Chapter 2
Anatomy of a Dot-Com Failure: The Case of Online Grocer Webvan

E-tailing does work. By using the Internet intelligently, old-economy grocers such as Safeway and Albertsons, far from being dinosaurs, are the wave of the future.

(Munroe 2013)

In 2008, when CNET published its list of the top ten dot-com flops ever, online grocer Webvan topped the list (German 2012). This chapter describes the rise and fall of Webvan, and analyzes the reasons for its failure. In particular, this case demonstrates that Internet companies – contrary to what many entrepreneurs believed during the dot-com boom – are not immune to the basic laws of economics or sound business practice.

2.1 Origins

In 1996, using funds from the sale 4 years earlier of the successful bookstore chain he had created with his brother, Louis Borders formed a new firm named Intelligent Systems for Retail. The computerized inventory system that the Borders brothers had built in order to customize the stock in each local Borders bookstore, which had been a major factor in the chain's success, had convinced Louis that the intelligent management of inventory and delivery offered many new business opportunities. Louis hoped that his new company could revolutionize direct delivery to consumers of a wide variety of products – offering personalization through the intensive use of technology.

Drawing on the cachet of his previous entrepreneurial success, Louis lined up a broad group of first-class investors – Benchmark Capital, Sequoia Capital, Yahoo, Softbank, Goldman Sachs, Barksdale Group, CBS, Knight Ridder, LVMH (Louis Vuitton, Moet, Hennessey), Amazon, and others – in addition to investing some of his own personal fortune. He attracted George Shaheen, the managing partner of

Andersen Consulting, to become the CEO. The company had a highly successful initial public offering, raising $375 million. Through these various efforts, the company acquired $1.2 billion in capital.

Borders's first venture partner, Benchmark, reined in his vision somewhat, and the decision was made to focus on selling groceries online, which would be delivered directly to the customer's home within a 30 min window of time specified by the customer on the previous day. The company was renamed Webvan Group in 1997 and became a leading player in the e-commerce field. Borders believed the company could be successful if it could capture even a small piece of the more than half trillion dollar American grocery market (Gale 2002; McAfee and Ashiya 2001).

The initial plan was for Webvan to open operations in 26 metropolitan areas. Customers would order online, with a toll-free telephone number available if they had questions. Orders would be filled from a high-tech, purpose-built warehouse located within the metropolitan area and delivered by one of the company's vans to the customer's home, where the groceries were left on the front steps or brought in to the kitchen. Webvan ordered untested high-tech warehouses for each of the metropolitan areas in which it planned to operate from the locally headquartered but nationally prominent construction and engineering company, Bechtel Corporation, at a cost of $35 million apiece. Thus the total price tag for these warehouses was a staggering 1 billion dollars. The warehouses were intended to be the most automated in the world, each one with more than four miles of conveyor belts carrying shopping baskets through the building. When a basket reached a "pod" (an order fulfillment station), an electronic order flashed a light and the stock shelves moved so that the human assembler was made aware of which grocery item to select and place in the cart, without ever having to move more than 19 ft. Trucks then took the cart to one of a dozen docking stations, where the groceries were loaded on a van for home delivery.

2.2   Operational Practices and Business Mistakes

The company began operations in ten cities by the end of 2000. The customer base continued to grow, and most customers were reasonably happy with the variety (e.g. 300 kinds of vegetables) and high quality of the products, as well as the generally on-time service. However, the customer growth was not rapid enough to secure a profit. The company expanded into new cities too quickly and spent too much money not only on the warehouses, but also on the vans to deliver the food and computer systems and proprietary software to run the operations. These capital expenses, together with salaries for 3,500 employees, meant the company was burning through $125 million per quarter.

