuns and Peapod will not have much competitive advantage except for perhaps lower cost structure in fulfilling grocery orders because of their centralized approach to processing orders. But this low cost structure can easily be offset by the cost savings that SameDay.com can achieve, for instance, through increasing the density of its routes with partnerships with a slew of retailers.

The economic facts about online grocery business models and the high cost of deliveries plus competition from other delivery companies will spell doom for those that do not adapt their business models. Online

grocery market is quite competitive with about at least seven major businesses at national level competing in this space. Without breadth of product and service selections, it will be hard for pure grocery companies to survive on their own. Instead, the low valuations of these companies (Table 1) and the niche nature of their business make them attractive targets for buyouts. Most likely, these companies will be bought by large food companies that want more online presence. Indeed, recently the Dutch food retailer, Royal Ahold, bought 51% of Peapod for \$73 million. Immediately afterwards, Safeway invested \$30 million for 50% stake in GroceryWorks.com.

What may save these companies from disaster is if residential customers differentiate between kitchen-counter deliveries by most online grocers vs. door-to-door deliveries by others. If consumers do make such differentiation, it will leave a space in the market for online grocers to survive. However, even in that case we have to wonder if these companies can achieve sufficient density in routes in neighborhoods to generate good margins and cash flows for growth.

5.2 Transitional Companies

The second category of local delivery companies consists of those that are in transitional phase. They are refining and adapting their business models according to market forces behind the industry. But they are still in the state of flux and have not necessarily found the right mixes yet.

The strongest statement made by any such company in that regard was by Yong Kang, president of Kozmo. In a recent talk by Mr. Kang, he clearly labeled Kozmo as a *service company*. Such a labeling can only be the first step towards de-emphasizing Kozmo's own product sales in favor of servicing its partners.

Both Kozmo and WebVan have done much experimenting with the idea of partnerships and expanding product lines. WebVan's expansion into book sales at the same time it is partnering with others to deliver their goods may be interpreted as a form of identify crisis: should companies such as WebVan be a retailer or a service organization or both?

The discussions in the previous chapter argue that eventually experiments by WebVan and Kozmo in expanding their own product lines and *integrating* into other value chains will fail. In order to increase their order density and delivery frequency quickly and cheaply, such companies need to partner with others. And as we saw, to effectively partner with other retailers, these delivery companies must eventually relinquish their own retailing operations to avoid competing with their own customers.

As time goes by, these companies will focus more on value-added logistics services rather than retailing. They will create barriers to entry through the expensive warehousing and distribution infrastructure that they are building around the country.

And the opportunities are great for being just a delivery and logistics service provider to other retailers. Their customers will be retailers selling goods to consumers. For instance, today both HomeDepot and Staples have their own delivery fleet. It is conceivable that these two will eventually outsource most of their non-bulky deliveries to companies such as DeliverEToday or SameDay.com. Other types of customers will be retailers with both online and offline presence such as Gap and Barnes & Noble. Value creation for shoppers will be giving them the choice to have their jeans or books delivered from a local store to their houses in 24 hours instead of waiting for UPS shipment that takes several days. Indeed, Barnes & Noble.com has begun delivering books to New York City customers from a local distribution facility.

A potentially big market to serve though could be small local shops, those with little or no online presence. These local stores already enjoy strong relationship with their customers by offering convenience of shopping in local neighborhoods. It is conceivable to extend this convenience by

allowing their customers to order online and have them delivered from the local stores by a delivery company. The size of retail market was \$2 trillion in U.S. last year. It is likely that most of this commerce was done locally, within stores in metropolitan areas. Therefore, offering delivery services for local commerce can potentially be a large market.

Finally, an even more lucrative market to serve will be B2B: serving delivery needs that businesses have with regards to their business customers. The focus group study indicated that while no one is willing to personally pay much for same-day or next-hour deliveries, everyone would pay a premium relative to UPS and FedEx for such services if they were work-related. Indeed, there are many package deliveries that take place in local areas for business purposes. Auto parts need to be delivered to garages. Large copy jobs are shipped to local copy centers and then have to be delivered back. Test components and circuit boards are transported back and forth among semiconductor suppliers and R&D labs for large corporations. Most of the deliveries are done personally by employees of the companies. There is no nationally established player with a trusted brand to serve this market. That presents a market opportunity for express delivery companies to enter and to garner large premiums.

