

# An Approach for Enhancing Current Korean e-Grocery Business Focusing on Delivery Service Alternatives

한국의 e-Grocery 배송서비스 대안에 관한 연구

**Jong-Soon Koo**

A Professor in Department of International Trade,  
Chungnam National University

**Jung-Sun Lee**

A Visiting Professor in Department of International  
Trade, Chungnam National University

**Dong-Hwa Jeon**

A Ph.D Student in Department of International  
Trade, Chungnam National University

## Contents

I. Introduction	V. Conclusion
II. The Theoretical Background of e-Grocery	References
III. The Current Situation of e-Grocery Business	국문초록
IV. The Alternatives for the Development of Korean e-Grocery Business	

There was a new wave in grocery business with development of information and technology, thus a movement from traditional stores to online stores. In order to expand the scale of traditional supermarket and to satisfy the customers' needs, they provide offline and online services simultaneously.

This paper is based on the previous studies which had been researched in developed countries from late 1990s to early 2000s and the purpose of this study is to introduce the idea and operation system of e-Grocery business. Moreover, we suggest the alternatives on delivery service methods in order to satisfy the customers' needs through analyzing the current condition of e-Grocers in Korea. According to the result of this study, Korean e-Grocers offer only attended home delivery services. In our opinion, Korean supermarkets have to take hybrid model which Tesco.com is using. There are some alternatives to increase the profits of Korean e-Grocers and to provide better services to their customers as follows:

As an alternatives for delivery services, picking service is the easiest and cheapest way to apply

for supermarkets. This is very useful for working women and also it is possible to order by smartphone recently. They can order the goods to the closest local supermarkets from working place, and then they pick them up on the way home from working off. In order to improve the quality of delivery services, to use the reception box will be the way to provide better services to the customers. The reception box is a way to protect the quality of goods such as fresh-cut product, which require the freshness through the temperature adjustment, and also to keep the safety of ordered goods through locking system. Through this system, supermarkets are able to use attended or unattended services under the customers' satisfaction. However, using the reception box is expensive, so shared reception box will be an alternative.

As an alternative for development of e-Grocery business, the advertisement for e-Grocery business has to be supported in order to attract potential customers in e-Grocery business. Furthermore, the main concerns of e-Grocery business such as the sanitation and safety of goods, and convenience must be guaranteed in order to keep the loyal customers and to attract new customers.

Key Words: e-Grocery, Home Delivery Service, Reception Box

## I. Introduction

In the early twentieth century, there were no supermarkets, shopping was highly personalized, and people bought groceries from multiple retailers. Past the Great Depression, Grocery retailing markets had been transformed into a complete new model. Chains of supermarket dominated providing different food products and reliable self-service that largely replaced home delivery system. Till these days, supermarkets all over the world serve as a convenient one-stop shopping and low price entity. Food supermarket and hypermarket dominate the market and are main source for grocery purchasing. However, with development of Internet, the trend of online shopping is rising and supermarkets and logistics companies have launched their own version of online supermarkets. Even though most online grocery services have yet to be profitable, supermarket chains are rapidly partnering with online grocers or they are building their own online services. In the nineties, some segments of grocery shoppers showed interest in home delivery system. Until the end of 2002, some e-Grocery operators such as Webvan and Streamline in the western area had been failed but Britain's No.1 supermarket chain, Tesco, runs its business successfully. Consequently, it is important for supermarket operators to understand their consumers' attitudes toward using online services.

With the advent of the Internet and increased competition, grocery shopping has taken on a new dimension. The e-Grocery business is still an emerging market and it is still in its infancy. The Internet

is still growing in global environment and is the new tool for global electronic commerce but the e-Grocery business is still marginal compared to traditional grocery shopping especially in Korea. Most of the researches concerning e-Groceries have been carried out in the west, mainly in the USA. Despite its growing importance, academic research in this area is particularly negligible in Korea. Moreover, considering the present environment of Korea such as the trend of nuclear family, the entry of women in public affairs, the expanding of a double-income family, heavy workload and so on, the e-Grocery shopping will be a potential area for grocery companies in order to expand their profits.

