Lessons from B-Webs in Grocery Business

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Ⅰ. Introduction

In the old days before supermarkets appear, small family-owned food store delivered groceries to most of people. Today we are finding that some people are ordering and getting groceries at home. But the grocery store offering delivery service and many others is not a small business any more. It is usually a large e-business company. Using internet, people get some new service in several industries including groceries.

Getting to know the famous Amazon.com, most people would think that the standardized and easy to deliver goods such as books, CD's, video games are the right ones for e-commerce. Also information goods such as securities should be more than perfect for e-commerce. But in this paper, we study the grocery industry in the context of business webs. It is not easy to standardize groceries, and they have many characteristics which make it hard to handle.

For most of our discussion, we consider U.S.-based grocers which tackle e-business consumers. It is known that a typical shopper in U.S. visits a grocery store 2.2 times a week and spend around $60- $100(approximately one-tenth of weekly earnings). The size of grocery industry is rather huge and $450 billion in the United States. The size is approximately 15 times that of

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book market.

According to the research of Anderson Consulting, 15 million Americans are shopping avoiders who dislike shopping on the supermarkets. They want to avoid traffic jams, lengthy queues to picking and packing goods. These people would be the target for e-grocers. Forrester Research also forecasts that the market potential for online grocery sales will reach as much as $60 billion.

Many people say that grocery industry can be a potentially good playground for e-business. But online grocery business has several problems. Delivering an electronic order to customer's door satisfactorily needs a complex operational sophistication. Grocery shoppers on a web cannot see the rich color nor smell the fresh bread. And some of the grocery goods themselves are problematic in carrying. It should be hard to ensure the eggs arrive unbroken, and vegetables fresh and unflattened. Thus in pursuing an industry for a new e-business model, we should weigh the pros and cons of inherent characterists, and try to maximize the advantage.

In this paper, we review several players in the e-grocery industry. Some players implemented somewhat ingenious ideas to overcome the disadvantages of e-business. In addition to the several cases, we give the current evaluation of those firms in the stock market. By doing so, we might get some overview of the industry and have the knowledge which can be applied to other industries.

Our objective in this paper is not to study only the e-business itself on the web. Rather it should be to study what the real-world players did to overcome the barriers to e-business. Did they tackle the barrier appropriatly? We should be able to apply the lesson in a grocery industry to other sectors for successfully implementing e-commerce.

II. Industry Overview

The grocery industry we are dealing with is rather huge. Everybody needs grocery for living. Average U.S. household is known to spend $4000/year on

groceries.

Forrester Research predicts that online food and beverage sales will reach $10.8 billion by 2003. which is 2% of total industry sales. And Anderson Consulting estimates $57 billion for online orders of food and household goods by 2007. According other research. grocery/prepared food/drugstore industry is $650 billion market. And its online section is $350 million and will be $3.5 billion by 2002. The common idea that all these researches

share with being possibly different in exact numbers is that the grocery industry is large and its e-business sector will take larger share as time goes by.

Many of a supermarket's product-centered core assets. including its industry-specific knowledge. business processes. and management practices. do not apply to business on the internet. Supermarkets manage categories rather than individual product for profitability. Using the aggregate and anonymous customer purchase information. managers design a portfolio of assortment. price. shelf placement. and promotional activity.

On the other hand. web grocers are more customer-focused. The customer is the central unit of analysis. Individual customers drive product assortment. placement. pricing. and promotions. Through the consumption habits and shopping behaviors. web grocer can customize several marketing activities which can be more effective in increasing profit. This kind of customization can be more helpful to each customer by providing the needed service.

When we use the individual information. we can go one step further for the operations management as well. Many people say that the day of make-to-stock is gone and we should focus on make-to-order. But with individual information on a web. we can 'premake-to-order'. For example. tracking the date of last purchase of toothpaste. the grocer can predict when the customer will need another. Based on this refined forecast. the grocer can replenish more efficiently than before. This system looks like the old system of make-to-stock based on forecast. but is totally different in the sense that it is based not on aggregate

forecast but on refined individual prediction. This kind of refined information on individual customers will improve inventory management.