5.3 New Entrants

The last category to discuss is new entrants into the local delivery market. These companies have the luxury of not having invested any money into expensive business and technical infrastructures and also of having observed the industry for a while and understanding the market forces. Those that have entered the market in the past year or so have done so by focusing on providing delivery and logistics services at local level to retailers. Examples are SameDay.com and DeliverEToday.com.

As for opportunities for new entry into the consumer market, the window has closed. There are already too many companies that offer similar services, including those that I have argued will focus more on logistics service model such as Kozmo. The stiff competition, cost of building a brand, and high capital requirements for establishing presence nationwide are deterrents to entry.

5.4 The Outlook

The following are predications for the future of the local delivery companies:

- *Online grocers and replenishment companies that stay their current course of business will either go out of business or will be bought up by major grocery chains*
- *Existing local delivery companies that do adapt and focus on being service organizations will have a better chance of survival than others:* Success is not a sure thing though. The operations model for these companies are quite different in many cases such as Kozmo vs. WebVan. It is not clear which models will end up surviving at the end. But clearly the business flexibility, access to capital, and good name recognition go a long way in helping companies succeed.
- *New entrants will have a slim shot at surviving:* Survival requires access to capital and customer base. On one hand, it can be argued that retailers in search of delivery solutions will assist new entrants by signing deals with them in hopes of creating channel competition in that market and lowering their own delivery costs. On the other hand, big players such as WebVan and even UPS that will eventually get into this market will prevent that to happen. Consumer trust is important factor because of the high personal nature of making residential deliveries. Therefore, brand becomes important in who can succeed and attract the most business.
- *There will be a wave of consolidation in the industry:* The large number of entries into the delivery service market in the past two years and the difficulties of smaller companies to survive will create

opportunities for larger businesses to acquire resources of these companies at relatively low valuations.

- *B2B delivery market will heat up:* Going forward, B2C delivery market will a tough place to make money in. As mentioned before, in consumer market it will be difficult to charge high prices for same-day or even same-hour deliveries. Furthermore, because of the consumer mindset of comparing such services to the experience of going to a local store (Appendix C), these services will hardly create new impulse buys, a particularly interesting area for online retailers. Therefore, it will be difficult to justify economic benefits to retailers that will subscribe to local delivery companies and their services, unless a delivery service has a trusted and established brand that will induce consumers to use the service frequently. Instead, delivery service organizations will focus more on serving delivery needs of B2B market.

Last but not least, as companies become more of service business in nature and begin to address logistics needs of other retailers and businesses, they go in direct competition with logistics giants such as UPS. Eventually, such moves in the industry will convince UPS and FedEx that they will have to defend their turf through expanding their own offerings. Whether they will do so incrementally through organic growth or externally by directly investing in existing delivery companies remains to be seen. The competitive nature of the industry and the opportunity for consolidation certainly raises the chance of a series of acquisitions by UPS and FedEx in this market. Their success though remains to be seen as these companies carry excess baggage that many startups do not, such as large size and existing customer base that they may end up competing with (such as the Streamline.com example and UPS Logistics).

6. BUSINESS OPPORTUNITIES

As delivery companies mature and shift their business models, new business opportunities are created for both new and existing companies in e-tailing industry. Fundamentally, the opportunities are created by the fragmentation of the value chain (Figure 2) as delivery companies focus more on becoming service organizations. Such focus allows companies to allocate resources more efficiently to projects that create differentiation for them and help them provide quality delivery services for their business partners.

One type of business opportunity is quite basic in nature: Figure out what the technical and functional needs of companies such as WebVan will be when they make a transition to a service model and focus on being a niche provider of those needs. In other words, a host of new businesses will be created to introduce efficiencies for local delivery companies once delivery companies stop doing all parts of the value chain by themselves. Generally, such needs are obvious but fundamental to basic operations of delivery companies.

