

# **LOGISTICS AND ORDER FULFILLMENT STRATEGIES FOR ONLINE GROCERY RETAILING**

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## **Introduction**

Grocery shopping is an activity that, in some fashion, has taken place for hundreds of years. In the early 20<sup>th</sup> century, the grocery chain and supermarket concepts came to fruition. By the 1970s, discounters and wholesalers were becoming known in the grocery industry. In the late 1980s, small local companies began accepting orders via phone and fax, paying “professional shoppers” to purchase the groceries for the customer from existing stores, and delivering or holding the groceries for in-store pickup. The Internet boom of the 1990s allowed this new method of grocery shopping to transform into an online version (Afuah and Tucci, 2003, 398-409). Today the industry is dominated by several mass merchandisers and supermarkets offering a one-stop shopping experience, accommodating today’s busy consumer (Groceteria.com, 2010). However, the players referenced in this study have taken that consumer-accommodation effort to an even more advanced level.

When this new way to grocery shop became possible, optimistic business pioneers everywhere sought venture capital to test the idea that consumers would actually purchase their groceries on the Internet. Some were successful; others found themselves in too deep of a financial hole to sustain operations and were acquired by other businesses or shut down. Today, the online grocery market seems to be in its growth phase. Growing Internet use and access as well as

consumer realization of the convenience of shopping online has, at a minimum, given the online grocery market a continual boost. It may be difficult and ill-advised to assume these driving forces will slow down any time soon (Ellis, 2003; Fox et al, 2004).

There are obvious barriers to entry which include high start-up costs, efficient stock-picking systems, and user-friendly web design, just to name a few. Effective stock control and high product-substitution rates are among the major issues faced by the online grocers, as is gaining consumer loyalty and trust to such a new concept (Hansen, 2005).

The purpose of this paper is to analyze the successes and shortcomings of what appears to be the key determinant of long-term success for an online grocer: order fulfillment. The different order fulfillment methods of online grocers, whether one method or a combination of multiple methods, has been the saving grace or Achilles heel for those attempting to thrive in online grocery.

Aside from industry and market materials, the research presented in this paper will use examples and cases from a selection of industry-defining players in the online grocery business, particularly those who provide a sufficient example of the advantages and disadvantages of different fulfillment approaches

### **Issues Related to Online Grocery**

Aside from the typical properties of the Internet that most of its users enjoy (Afuah and Tucci, 2003, 32-48), consumers enjoy many benefits when shopping for groceries online. First, the consumer enjoys a service that is customized to his/her personal needs and shopping behavior. For example, shopping lists can be saved and personalized coupons are provided for frequently purchased items, saving time and money. Next, thanks to strict controls and a shorter supply chain, the customer enjoys a fresher and higher quality product than those found in supermarkets and most other grocery stores (Ellis, 2003). Customers also enjoy benefits such as access to customer feedback on products, the ability to e-mail grocery lists, and the ability to purchase the items for a complete recipe with one click.

One study found that many consumers that have groceries delivered to their home experience weight loss due to the ability to buy healthy food items without having to ever see unhealthy items (Gorin et al, 2007).

The challenges faced by consumers revolve around their deep-rooted shopping habits. These habits can be very difficult to change. Also, consumers may be reluctant to pay the delivery charge associated with getting the groceries shipped to their door. Most popular online grocers offer incentives to alleviate this issue (i.e. free shipping coupons). If consumers are not satisfied with their online grocery shopping experience in the early stages, it is likely that they will avoid the method in the future (Hansen, 2005).

Just like the consumer, businesses experience benefits as well as difficulties with online grocery. Benefits include the ability to store goods more efficiently thanks to the lack of customers walking around the floor. Also, the automation that is used to pick the products from the shelves creates the ability to assemble an order in a more efficient manner. Online grocery businesses also experience properties of the Internet such as universality (ability to reach anyone with Internet in a shippable location), distribution channel (product information and research from the convenience of a computer), time moderator (the Internet never “closes”), infinite virtual capacity (perception of “no lines”), among others. (Afuah and Tucci, 2003, 398-409). Online grocers, like most Internet businesses, enjoy a lower human capital and non-storage/delivery-related asset requirement (i.e., no shopping carts).

Challenges are certainly prevalent for those in the online grocery business. As mentioned in the consumer issues above, the business must find ways to gain trust from the consumer to make the switch from traditional grocery shopping methods to an online approach. The business must also find a way to sell the consumer on shipping and delivery charges without deterring them. Another challenge is overcoming sensory issues with the consumer. The consumer’s inability to feel and smell the fruit being purchased, for example, can represent a very challenging issue for the online grocer. Safe

handling and temperature for fragile and perishable items is a challenge must be addressed. As discussed earlier, if the customer receives a bad experience in the beginning stages of online grocery shopping, the individual will likely renounce the method (Hansen, 2005). And, like any shipping company, efficient methods to deliver the products to the consumer present a daily challenge to online grocery retailers.