III. U.S. Players

In this section, we review several e-grocers in the U.S. markets. Their strategy is somewhat distinct in some dimensions. We can get some overview what the real world players are doing for grocery market.

(1) HomeGrocer

HomeGrocer was founded by Mike Donald and Terry Drayton in Bellevue, Washington in May 1988. Amazon.com paid $42.5 million for a stake in this Seattle-based HomeGrocer. One of the reason to choose Seattle was that it has dense "wired" populations, who are potential customers. Wired customers log on, purchase groceries using credit card, and the order is delivered to their door within 24 hours.

HomeGrocer operates an automated warehouse. In warehouse, pickers with LCD screens on their wrists go to the right place. Upon picking the item, they scan it with the laser scanner mounted onto the end of their index finger. As the trucks were being loaded with their day's worth of deliveries, a sophiscated routing software decides the most efficient route for each truck. There is a 45 minute window for grocery delivery and currently it achieves 98% of fulfillment. Initially HomeGrocer outsourced for IT, but started to hire in-house developers for building an entry-barrier.

Its greatest challenge was getting the necessary customer base. This requires demanding customers completely change a certain aspect of their way of life, which should be very tough. The ideal customer for HomeGrocer is a family of four who is likely to exceed $75 per order. As a way to induce customers, it offered better customer service via internet. For example, it offered online recipe which accompany its ingredient grocery.

(2) NetGrocer

The Barksdale Group, a venture-capital firm launched by former Netscape boss Jim Barksdale, chose NetGrocer for its maiden investment. NetGrocer works from a central warehouse, but ships nationally using FedEx. The delivery usually takes 4-5 days and NetGrocer offers low prices on many products. It leapfrogged Peapod's local market growth, but offer only non-perishable shelf-stable 3,000 items. It did not partner with any gorcery retailer, but worked as a large established online membership discounter.

(3) Peapod

Andrew and Thomas Parkinson, both former Procter & Gamble employess, founded Peapod in Evanston, Illinois in 1989. They were brand manager and software designer respectively at P&G. Initially they did not intend to operate stores or warehouses. They partnered with the Jewel supermarket chain and brokered the relationship with customers. Upon receiving orders from a customer by phone or fax, they dispatch Peapod employees to pick and pack orders off the Jewel shelves. Then Peapod vans delivered the goods to the customer's door. Peapod focused on processing orders, delivering them on time, collecting money, and handling complaints.

They targeted the busy and affluent suburbanities who buy lots of groceries but also too busy to go to the grocery store. In 1992, Peapod operated in Chicago with Jewel Foods and Osco Drug Stores with offering 15,000 items to its members. By 1993, it added the partnership with Safeway in San Francisco and the total revenue reached $3 million. In 1995, it achieved 10,000 subscribers and offered information on nutritional facts such as calories and sodium level on groceries. In 1996, the customer base reached 18,000 with the offering of 20,000 items and the revenue was $30 million. Even after Peapod charged customers $16 for delivery fee per order, it lost $53 per order until 1996. But in 1997 IPO it sucessfully raised $64 million. Peapod extended its linkage with other supermarkets in several other U.S. cities, including

Randall's in Houston and Edward Super Food Stores in New York. It extended to seven cities and supermarket chains in 1997.

As volumes got larger, Peapod prompted redirection and announced plans to build and operate distribution centers in its busiest markets. The company now carried inventory and assumed the risk. Although Peapod's distribution center eliminated some costs, the company continued to lose money. Oct. 1999 Peapod launched Peapod Packages-7000 pantry, pet&household products via UPS to most of U.S. It went for strategic alliances with Walgreen for drugstore items, McLane Group(Wal-Mart subsidiary) for food distribution logistics. Through three quarters of 1999, it lost $20 million on $50 million in sales.