An example illustrates the point. As mentioned before, when HomeRuns and Kozmo started operations, they opted to develop their own fleet scheduling software because no other existing software could satisfy their requirements. It is because of these reasons that almost all early entrants in the local delivery market covered the whole value chain end-to-end: There were simply too many gaps to fill and no adequate solutions by external parties.

But as the market has matured and as the need for more sophisticated and refined fleet scheduling system has been observed, leaders in the fleet optimization software industry such as Descartes (Canada) and Roadnet Technologies (a UPS Logistics company) have adopted their software applications to also serve this new breed of delivery companies. Therefore, going forward, delivery companies do not have to develop all their infrastructure components themselves. As it becomes clear what those needs are, third parties will address the needs either by creating wholly new products and services or adapting existing ones.

But if the solution is done in an obvious way, the market opportunity for such companies disappears as quickly as they come about. It will be too easy for others to duplicate the solution and quick competition will remove any competitive edge. Therefore, if the solution is just evolutionary, there is simply no sustainable business advantage.

To continue our example above, Descartes has recently developed a web-version of its fleet scheduling software that can be accessed over the web by delivery companies. The revenue model is based on transaction fees rather than licenses. Although this is a novel way of approaching this functional process for delivery companies, by no means this is a revolutionary one. This is just an evolutionary step that can just as easily be duplicated by Roadnet and other competitors in this industry.

Evolutionary products do not protect a company against competition. The revolutionary ones do. An example is B2B exchanges that are revolutionizing the supply chain management. They are making the playing field for small and large players more level than before. They inherently have a high degree of positive network externality. The more buyers and sellers join an exchange, the better becomes the service and that in turn attracts more users. Therefore, an exchange, once it reaches a critical mass, has built-in barriers to entry while it delivers a great service to others.

Another type of business opportunity that exists related to local delivery companies will come about by the vertical disintegration process itself. The disintegration creates fragmentation of services across the value chain. Such fragmentation can become confusing to end customers of the service. For instance, there are currently many music sites selling CDs over the web today. When someone wants to purchase a

CD online, this person has to decide which place offers the best shopping experience (price, good navigation, or other factors). But if each site also offers multiple delivery choices, the decision process will further get complicated for the customer: The customer has to also choose the best delivery option.

Therefore, the force against fragmentation will be a complex (and weaker) form of vertical integration that is achieved through partnerships among various players in the value chain. Lets look at an example.

- Simon Property Group is the largest mall owner in the U.S. with 153 regional mall, 77 community shopping centers, three specialty retail stores and three super-regional malls in U.S. and Europe. Recently, it formed a product company called Clixnmortar to produce e-business solutions for retailers and for Simon Property malls. One such product is MySherpa.com. It consists of a Personal Digital Assistant (PDA) that customers can pick up at a mall and use to scan products that they see at the mall and want to purchase. Once the PDA is returned to a kiosk setup at the mall, the shopping list is uploaded to MySherpa.com. The customers can complete the purchase later from home.
- HighPoint Systems is a provider of PDAs and scanners for home usage. Users of these devices can scan grocery products and replenishment items and upload the lists to a website to complete the transaction.

Each product above is more on evolutionary path for inputting shopping lists to a website. A much interesting approach would be to combine the two product offerings with a delivery company such as DeliverEToday so that:

- Customers will own their own personal scanners. The scanner may be used at home or at participating retailers such as those in Simon Property malls.
- Customers will be able to scan products within a mall and perform a checkout process right there through wireless networks. As part of the checkout, the customers schedule a delivery time.
- The order is automatically uploaded through HighPoint to DeliverEToday. A DeliverEToday truck will pickup the completed order from retailers later in the day and deliver the product to customers' homes.

The point of above example is to emphasize that vertical disintegration and the associated business opportunities go beyond just responding to business forces. Successful companies are those that have the vision to introduce innovation both in their products and in the partnerships that they will strike to create new value added services for customers and to simplify choices.

One such interesting service, already being offered by SameDay.com, is a shopping portal. SameDay has created an online mall that is local in nature (a collection of retailers with local inventories). A customer purchasing goods from this shopping portal can receive the goods the same day by SameDay.com. This is different from WebVan selling the goods itself. It is also different from LycosShop or Yahoo!Stores in that customers can receive the goods almost immediately. The immediacy of transaction can create trust and a feeling of being in control for consumers, further inducing them to purchase products later from the site.