### **Business Models**

**In-Store Fulfillment/Picking:** The in-store method of order fulfillment offers several advantages. First, in-store fulfillment can be established and become operational in a relatively short period. Also, it carries a low capital investment in comparison to warehouse approaches. The greatest testament to this method of fulfillment is Tesco. Tesco is the largest home delivery grocer in the world; they have access to almost 100 percent of the United Kingdom's population. Tesco also services other locations in Europe and locations in the United States and Asia (Tesco Group, 2009). Its business model focuses on lower risk and gradual but steady improvement. This model is best supported by in-store fulfillment. Employees of Tesco use carts called "picking trolleys" with software installed to expedite the picking process (Jelassi and Enders, 2005, 298-309).

On the downside, there can be a conflict between item storage methods for the online versus the on-site customers. The pickers may also interfere with on-site customers as they walk through the aisles of the store. Tesco has alleviated this issue by setting up separate zones for their different customer types. In-store fulfillment is more labor intensive than warehouse approaches and this can be burdensome as volume increases. Tesco has not ruled out centralized distribution centers in the future when justified by the volume of orders. For example, in 2006, they put into operation a warehouse devoted only to online orders in London (Tesco Group, 2009).

**Distribution Centers:** If executed correctly, distribution centers can provide for a very sustainable and competitive advantage for online

grocers. If the enormous capital investment needed for this approach can be justified by demand, economies of scale combined with the ability to serve the customer more efficiently can prove very advantageous. This model is ideal for locations where the population is dense and/or weather is typically less than favorable.

Most that are successful using this model are in such locations as London, New York, Seattle, or similar areas. For example, FreshDirect fulfills orders from a distribution center in New York City, where both of these conditions exist, and the delivery model is met with a favorable market demand. Their approach is less automated and focuses on market-research and data collection. The most single most important factor contributing to FreshDirect's success is likely their one-market focus (Dignan, 2004). Similar to FreshDirect but more automated, Ocado Limited in Hatfield, England uses a less traditional approach to order fulfillment. Its single 23 acre warehouse has the ability to reach approximately 65 percent of British postal codes. Orders are received online, even through an iPhone application. A complex computer system determines the most efficient route through the picking and gathering process. The employees being guided by the system have minimal traveling to collect the customers' groceries. While the model has been operating at a loss, Ocado is showing a steady trend of growing sales and diminishing losses (Sonne, 2010). While more automated than FreshDirect, Ocado focuses on a large percentage of the United Kingdom from a single location.

As seen in Webvan's demise, simultaneous rollout to multiple markets and locations requires a huge capital investment and represents excessive risk. At the time that online grocery was in its infancy, distribution centers proved to be far too costly and too large for the demand. The most relevant example, as mentioned above, is Webvan. Webvan spent over \$1.2 billion U.S. dollars on very large and multiple warehouses with cutting-edge automation. They failed by overestimating demand for online grocery shopping and miscalculating the market conditions that would be favorable to such a model (Afuah and Tucci, 2003, 398-409). Webvan's demise illustrates the potential drawbacks of the warehouse-based fulfillment

approach. A high initial investment combined with the longer implementation must be carefully considered by potential online grocers considering a warehouse approach.

**Drop/Unattended Delivery:** Those who order perishable groceries online may not want the inconvenience of sitting at home and waiting for their groceries to arrive. Some online grocers, such as Peapod, leave unattended boxes packed with dry ice for perishable or temperature-sensitive items. Other forms include a type of lock box for unattended delivery (Scott and Scott, 2008). This is not only convenient for the customer, but it allows grocers to avoid tight delivery windows.

**Hybrid:** Peapod, founded in 1989 and acquired by Royal Ahold in 2000, was a pioneer in the online grocery industry (Ahold USA, 2009). As the leading online grocer in the U.S., Peapod provides online grocery access to multiple markets in the middle and eastern U.S. It has a hybrid business model using distribution centers and stores through partnerships with high-quality grocery retailers such as Kroger, Jewel Food Stores, and Safeway (McTaggart, 2006). Peapod's innovative software gives the customer a personalized shopping experience with the ability to build grocery lists that are stored for future use; customers view virtual isles as if shopping in an actual store, and find groceries using a search tool. The orders are then transmitted to the nearest distribution center (to the customer), where the items are picked, organized, and shipped or received by the customer. A flat membership fee is paid by the customer and a percentage of the order is charged for the delivery service. The customer also has a choice of delivery windows (Jelassi and Enders, 2005, 253-268). Like Peapod, Tesco opened its first online-only store in 2006 (Tesco Group, 2009).

**Store Pick-Up:** Pick-up from stores is also another approach. In most cases, this approach is in addition to a core warehouse or in-store (or hybrid) method. FreshDirect offers the ability for grocery pickup to its customers at its processing center. This is a great option for those who do not want to pay delivery charges or wish to rely on home delivery. In the same category, companies such as AutoCart LLC have also started stores with a drive-thru grocery pick-up service (Schuman, 2005). Another variation of in-store pickup is drive through or curbside service. Publix is testing this method by charging a \$7.99 fee to bring the groceries to a customer's vehicle after they order their groceries online or via phone (Cash, 2010).