(4) Streamline

A successful variation to Peapod's approach was made by Streamline at Boston in 1993. It used Consumer Resource Center which is a replenishment facility. It pursued warehouse cost efficiency in order fulfillment. If offered routine replenishment and delivery of groceries, dry cleaning, video(with partner Blockbuster), photo processing, postage stamps, diapers and so on. Customers of Streamline.com need not be home to receive their orders, because the company installs a temperature-controlled, secure delivery box in each customer's garage. The box has a section for hanging garments and refregerator, whose size is 152.4 x 76.2 x 157.48 cm. One of the disadvantage of e-shopping for grocery was that the customer should be at home to get the delivery. In order to overcome this, Streamline applied the sneak idea like this. Streamline raised $36 million in investments from Intel, SAP, GE Capital, and Nordstrom.

(5) Webvan

Webvan, founded in 1998, served San Francisco bay area in June, 1999. It was founded by Louis Borders of Borders Books. Its C.E.O. is George Shaheen, former Anderson Consulting Chief. In the summer of 1999, Webvan secured $275 million in venture capital. Selling into a single locality(San Francisco),

the company's market capitalization peaked at $8 billion in late 1999, half that of traditional grocery giant Safeway. It offered groceries, videos, books, housewares and so on. Customers can choose 30 minute delivery window. We can note that storage box by Streamline can be a substitute for short delivery window. The business process is as follows. Order is taken from a customer and goes through the Distribution Center. In the Distribution Center, the order is packed into tote boxes and sent out in refrigerated trucks.

In Webvan, each city has decentralized infrastructure. Learning effect in operating an additional Distribution Center is large and the marginal cost is small. Investors viewed Webvan as the most robust of Web grocery business models. Webvan claimed that it would accomplish the followings:

- Webvan's large distribution centers(e.g. 300,000 square feet in Atlanta, May 1, 2000), at a cost of $25 million each, feature state-of-art automation, ergonomics, and information management. Miles of conveyor belts move goods to super-efficient human packers, who never travel more than 6 meters in any direction. Intelligent logistics software optimizes the entire supply chain, from purchase click to package delivery. Webvan developed an efficient home delivery system by deploying across a $1 billion national distribution network.

- Webvan predicts that its operation, when at capacity, will generate 8 percent margins, even with low prices and free delivery of orders greater than $60. This is much higher than the typical supermarket's 1 percent margin. Low costs for real estate and labor, reduced shrinkage and spoilage, improved buying power will make the difference. However if Webvan cannot operate near full capacity, the model fails.

- To customers Webvan promises low prices, vast selection, free shipping, customer specified half-hour delivery window. Webvan predicts that this kind of high service will lock in customers and ultimately command a hefty share of households' money.

With the reputation generated in its core business, Webvan tries to extend

its offering well beyond traditional industry borders. If shoppers trust Webvan to deliver them fresh. safe food products. then this customer relationship can be leveraged into just about any other market for goods and services. This kind of expansion will make the boundary between distinct industries obscure. For example. it will be a competitor to Amazon with the overlapping selection of goods.

In July. 2000 Webvan bought the Kirkland(Washing-based) at $1.2 billion. By doing this. No. 1 HomeGrocer and No. 2 Webvan got combined and became Webvan Group Inc. Webvan attempts to redefine itself as a "last mile in ecommerce" company. not an internet grocer. It expanded the products such as video. DVD. books. pet foods. office supplies. mass transit fare cards. postage stamps. In the first quarter 2000. Webvan lost $57.8 million on sales of $16.3 million and HomeGrocer lost $35.3 million on sales of $21.2 million. On May 2000. Webvan has two distribution centers in Oakland and Atlanta. It has a contract with Bechtel Corp. to build up to 26 fulfillment centers costing $1 billion over the next three years. The stock was around $6 at the time of HomeGrocer acquisitions. With acquiring HomeGrocer. Webvan has access to the nine Distribution Centers operated by HomeGrocer in Seattle. Portland. San Diego. L.A., Orange County. Dallas. Texas. Atlanta. We can note the different strategy that Webvan uses large highly automated regional hubs and HomeGrocer small(100,000 square feet) distribution centers allowing quick entrance to a market.