The purpose of this paper is to introduce the idea and operation system of the e-Grocery business which is positioning in the beginning stage in Korea because there isn't any study related to e-Grocery business in Korea. And also suggest some home delivery alternatives which is one of the critical resources to the success or failure of the e-Grocery business, in order to satisfy customers which ultimately expect the development on e-Grocery business in Korea in the long run.

The remainder of the paper is organized as follows. The next section presents the theoretical background of e-Grocery. Section 3 introduces the current situation of e-Grocery business in foreign countries and Korea. The delivery alternatives for development of Korean e-Grocery business are discussed in Section 4. Finally, Section 5 gives the conclusion.

## II. The Theoretical Background of e-Grocery

### 1. The History of e-Grocery Business

The concept of e-Grocery is buying groceries from home electronically over the Internet and those ordered groceries are subsequently delivered at home.

In the late 1970s, e-Grocery shopping ordering by phone and fax was an important new form of retailing but in the 1980s e-Grocery shopping had not developed a lot as academic researchers are expected. However, due to the upcoming of Internet, the e-Grocery shopping was renewed in the 1990s.

The first online grocer, Grocery Express, was founded in San Francisco in 1981. It offered home delivery of grocery products ordered via an on-line service or phone or fax. However, Grocery Express

was eventually closed down because of logistical challenges and inability to build scale. After then, a number of US-based retailers, such as Peapod, Streamline, Net Grocer and American Stores introduced new electronic grocery shopping services on the Internet. In Europe, the electronic grocery shopping services by leading retailers such as Tesco and Sainsbury are provided.

After the fast market growth from mid 1990's to the end of 1990's, many new players with different operations models such as Webvan, Streamline, Homegrocer, and Peapod have either collapsed or been acquired by traditional retailers<sup>1)</sup>. However, successful and profitable operations models such as Tesco's started in 1996 based on picking from existing stores, have been developed and today Tesco.com is the world's biggest e-Grocer<sup>2)</sup>. As the Internet continues to grow, the new format of selling groceries online has gained significant momentum, and several strong e-Grocers' expectations about product and service quality hadn't been disappeared until now.

A study by Andersen Consulting had been conducted and found that the grocery shoppers could be categorized into six different groups:

- Shopping Avoiders, who dislike shopping
- Necessity Users, who have limited ability to go to stores
- New Technologists, who are young and like technology
- Time Starved, who are price insensitive and need more free time
- Responsible, who have free time and gain self-worth from shopping
- Traditional Shoppers, who are older, dislike technology, and enjoy shopping.

The study shows that every group except Traditional Shoppers was willing to go online in order to shop for different goods. The desire for online shopping comes mostly from dual-income families, living in large urban areas and for which saving time is the important factor of their lives.

## 2. Advantages and Disadvantages of e-Grocery

In general, there are a number of advantages and disadvantages of e-Grocery shopping. These advantages and disadvantages are discussed henceforth.

1) Mikko Punakivi, "Comparing alternative home delivery models for e-Grocery business", Dissertation for the degree of Doctor of Science in Technology, *Helsinki University of Technology*, 2003 p.38.

2) The sales of Tesco was 535 million euro in 2002. Other big players are Peapod(120 million euro in 2001), Safeway(65 million euro in 2001), Sainsbury's(65 million euro in 2001), Wal-Mart(60 million euro in 2001), Iceland(50 million euro in 2001), and Carrefour(50 million euro in 2001)

### 1) Advantages of e-Grocery

First, e-Grocery shopping offers consumers a higher level of convenience. Electronic grocery shopping services provide this convenience by enabling consumers to order groceries from home and having the groceries subsequently delivered at home, so they do not face any transportation and physical problems.

Second, e-Grocery shopping helps consumers to save their time. Due to less transportation time, less waiting time and less planning time, the overall time required for electronic grocery shopping is lower than the time required for in-store shopping. Furthermore, the expanding number of dual-income households and single-parent households results in a growing number of consumers experiencing time pressure.

Third, the larger geographic coverage of shops can be selected. Furthermore, it is believed that consumers can choose from a larger product assortment when they shop at home or work via the Internet.

Fourth, electronic shopping via the Internet allows consumers to communicate with other consumers using discussion groups and communities. The e-Grocery shoppers can get information from the members in the community. The information could be shopping related, recipe related, and so forth.