The company made a number of basic business mistakes that savvy brick-and-mortar companies would likely have avoided (PC 2011). There was a belief among dot-com business entrepreneurs at the time that rapid growth was more important

- Some people enjoy the experience of grocery shopping.
- People commonly like to pick their own meat and produce.
- People get menu ideas by looking at store shelves.
- People are confused by a large number of provduct choices, which Webvan offered.
- People want to be able to use coupons, which Webvan allowed only near the end of the company's life.
- People want to be able to purchase economy-size budget packs of diapers and paper towels, which Webvan did not offer because these items take up too much space in the warehouse.
- People cannot easily commit in advance to a particular time to be home for the delivery.
- Women (the main target customers) were sometimes worried that they might be criticized for not doing their part for the household by making trips to the grocery store.
- People like to have the chance to make their own real-time decisions about substitutions if a product is not available on the shelf.
- A trip to the grocery is often coupled with other errands, such as going to the gas station or dry cleaners, so online grocery shopping does not eliminate household tasks outside the home.
- By not going to the store, people lose the opportunity to conduct other grocery store activities such as cashing a check, filling a prescription, or returning an item for immediate credit.
- People like to talk to store personnel and ask questions.
- People like to look at "meal-replacement" items such as ready-to-eat or ready-to-bake items before selecting them for purchase.

Fig. 2.1 Knowledge Webvan might have gained from user testing (Source: Hiser et al. 1999; Keh and Shieh 2001; Morganosky and Cude 2002; Ramus and Nielsen 2005)

than anything else; and many of these mistakes can be attributed to this "get big fast" philosophy. The 350,000 square foot warehouses, each of which could supply the equivalent of 18 grocery stores, were too large for the amount of business the company had attracted. In many cities, operations were running at only one-third capacity, well below the break-even point; and it was only through productivity gains in the warehouse that the company had any chance of competing with brick-and-mortar supermarkets. The design of the warehouses was not tested before Bechtel began to build them in multiple copies for the various cities in which Webvan was planning to operate; and a number of features had to be abandoned, such as the butcher area, which was closed when it was decided the company would do better to outsource meat provision, or when they learned from experience that the automated lazy susan slowed to a crawl in the deep freezer. The company apparently never conducted consumer testing, such as focus groups or surveys, to learn if there was sufficient demand for online grocery shopping. See Fig. 2.1 for a list of some of the things the company might have learned from user testing. It was also costing the company too much – $210 – to acquire each new customer. Many people tried Webvan once, but more than half of the first-time customers never returned.

2.3   Demise

It was probably a mistake for Webvan to have chosen groceries as its principal business, for the grocery business has one of the leanest profit margins (under 5 %) of any commercial market they could have entered. Moreover, none of the principals had experience in the supermarket business (Glasner 2001). Brick-and-mortar grocery chains had a competitive advantage against Webvan by filling online orders out of their stores without the time and capital expense of building a new warehouse infrastructure. The large brick-and-mortar supermarket chains had buying power that Webvan lacked. The company also made a mistake in selecting such a narrow delivery window. With only a small number of scattered customers, the 30 min window made the delivery portion of the operation highly inefficient and expensive to carry out. Peapod, one of Webvan's major competitors in the online grocery business, chose a 2 h window for delivery, which enabled it to rationalize its delivery routes to a far greater extent than Webvan.

Rather than trying to correct most of these problems, Webvan plowed ahead with its get big fast philosophy. In 2000, instead of cutting back and controlling its costs, the company expanded into Atlanta and Dallas. That same year, it bought its nearest rival in the online grocery business, Home Grocer, for $1.2 billion in stock. However, Webvan was never able to integrate the two lines of business sufficiently and retain the customers so as to gain advantage from the merger (Cuneo 2000a, b).

In one last-ditch effort, after the company had started to hemorrhage money, it decided to rebrand itself as a purveyor not only of food, but also of electronics, pet supplies, kids clothing, non-prescription pharmaceuticals, books, and a half dozen other product categories. This compounded the problem because the company's original brand and mission were not yet well known and rebranding was expensive.