SameDay.com is creating a vertically integrated service and thus it is going the opposite way of disintegration (Figure 3). But SameDay.com is doing so through partnerships rather than through internal investments. SameDay.com is still focused on providing the backend logistics services necessary for running such a shopping portal. The portal feeds its delivery business. The creativity and complexity of the service is quite interesting. There is sure to be more examples in future.

7. CONCLUSION

In this thesis, we discussed the local delivery industry. We looked at the state of the industry today and we discussed the economic forces that are pushing it away from retailing business and towards becoming more of service industry. Being a service organization allows delivery companies to build more density in their routes by expanded product offerings and larger customer base acquired through partnerships. The density in turn makes the delivery operations more affordable for customers to use.

Not all the companies though will make the transition to a service model. Those that stay focused on their core product sets will simply be unable to achieve the economies of scale necessary to be sustainable. They become targets for acquisitions by larger grocery chains. Others that do make a transition to the service model have to content with competitive nature of the industry, the consumers' reluctance to pay for deliveries, and giants of shipping such as UPS and FedEx responding competitively. The opportunities, though, will be great, especially in the business-to-business delivery market, where margins can be quite high on each delivery.

Finally, we discussed possible business opportunities in this market. The first class of opportunities results from the vertical disintegration of the industry. As delivery companies focus on their core operations, they will look for ways to outsource as many non-core processes as possible. That creates an opportunity for new and existing companies to address the basic needs of delivery businesses.

Another opportunity is that fragmentation necessitates simplification of choices and services to consumers. Companies will come up with innovative solutions and partnerships to create value for end users through complex forms of business relationships. Such partnerships counter-balance the disintegration of the industry.

Finally, both types of opportunities demand a high degree of creativeness and innovation. Simply evolving existing solutions to adapt to local delivery companies and e-tailing is not enough to sustain competitive edge. Companies must find ways to introduce innovations and efficiencies in the value chain in ways that are not easily duplicated by others.

APPENDIX A: OPERATIONAL CHALLENGES

There are a number of challenges in running the operations for a local delivery company. This section briefly discusses some of these challenges. The material presented here is based on publication research and industry interviews.

- *There is a high cost associated with product returns when there is no place to drop-off a package:* The biggest headache for many delivery companies is product returns. When a driver attempts a delivery, if there is no one at home or office to receive the package, the driver has to carry back the package and perhaps even attempt the delivery later. The repeat delivery and the restocking of the package (in case the package is returned to the central distribution facility for the night) costs businesses money, estimated to be 10-20% of the purchase size. The problem is even worse in case of perishables: Most companies end up throwing away the returned perishables to keep their delivered products fresh.

Some companies have adopted business models that avoid this. Streamline.com, for instance, installs drop-off boxes for its customers to reduced failed deliveries. However, even that does not solve the problem 100%. Furthermore, such solutions do not work well in congested metropolitan areas where there is not enough room to install external boxes.

- *Residential deliveries generate demand in non-business hours:* Most deliveries to residential areas, especially if targeted at professionals and working parents, are made during morning and early evening hours. If a company has staffed its operations by hiring full-time drivers, scheduling drivers becomes tricky as it may create excess delivery capacity for the company during business hours. Some companies hire only part-timers. Some have delivery models requiring delivery within only certain hours of the day. Others are addressing the problem more structurally by building sufficient density in volume of orders either through partnerships with other retailers needing their delivery services or targeting businesses as customers during business hours.
- *If a business offers deliveries in specific time slots (half-hour slots, for instance), scheduling the deliveries becomes quite complicated:* As delivery windows become tighter, the logistics of fulfilling the order become very complicated. The problem is exacerbated when deliveries are guaranteed within a short period of time, as in case of Kozmo. In these cases, margin of error in estimating order fulfillment and delivery times become minimal. The most direct way to address this issue is by building a sophisticated technology infrastructure. Both WebVan and Kozmo have invested heavily in building a technology backbone to support their tight delivery windows.