### 2) Disadvantages of e-Grocery

First, personal needs are restricted such as the need for sensory stimulation, physical activity and learning while shopping. They cannot take the pleasure of bargaining while shopping and they cannot smell and taste the products. Sometimes shoppers are dissatisfied with the ordered goods.

Second, social needs are limited such as the need for social experiences, communication with other shoppers.

Third, higher search costs and waiting times to receive the ordered goods are required. For the e-Grocery shopping, we have to connect the Internet and it requires plenty of time to search and compare products. If users are not used to using computer, it requires more time to adapt to a new system. Moreover, after ordering goods via the Internet, they have to wait to get the ordered goods.

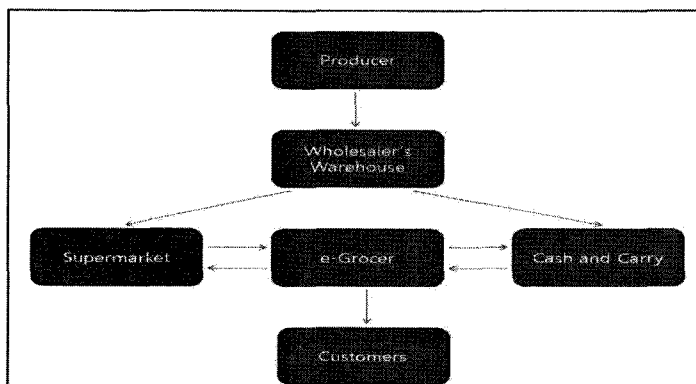
## 3. Operations of e-Grocery

First, In the e-Grocery fulfillment operations, various different models have been developed, for example, order picking from either a store or a dedicated distribution center(DC), home deliveries with

attended<sup>3)</sup> or unattended reception<sup>4)</sup> using reception boxes<sup>5)</sup>, and so forth.

According to the study of Vesa Kämäräinen (2001)<sup>6)</sup>, the e-Grocery shopping has two totally different business models.

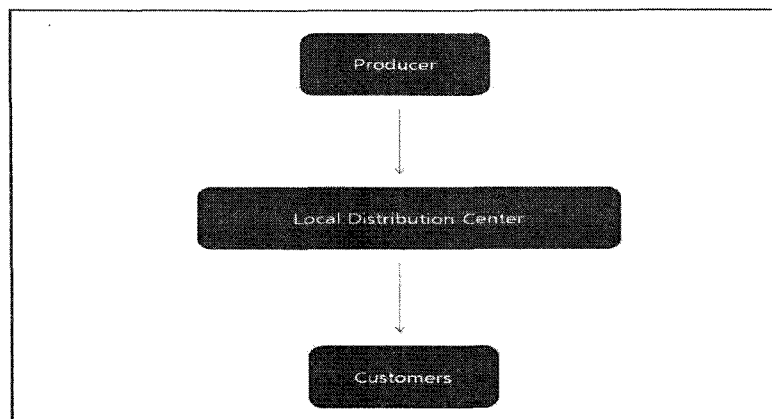
The first alternative is to operate as an intermediary in the supply chain by picking groceries from a supermarket and delivering these to the households <figure 1><sup>7)</sup>. This model was used by Tesco, the largest UK nationwide supermarket chain. Tesco began "bricks and clicks" operations in 1996, and was roundly criticized in the US press for its "backward" and "limited" store-based methods<sup>8)</sup>. This model is based on occasional deliveries and customers want their groceries to be delivered quickly. So, this model requires short response times from the e-Grocer in the form of short picking times and tight delivery windows that can make the whole supply chain inefficient. However, occasional purchases and short response times cause capacity problems especially in the home delivery function because it is impossible to forecast customers' demand. It is not very cost effective, but it is a fast way to increase sales volumes by moving quickly into new areas.