In July 2001 Webvan laid off its remaining 2,200 employees and ceased operations in the seven markets in which it was then operating (San Francisco, Los Angeles, Orange County, San Diego, Portland, Seattle, and Chicago), having gone through $1.2 billion in only 2 years of set-up and another 2 years of operation (CNN Money 2001; Delgado 2001; Hansell 2001a, b; Knowledge@Wharton 2001; Levis 2011; Venture Navigator 2007; Weiss 2001). At the end, the company had approximately 750,000 customers – although only a small percentage of them used the service regularly. A month later, stock certificates from Webvan were being sold on eBay as memorabilia of "the most spectacular failure in Internet business history" (eBay sales copy, as quoted in Tedeschi 2001).

2.4   Competitors in the Online Grocery Business

Stepping away from the individual story of Webvan and placing it in a larger business context, the first online grocer was Grocery Express, which began operations in San Francisco in 1981. In the mid and late 1980s, Grocery Express customers

1. Marsh
2. Harris Teeter
3. Giant Food
4. Albertsons
5. Stop & Shop
6. Bashas
7. Peapod
8. Schnucks
9. Hy-Vee
10. Ingles Markets
11. Why Run Out
12. Stater Bros.
13. Easy Grocer
14. Publix
15. Walgreens
16. Simon Delivers
17. My Web Grocer
18. Market One Stop
19. House Calls Online
20. Price Chopper
21. Net Grocer
22. Ethnic Grocer
23. Grocer Online
24. Kroger
25. Metro Food Market
26. Electric Food
27. Your Grocer
28. Groceries Express
29. Bluelight
30. Giant

Fig. 2.2 Top-ranked online grocers as of third quarter 2001 (Source: Lim et al. (2004) [MyWebGrocer is a company that provided hardware and software so that brick-and-mortar groceries such as Piggly Wiggly and D'Agostino's could add an online operation])

connected through the Prodigy online service, before the World Wide Web existed. Among the earliest entrants, in addition to Webvan and Grocery Express, were Streamline, Shoplink, and Homeruns (Weise 1999). All of these companies were "pure" players, i.e. they started as Internet companies rather than being brick-and-mortar groceries that later entered the online grocery business. Streamline and Shoplink took a different approach from Webvan in that they used reception boxes rather than requiring the customer to be home for the delivery. Reception boxes are locked, refrigerator-like boxes with separate compartments for frozen, refrigerated, and room-temperature groceries. Reception boxes ease the logistics of delivery and free customers from having to be home when the delivery is made (Ring and Tigert 2001; Smaros and Holmstrom 2000; Tanskanen et al. 2002; Williamson 2000; Willoughby and Holcomb 2001; Yrjola 2003). However, neither of these companies was successful. Figure 2.2 shows the list of U.S. online grocers as of the third

quarter of 2001 (ranked according to an analysis that shows various qualities, not amount of business). Note that some of the leaders at that time were pure players. By the first quarter of 2004, however, none of the pure players ranked in the top ten. The companies that were most successful in the online grocery business were the brick-and-mortar grocery firms that used online sales to extend their services and capitalize on their existing infrastructures. Change occurred quickly in this field. Of the 30 companies listed as players in the first quarter of 2001, ten were no longer in the business by the fourth quarter of 2002. Note that two of the brick-and-mortar companies in online groceries were not even grocery firms: Walgreens is a drug store chain and Bluelight is the online website for discount retailer Kmart. The two largest brick-and-mortar grocery firms in the United States, Kroger and Walmart, were hardly a presence in the online grocery business at this time.

The year 2000 was a principal entry year into the online grocery field (Streif 2000). Two of WebVan's major startup competitors were Kozmo and UrbanFetch – both founded that year (Moskin 2005). 28-year-old New York City former investment banker Joseph Park founded Kozmo as an online convenience store (Scott 2002). The customer who did not want to make the trek to the corner store could order soft drinks, ice cream, movie rentals, and other convenience store items online, and they would be delivered by bicycle courier to the home within an hour (Collins 1999; Kushner 1998). UrbanFetch had a similar business model and also delivered food, books, and compact discs by bicycle in Manhattan and London, but most of its revenue came from delivering – within an hour – higher-priced items such as designer fragrances, video games, digital cameras, and DVD players.