**Niche/Specialty:** Many online grocery retailers, regardless of the fulfillment approach, have taken the route as niche or specialty online "grocers". Whether authentic Cajun products at Cajungrocer.com, organic food at Diamondorganics.com or a wide selection of wine from Chateau Online, there are scant specialties not represented in an online format. Chateau Online, founded in 1998 and headquartered in Paris, offers a wide variety of wine from regions all over the world. Their value is driven by targeting "wine lovers" and offering a community feel and expert wine advice (Jelassi and Enders, 2005, 310-324).

**Cutting Edge Methods:** Several other methods of grocery order fulfillment are being tested. For example, some supermarkets in France are installing wine machines that allow consumers to choose their favorite wine and fill the container of their choice. The machine charges accordingly based on the output volume that the consumer desires (Embassy of France, 2010).

#### **Analysis of Fulfillment Methods**

With any single or hybrid order fulfillment approach, there are tradeoffs. Productivity can be compromised with in-store fulfillment as there are advantages absent in the picking process that make the warehouse approach more efficient and timely (e.g., conveyor belts). There are also more distractions and risk for human error with in-

store fulfillment. Warehouses offer much more than the ability to carry more stock-keeping-units than stores.

Thanks to centralization of goods, and as seen in the cases of grocers like FreshDirect and Ocado, warehouses typically exhibit lower inventory costs than traditional retail stores. Freshness is also an area where warehouses enjoy an advantage over stores. This is attributable to less handling and a shorter supply chain. Finally, and also attributable to centralization, the warehouse approach gives the customer a larger selection. This lowers the risk of displeased customers due to lack of desired goods as well as substitutes (Scott and Scott, 2008).

On the flip side, store fulfillment carries lower business risk and lower delivery costs because they are often within closer proximity to customers. However, as stores reach their capacity limit, congestion and fulfillment-ability becomes an issue. Distribution centers typically result in higher productivity, higher quality and a wider selection than the store fulfillment approach but they carry high market risk and demand must support the large initial investment (Scott & Scott, 2008). This notion is supported by the case of Webvan, whose 25 million to 35 million dollar per warehouse cost proved far too large to be supported by customer demand (Afuah and Tucci, 2003, 348-409).

It seems rational to begin with an in-store fulfillment method or a small-scale warehouse approach, as evident in the success of Tesco and FreshDirect, and further supported by the massive failure of Webvan. This strategy limits start-up costs and increases roll-out speed. As orders reach a point when in-store fulfillment seems less effective, a warehouse approach should be considered. Tesco.com has long utilized an in-store method, but now has transitioned to a hybrid approach with online-only warehouses. A hybrid approach that accommodates in-store customer pick-up and online customers in the most efficient manner appears optimal. In the case of Tesco, they can now alleviate their stores' online/on-site fulfillment conflicts by servicing online customers from their exclusive warehouses.

## **Conclusion**

Online grocers face many obstacles in optimizing their fulfillment strategy. For the most part, if implemented and managed effectively, warehouse fulfillment is more efficient than other approaches. Warehouses facilitate less inventory and real estate expenses, more selection and better quality. However, the warehouse approach is riskier due to the high initial investment and a higher probability of insufficient demand and overcapacity. Fulfillment from stores carries a lower business risk and requires less capital to implement. Disadvantages include lower productivity, less product selection and congestion in stores from adding the pickers to the traditional customers. In addition to market analysis, statistical forecasting models have proven helpful in analyzing tradeoffs (Scott and Scott, 2008).

Before choosing or changing order fulfillment methods, market research should be extensive. In some areas, online grocery shopping is a concept that is relegated to the very distant future. In others, in-store fulfillment may not prove profitable whatsoever. In addition, statistical analysis and optimization models have proven useful. These models assist in predicting potential risks and tradeoffs when choosing or changing fulfillment methods (Scott and Scott, 2008).

Deciding when a warehouse approach is viable can be calculated by using a simple break-even formula that divides the contribution margin per order and the average revenue per order into the relevant fixed costs. For example, if a warehouse had \$15,000,000 in fixed costs, a contribution margin of twenty percent and an average order of one-hundred twenty-three dollars, 600,000 orders per year would be the break-even point for the warehouse (Jelassi and Enders, 2005, 298-309). If this volume cannot be attained, the warehouse will operate at a loss and not likely sustainable.

The evolving consumer and the industry's ability to provide perceived value will define the future of online grocery shopping. New and existing firms must continue researching and implementing fulfillment approaches that will satisfy the customer and provide sustainable profitability for long-term success. As the online grocery industry proves profitable, major players in grocery are making groceries available online. Publix, Kroger as well as Amazon.com are all testing ways to reach the online consumer with groceries and that list will likely continue growing.

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