Webvan Group sees itself in the delivery business. The company combines online shopping with state-of-art inventory management and a courier service that guarantees in-stock products and deliveries to customers within a 30 minute window of their choosing. The 30-minute delivery window can be chosen up to seven days in advance. When a customer says he or she wants a particular slot. a series of algorithms that Webvan have developed begin working. These algorithms fit an order into a van and alter the routes. which have been optimized in advance.

Its proprietary integrated infrastructure is based on bar code technology. In Distribution Center, bar code-labeled totes are assigned to hold each order. Five hours prior to delivery, the totes begin traversing a 5-mile conveyor belt system, picking up each item in an order. A software assigns combinations of orders to fit into each tote based on size, weight, and fragility of each item. Fixed bar code scanners read each tote's label and direct the order toward the next pick-up station. Once filled, an order is sent to a loading area, then to one of 14 Bay-area satellite centers where all orders are divided into routes and delivered by couriers within the specified delivery time. Webvan executive says that unlike most e-commerce and brick-and-mortar companies, their customers tell in advance what they want. This makes intelligent buying possible(recomputes our quantities on the back end daily and leads to JIT inventory).

When customers do not want the goods delivered, credit can be given on the spot and couriers will take back the unwanted items with no question. Three integrated touch points(courier, web site, call center) are open for any problem. Webvan also manages the data base such that it can tell the customer what they have in stock at any given moment down to the last carton of milk. In terms of average sale amount, Webvan's average order is $80, which is smaller than Peapod's $120 and HomeGrocer's $110. That of NetGrocer is $57.

(6) Others and Traditional Grocers

Priceline's WebHouse Club extended their famous reverse auction. It asks the customers to name their own price on 188,000 grocery items and then pick-up at one of 650 participating grocery stores. But the average sale is rather small amount of $30. At one end of the spectrum, ultimate in grocery selection, quality and service is the goal of Streamline and Shiplink. They target busy, affuluent families in Boston. They both had sales of $15 million in 1999 and average sales per order was $100 with the base of 4,000 members. The difference is that Shoplink delivers its food in temperature-controlled totes and

Streamline used customer-installed refrigerator/freezer.

As a way to outrun Peapod or Webvan in delivery, HomeRuns serving Boston region try to integrate the site into their overall business practices(customer order reps, inventory management, order fulfillment tracking and reporting, radio frequency tools for item and order accuracy). And EasyGrocer in Carteret, N.J. offers online network of local merchants allowing consumers to choose products from their local brick-and-mortar grocery stores.

In responding to the e-grocers, $500 billion supermarket industry chose consolidation. Over $50 billion in grocery deals happened in 1998-1999, as supermarkets and wholesalers extended their scale advantage over innovators like Wal-Mart. Also, some established grocers made online business of their own. Bricks-and-mortar retailers test e-commerce. Examples are Schnucks Markets (Missouri, Illinois, Indiana), Hannaford's HomeRuns.com(Boston), Albertson (Texas), Safeway, Kroger. There are also partnership between retailers and internet companies: VirtualGroceries.com and PeachtreeNetwork.com.

Ⅳ. Strategic Considerations

(1) advantage and disadvantage of e-grocery shopping

We first deal with the advantage of e-grocer. It can eliminate many of the costs associated with the traditional retail setting(desirable retail location which is closer to customers and has sufficient parking space requires premium rent and incurs high property taxes), no display, and so on. It can offer convenient search capability and personalized service. For busy customers, it allows them to save time and increase convenience. Customers of e-grocer also can get information-based services such as nutritional advice.

On the other hand, there are several disadvantages in e-grocery shopping. Those should be identified clearly and overcome to make e-grocer profitable. Many people, in general, are reluctant to try the service. This reluctance may be due to many reasons. They may not want to transmit credit card

information. They may perceive the goods from a e-grocer are not fresh. They may not feel comfortable in ordering grocery via internet. The interface may not be so easy and comfortable. Some people crave for shopping experience rather than dislike it. Using credit card can be safer as internet security gets stronger. The people who do not dislike traditional grocery shopping are not the right target market of e-grocer. But to change the perception on e-grocery and the way of life in shopping requires a huge amount of investment for a long time.