Kozmo started its business operations in New York City with many of its early employees sleeping in the company's offices and showering at local health clubs. Amazon pledged a $60 million investment in Kozmo, when it agreed to deliver books, music, and toys for Amazon by bicycle courier within an hour of being ordered (in the cities in which Kozmo operated) (Dobbins 2000). Kozmo also entered into a 5-year agreement to place dropboxes for its movie rentals in Starbucks coffee shops and deliver Starbuck coffee products. This arrangement with Starbucks did not work out well; it cost Kozmo $150 million and was terminated after only 13 months. Kozmo originally delivered products for free, but eventually it instituted a $4.95 delivery fee. Even that fee did not cover the actual cost of delivery (estimated at $10), nor was there enough of a margin in the markup on video rentals or pints of ice cream to subsidize the delivery cost. Kozmo considered acquiring UrbanFetch in 2000 until it learned more about the latter's financial circumstances (Fendelman 2000). UrbanFetch closed in 2000, followed by Kozmo in 2001. Streamline and Shoplink also soon closed.

While Webvan was not able to succeed in the online grocery market, other organizations have (Munroe 2001). In Britain, the Tesco supermarket chain has had a profitable home grocery delivery service since 1996 (Delaney-Klinger et al. 2003; Ehrlich 2006). Tesco decided to fulfill its delivery orders from within its existing brick-and-mortar stores, using carts that follow a computer-generated path through the store, filling six orders simultaneously, and employing efficient delivery routes distributed across the metropolitan area. Tesco charges an upfront fee of five pounds

for the service. Its success in this business in the United Kingdom led it to operate a successful grocery delivery service in the United States for the Safeway grocery chain.

Some startups have also succeeded, notable among them is Peapod (now part of the Dutch Royal Ahold grocery conglomerate). Today, Peapod operates a profitable grocery delivery service in connection with two brick-and-mortar grocery chains also owned by Royal Ahold: Giant Food in Pennsylvania, Maryland, Virginia, and Washington, DC; and Stop & Shop in Connecticut, Massachusetts, New Jersey, and New York. Peapod has succeeded by doing a number of things differently from Webvan. Peapod does not open a centralized warehouse until the volume of business makes this a cost-effective practice, and in smaller markets it fulfills orders from small buildings adjacent to existing grocery stores. In the beginning, Peapod's fulfillment was carried out through existing brick-and-mortar grocery stores. Peapod tested markets before making a large commitment – in contrast to Webvan's strategy of getting big fast. Peapod had a 2 h time delivery window, making it easier to rationalize delivery routes and reduce delivery costs. Peapod focused more on business practices than on technology, and it did not incur the large up-front costs for technological infrastructure that burdened Webvan. Peapod's management was already familiar with the grocery business and was careful to learn lessons from its interactions with customers (Lunce et al. 2006).

Others successful in the online grocery business in the United States include Coborn Delivers (formerly Simon Delivers) in Minnesota and Wisconsin, FreshDirect in New York City, and Winder Farms in the western United States. The brick-and-mortar grocery chains Albertson's, HyVee, and ShopRite have also operated online grocery delivery services. Amazon, which was an investor in Webvan, has operated its AmazonFresh delivery system in Seattle since 2007. It can be accessed through all of the major mobile phone platforms. Even the hotel and airline ticket discounter Priceline joined the business with its WebHouse Club, which for a $3 monthly membership fee allowed customers to set the price at which they were willing to pay for groceries; and if a grocer accepted their bid, the customer would pick the groceries up at a Giant or Safeway store (Canedy 1999).