[Figure 1] The e-Grocer as an intermediary in the supply chain<sup>9)</sup>

- 3) Attended reception is the traditional home delivery model, where customers wait at home to receive the delivery.
- 4) Using facilities enabling unattended reception, the customer is relieved of the need to receive the goods ordered. Unattended reception may be based on reception boxes, delivery boxes, shared reception boxes, or collection and delivery points.
- 5) The customer-specific reception box is equipped with a refrigerator-freezer unit, enabling compartments for frozen and chilled food. In the reception box there is also a room temperature compartment. The customer-specific reception box is installed, for example, in the customer's garage or the yard of their home.
- 6) Vesa Kämäräinen, "The reception box impact on home delivery efficiency in the e-Grocery business", *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No.6, 2001, pp.415-416.
- 7) This is how Peapod in the USA and Y-halli in Finland operate. It is the most common e-Grocery business model today.
- 8) Andrew J. Murphy, "Grounding the virtual: The material effects of electronic grocery shopping", *Geoforum, ScienceDirect, Elsevier* Vol.38, 2007, p.942.
- 9) Source: Vesa Kämäräinen, "The reception box impact on home delivery efficiency in the e-Grocery business", *International*

The other alternative is when sales volumes are sufficiently large, a totally new direct channel between the producers and the consumers can be created. In this business model, the e-Grocer purchases items straight from the producers or importers, stocks products in a local distribution center and delivers directly to the consumers (Figure 2)<sup>10)</sup>. In this model, picking and packing is more efficient than when operating from a conventional store, because picking speed increases when the operations are especially designed to serve home delivery. However, investments are higher in this model<sup>11)</sup>.



<Figure 2> An e-Grocer using a distribution center in the supply chain<sup>12)</sup>

The reception box<sup>13)</sup> is a new way for home delivery. If using reception boxes, customers are independent of the delivery timetable, thus they don't need to be at home to receive the goods because the groceries are delivered to locked reception boxes that are allocated to a specific customer with every delivery which makes it possible for many customers to use the same reception box. By using

*Journal of Physical Distribution & Logistics Management*, Vol. 31 No.6, 2001, p.415.

10) This is how, for example, Streamline and Webvan in the USA and Matomera in Sweden operate.

11) For example, Webvan's highly automated distribution centers cost averaging between \$25 million and \$35 million. Competitors who use less automation have costs of between \$4 million and \$6 million per distribution center. Webvan's fixed costs of distribution network are as follows: First, it consisted of average 26 truck bays. Second, multiple temperature zones plus cooking facilities on-site. Third, estimated operating cost of \$10/sq. ft. plus \$30 million for land, building, equipment, and assembly. Fourth, total running cost of \$5.2 million per year. Fifth, additional situations located around distribution centers of average size estimated at 4,000 sq. ft. and total running cost of \$2.5 million per year.

12) Source: Vesa Kämäräinen, "The reception box impact on home delivery efficiency in the e-Grocery business", *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No.6, 2001, p.416.

13) The reception boxes are equipped with a refrigerator-freezer unit, enabling compartments for frozen and chilled food. In the reception box there is also a room temperature compartment. So, the reception boxes operate in many temperatures and keep the groceries in good condition for as long as a normal refrigerator would.

shared reception boxes<sup>14</sup>), it is possible to drop off many orders at one stop. And it helps e-Grocers reduce the delivery time per customer<sup>15</sup>). This is the most cost-effective solution for the e-Grocer when delivery is required<sup>16</sup>). The e-Grocers, such as Streamline in the USA and SOK<sup>17</sup>) in Finland, use reception boxes, which are located in the households to cut delivery costs. The e-Grocer sells and rents the boxes to the customers. The drawback is that this mode of operation requires significant investment in the reception boxes<sup>18</sup>).

## 4. The Problems of Home Delivery Services and the Successful Delivery Services

### 1) The Problems of Home Delivery Services

Considering the general principle of delivery, delivery services have to guarantee speed, safety, convenience and economics in order to maximize efficiency. However these components are closely related to costs. Let's see the problems existed in home delivery services in e-Grocery operations.

First of all, there exists the vehicle routing problem with time windows in the e-Grocery home delivery problem. Reaching cost-efficient e-Grocery home delivery operations is challenging, for example, due to constantly-changing customer locations, failed deliveries because customers are not at

14) Shared reception box units may have various amounts of separate lockers, which may contain freezer, chilled, and room temperature compartments. The separate lockers have electronic locks with a changing opening code to enable shared usage of the lockers using a mobile phone. The shared reception box units may be placed, for example, in bus or underground stations, supermarket and office car parks, or apartment house cellars. In this dissertation delivery operations based on shared reception boxes are regarded as home delivery, although the location of the shared reception box unit is not necessarily at the customer's home.