Aside from technology, some companies elect to reduce their risk exposure by building slack into their delivery infrastructure. For instance, they maintain a higher number of drivers on staff than would be needed otherwise. But such an approach increases the operating costs and reduces operational efficiencies.

Other operational difficulties associated with tight delivery windows are:

- High on the wish list of all delivery companies is to establish a close relationship between their drivers and the customers. Therefore, these companies go through great length to ensure that only a limited number of drivers (in some cases, only one driver) is assigned to specific delivery area or route. That way, customers will not have to keep dealing with unfamiliar drivers.

However, the more dynamic is the nature of deliveries, the harder it becomes to schedule specific

routes and permanently assign drivers to each route. A company such as Streamline.com that has weekly scheduled deliveries to homes can afford assigning the same drivers to the same delivery routes. But a company such as Kozmo that processes orders as they come in and promises one-hour deliveries can hardly afford such luxury. Operationally this is simply too difficult a constraint to impose on the system.

- When delivery windows are tight, variables such as traffic and road conditions become critical to the delivery operations. These variables are outside the control of companies. When a company promises a delivery at certain time and fails to meet that delivery deadline, the company pays for it by losing customer's trust and loyalty. Some companies address this by building slack into their delivery schedules or by sending out more delivery vehicles to the field once the drivers on the road begin to fall behind their schedules. Some integrate technology into their infrastructure such as GPS tracking. The latter must take into account historical as well as current information such as traffic loads and weather conditions.

APPENDIX B: INDUSTRY INTERVIEWS

A number of interviews were conducted with former and current managers of online grocers. The objectives were:

- To learn about the order fulfillment and delivery operations of these companies and their complexity
- To hear the managers describe the differences between their business approach and those of others
- To understand the business priorities and objectives of these companies
- To learn where the managers see their companies and their industry is moving towards

For confidentiality reasons, the details of these interviews and the names of individuals and the companies involved are not disclosed here. Instead, the following is a list of questions prepared in advance of the interviews. Not all the questions were covered in the interviews. The direction that each interview took dictated the exact questions that were asked and their order.

QUESTIONS

- 1) What is your delivery process? When the orders are received, how are they processed and allocated to trucks, how are the routes picked, how are the orders tracked?
- 2) What are your top business objectives/priorities for your customer fulfillment, in general, and your delivery operation, in particular?
 - Cost reduction?
 - More efficiency? (What does *efficiency* mean to you?)
 - Building better relationship with customers? (How?)
 - More predictable delivery times?
 - Others?
- 3) What are the top business issues you are facing in achieving your goals, especially for the delivery portion of your operation?
- 4) What are the top worries/needs of your customers?
 - On-time delivery?
 - Quick delivery?
 - Pickup options?
 - Others?
- 5) What are you doing to address those needs/worries?
- 6) Where the market is heading: on-demand, unscheduled deliveries vs. scheduled ones?
- 7) How many vehicles are in your fleet (total and average per city)? How many deliveries does each truck make per hour?
- 8) How much does each delivery cost on average (% or \$ amount) relative to total order amount?
 - How much is your average order?

- 9) What are the biggest contributors to the cost of delivery?
- Which input variable to delivery operations has the largest impact on your business?
- 10) What are the bottlenecks in operations: traffic patterns vs. design of service vs. inventory and its position vs. others?
- 11) What is the tradeoff between high level of fleet utilization vs. robustness of operations (on-time deliveries)?
- 12) Who in your company makes investment decisions for the fulfillment and delivery operations?
- 13) What types of investments are you making today in your information technology infrastructure as it relates to your fulfillment and delivery operations?
- a) Are these onetime investments or ongoing/recurring?
 - b) Are these done in-house or are outsourced?
 - c) Who are the current suppliers of solutions to your organization?
- 14) What types of investments in your information technology infrastructure will you be making in future?
- a) Will these be onetime investments or ongoing/recurring?
 - b) Will they be in-house or outsourced?
- 15) Would you ever consider outsourcing any part of your fleet management (software operations, phone dispatching, fleet management, drivers, etc.)?
- 16) Would you ever consider treating investments in improving the delivery side of your business as separate investments or do you bundle those with other investments in the whole order fulfillment operations?
- a) What would give you an incentive to treat the investments individually? Significant cost savings and improving efficiency?
- 17) Do you have specific selection criteria when investing in technical solutions by third parties?
- a) Are there any other factors that you look at aside from cost of the solution, such as size of the company?
- 18) Is any part of your delivery operations regulated by the government?