2.5   Business Challenges and Opportunities for Online Grocers

Turning away from the story of individual firms such as WebVan or Kozmo, what does the academic literature tell us about online grocery shopping? Online grocery shoppers are typically young (less than 45 years of age), female, college graduates, and with a household income over $70,000. Older people, major shoppers, and people with lower income are less likely to know about online grocers; and older people and those with no college education are less likely to consider using them. Perception of convenience and the ability to save time are the strongest drivers of online grocery shopping. Consumer trust is higher in firms that have a physical as well as an

online presence. Individuals who have experienced online grocery shopping are generally more trusting of it, and are even willing to buy produce and meat online. Perceived advantages of online groceries are greater convenience, wider product offerings, and better prices; disadvantages include not being able to check the products (fear of inferior quality) and loss of recreational shopping (Hansen et al. 2006).

One of the major business concerns in online groceries is the last-mile delivery problem. Compared to Webvan's business practice of attended delivery – even compared with a more flexible 2 h delivery period rather than Webvan's 30 min delivery window – having a reception box at the customer's house lowers delivery transportation costs by 43–53 % because the delivery routes can be rationalized more effectively. If the online grocer sets up shared reception boxes, perhaps at the local convenience store or gas station, the delivery cost is reduced further – 55–66 % lower than home-attended delivery. However, the use of reception boxes introduces capital expense for the construction and delivery of the boxes, which has to be recovered over time. One study argued that it would be impossible to get sufficient density for an attended reception model to work generally in the United States (Cox 2011; Kamarainen 2003; Kamarainen et al. 2001; Punakivi 2003).

The academic literature also has considered grocery distribution facilities. Use of a specialized distribution center, like those Webvan built, can be more efficient than using a local grocery store – but only in cases of high volumes of business. In other cases, using the grocery store infrastructure is clearly more efficient and has the added benefit of fast startup and low initial investment. Automation of the grocery picking (as Webvan used) only works in situations where there is high and constant demand; in many cases, these studies found, a flexible distribution with manual picking is more effective. The studies also argue that online grocery success depends on local factors, and thus it is better to do well in a confined geographical area before opening in another area – contrary to Webvan's plan to rapidly enter multiple cities.

Finally, the literature notes how formidable a competitor the traditional brick-and-mortar grocery is. Quoting one study (Ring and Tigert 2001, p. 271):

> Supermarket chains in most cities have developed a loyal customer base through years of service and convenient locations. Supermarkets are extremely efficient, with total cost per customer served of approximately $6-7. They are constantly advertising to maintain high levels of awareness about prices, assortments, service, quality, specialty products and loyalty programs.

Clearly, Webvan did not understand the business it was getting in to. There seems to be some limited promise for online groceries, but it is an open question whether they are viable in geographic regions with low-density populations.

2.6   Conclusions

Webvan was a monumental failure. It proved that Internet companies are not immune from the basic laws of economics and the sound practices of business. In particular, Webvan serves as a poster child for the problems of excessive spending

and the get-big-fast philosophy characteristic of the dot-com boom and bust. It was hubris on the part of the entrepreneurs who established Webvan to rely on their native smarts and experience and spent more than a billion dollars without first gaining a better understanding of its customers' needs and wants. The company did not realize how many grocery shoppers enjoy the experience of shopping, want to select their own meat and produce, are overwhelmed by too many product choices, and find it problematic to schedule in advance to be home for a delivery (even if the delivery window is small). Subsequent developments have shown that a small market for online grocery shopping and delivery does exist, provided that capital outlay is minimized and infrastructure is piggybacked on that of brick-and-mortar grocery stores. Webvan also made the mistake of testing its service in a market close to home in Silicon Valley rather than in a community where density of housing (e.g. Manhattan) or absence of brick-and-mortar groceries (e.g. Detroit) would have made for better prospects of success. The Internet parts of this business – ordering and payment – seem to be the least important elements for success. The logistics and warehousing, as well as the analytics of what products to offer and how to design the delivery routes and timetables, are the critical issues in making this business successful.

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