Also web site design and redesign cost is huge($750,000 for HomeGrocer)and fleet of regrigerated delivery trucks cost a lot. Customers cannot feel, see, smell the grocery in making a choice, and this will make the chance of return higher. This might restrict the items covered to standardized commodities. But this restriction tends to make the sales volume per order smaller which is bad for profitability. There are delivery difficulties such as delivering eggs unbroken and the ice cream unmelt. Returns compound the activities such as getting back the goods and giving credit and lower customer satisfaction. If each individual does the return process himself, then it is not such a burden. But e-grocer will suffer much workload to handle all the returns of several customers.

(2) Considerations

The essential contradiction for e-grocer to solve is as follows. The potential customers who get most value from e-grocer are far away from supermarkets in terms of either in physical distance or in time. But they are hard to reach and this makes the delivery costlier than the average customer. Also the traditional grocery stores can attract those by extending their store hours or offering delivery service themselves. The question for a successful e-grocer is how to find and implement a differentiating factor from the traditional grocer? Two main success factors are immediacy and convenience.

In the e-grocery industry, the players can be distinguished according to their

strategies. The criteria should be goods covered(grocery(perishable vs. nonperishable) vs. broad), strategic alliance(context only vs. contents and context), geographical markets(local vs. national), service(delivery vs. pick-up), and distribution center size. Some of them try to overcome an obstacle for e-grocery shopping. For example, Streamline considered the inconvenience that a customer should be home to get the delivery and came up with the idea of placing a storage box for each customer. A plausible alternative is to narrow the delivery time window, which was taken by Webvan. However, all these ideas requires large investment.

Also in order to break-even, e-grocers need to increase the amount per order. For this reason, some of them tried to expand the coverage of goods, and this made the industry boundary hazy. Many of the goods sold thru the e-grocers are those sold in other retailer such as Amazon. This bring a new competition. There is a tendency of merging markets. That is, the goods covered in B2C markets are broadened and become overlapped. This is due to both customers and retailers. Customers wants one-stop shopping and retailers want to increase their sales amount.

Inducing customers to e-grocery shopping requires to change their way of life. It may need a large amount of investment of both money and idea. The current players are paying for this investment. It is likely that even though the current e-grocers invest a lot, it will take much time than initially expected. This may put a late-mover with innovative ideas on more advantageous foothold than the incumbents. This is because a late-mover can take advantage of the customer base which the incumbent have created with huge investment. We should compare the first-mover advantage(brand loyalty and lock-in customers) and late-mover advantage(higher efficiency and free-rider benefit).

V. Conclusions

In Korea, we are more or less living in a period of on or before supermarket

era. Other than small scale e-tailers, we do not have prominent e-grocers up to now. There are also additional barriers to e-grocery shopping to those mentioned above. In metropolitan areas such as Seoul, the population is highly densed and there has been several delivery service for grocery, food, dry cleaning, video, and so on. E-tailers should confront a hard time in competing with these small stores offering delivery service. And many of the groceries are not standardized nor graded, and thus it is hard to order exactly what customer wants without seeing the actual grocery.

In this paper we reviewed several e-grocers who tried to construct their own strength compared with the traditional supermarkets. They used many ideas to overcome the barriers to e-shopping of groceries. But there are inherent barriers for e-grocers, which may require an excessive amount of investment. Considering these barriers, we can see why B2B rather than B2C is more prominent area for profitability.

As of Nov. 7, 2000, the stock prices of web grocers are: $1 7/8 for Peapod, $7/32 for Streamline, and $1 11/16 for Webvan. The moving average of their stock prices are continually going down. Up to this point, the operational efficiency of e-grocers does not seem to be good enough for overcoming the obstacle to web grocery shopping.

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