APPENDIX C: FOCUS GROUPS

To understand the online behavior of consumers and their shopping and delivery needs, four focus groups sessions were conducted with twelve fellow students from MIT Sloan. Although the sampling for the interviews was not random by any means, the young affluent professionals represented in this research is indeed the target market for many online retailers, especially online delivery companies.

The objectives for the focus groups were:

- Identify various types of online shoppers and categories of items that they purchase online
- Determine how critical is the cost and timeliness of product delivery in their purchasing decisions
- Determine if Express Delivery or Same Day Delivery does spur more purchases (both impulse and planned purchases)
- Determine how much can be charged for Same Date Delivery of goods purchased online

RESULTS

The following are the main results related to local delivery industry.

- Even in this small sample, it is quite difficult to narrow down the attitudes and behavior for online shopping to few categories. To some *convenience* means researching products and shopping online; to others it means researching the products online but purchasing them at a store. Yet, to others convenience means going to a local store, picking up the item, and paying for it right away. Simply put, different people shop online for various reasons, too specific to culture, background, and other factors to be broken up into just few general points
- The group expressed a number of concerns about online shopping including privacy and lack of face-to-face interaction with the vendors. Shipping charges and methods were not necessarily top concerns, but they were viewed as headaches. Specifically, some people loudly expressed frustration with having to go to UPS and FedEx distribution centers to pickup packages that could not be delivered to them in the first place because they were not home. These people want flexible delivery times so that packages can be delivered at a time that they are home.
- Almost without exception, no one is willing to pay a premium for same-day delivery services, relative to UPS and FedEx shipping charges, for the goods that they purchase online. Furthermore, a surprisingly large number of people said they will not pay much at all for the service if they can go to a local store and buy the same item there. This resistance to pay for same-day delivery service was quite surprising specially that the question clearly positioned same-day delivery in competition with FedEx and UPS shipping services. As was verified in follow-up questions, most people view physical stores as alternative to online purchase and delivery of goods the same day. Therefore, businesses that end up delivering items from retailers to consumers will have a hard time maintaining big margins over their cost of delivery.
- In contrast, without any exceptions, everyone said they would pay the same price as UPS or FedEx or even more, if item purchased was for their work. This indicates that delivery companies catering to businesses can position their delivery as a premium service relative to UPS or FedEx and extract higher margins.
- Same-day delivery services may spur more purchases but mainly for last-minute urgent purchases such as gifts or emergency purchases such as prescriptions. The impact of same-day delivery service

on encouraging sales for items that depend on the mood (such as music) or inconvenient items (like pet foods) was not clear and, therefore, deemed marginal.

QUESTIONS

- 1) Do you shop online? How often?
- 2) What categories? How often? How much?
- 3) Has your online shopping taken away money from offline spending?
- 4) What are the impediments to your shopping online? Consider impulse buys and also instances in which you decided against shopping after filling up your shopping cart.
- 5) Suppose you have made it through all the way to choosing the delivery method for your purchase. Suppose in addition to UPS and FedEx, you have a third choice for delivery called Same Day. That is, your product will be delivered to you on the same day you purchase it, perhaps even within few hours. Would this have any impact on your purchase at that point? Would you use this service? What will compel you to use the service?
- 6) Suppose you are browsing websites and you come across a website that on its homepage clearly offers Same Day delivery for products purchased on the site. Would this have any impact on your browsing behavior? Would that compel you to buy anything from that site? If so, for what categories of items would this impact your purchase decision? Would you use this service? What will compel you to use the service?
- 7) Suppose you have an option to use Same Day delivery for an online purchase. Understand how the participants view this service. Do they compare it to FedEx and UPS or do they view this as an alternative to going to a local store instead.
- 8) How much are you willing to pay for the Same Day delivery service, if at all?
- 9) Have you heard of or use any grocery companies? Why?