15) Vesa Kämäräinen, "The reception box impact on home delivery efficiency in the e-Grocery business", *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No.6, 2001, p.417.

16) According to the result about cost-effectiveness, an analysis of home delivery in a suburban area show a cost benefit of over 40 percent when using reception boxes. <Source: Vesa Kämäräinen, Johanna Smaros, Jan Holmstrom, Tomi Jaakola, "Cost-effectiveness in the e-Grocery business", *International Journal of Retail & Distribution Management*, Vol. 29, No.1, 2001>.

17) Source: Vesa Kämäräinen, "The reception box impact on home delivery efficiency in the e-Grocery business", *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No.6, 2001, p.416.

Product Range Offered	Groceries	Available Delivery Hours	Tuesdays & Thursdays 2-6 pm
Fulfillment	From Store	Delivery Window	4 hours
Picking	Manual	Lead Time	Next day
Reception	Reception Box	Delivery Charge	US\$28 a month includes two deliveries per week

18) The costs in order to establish the reception box estimated to be between 1000 and 2300 euro.



home, rush hours, multiple delivery vans, parking restrictions, and tight delivery time windows promised to the customers.

Secondly, to enhance safety, e-Grocers have to provide attended home delivery services, but it requires high costs to deliver the goods. As a safety manner, the reception boxes which have refrigerator or freezer function are designed, but it is very expensive to establish and also requires usage fee to customers.

Thirdly, as a convenience factor, customers save time to go shopping in traditional grocery stores, and they can order the grocery via Internet or smartphone. However, there still exists inaccuracy of ordering. In other words, there exists possibility to get incorrect items.

Finally, as an economic feasibility, customers have to pay for using delivery services. The delivery charge will be a burden for some customers.

## 2) The Successful Home Delivery Services

There are several problems existing in e-Grocery business, and the worst problems are slow picking and inefficient home delivery. It is possible to reach considerably lower operational costs by cutting picking costs. Better picking efficiency can be reached by picking the items from distribution centers instead of the existing supermarket. However, to build an automatic distribution center requires high investment. It can be a burden for online grocers and it simply made little sense to invest huge amount of capital into the online grocery business, which in general provides very little margin, without founding evidence that enough shoppers would change their purchasing habits. What is the best home delivery service?

The store picking is possible to start up with low cost and use existing facilities, but unable to handle large volumes so it is impossible to expect economies of scale. However, Tesco was succeeded based on store picking system.

The expensive home deliveries such as attended reception and delivery time windows of 30 minutes under low customer density caused high delivery costs (Austria Farmer & Sandoval, 2001). Webvan offered this service, but it was bankrupted.

Unattended reception such as the reception box in the case of Streamline and SOK, allows for a wider delivery time window for home deliveries. This means that different reception alternatives and especially the reception box model creates a basis for more efficient home deliveries. Streamline is

a good example of how to achieve cost-effective home deliveries. By using the reception boxes it avoided tight delivery time constraints in home deliveries. As a result, it dropped about 10 orders per hour compared with about three for a typical e-Grocer using attended receiving (Lardner, 1998). A high degree of customer loyalty was attained as the customers became highly dependent on the reception box, which Streamline owned and was the sole replenisher of. The reception box also makes it possible to offer a vendor-management inventory(VMI) service to the customers (Smaros & Holmstrom, 2000). In addition, "one-to-one" marketing solutions such as long-term deals with the consumers and manufacturer loyalty programs make it possible for the e-Grocers to create a deeper relationship with the consumer (Peppers & Rogers, 1997).

Manual DC is possible to minimize risk, but hard to achieve lowest cost position. In case of Automated DC, it requires high initial capital cost(\$35 million/DC) and high minimum volumes to achieve profitability. In most cases, e-Grocers' over investments are made in DCs. For example, Webvan made a total investment of about US\$250 million in automated DCs. The cost of one highly automated DC was from US\$25 million to US\$35 million, compared with their competitors' less automated distribution centers, which cost between US\$4 million and US\$6 million each (Cuglielmo,2000). However, Peapod has achieved more efficient negotiation and purchasing power through performing its picking operations from DCs in addition to Royal Ahold's supermarkets by partnership. Currently, Peapod is the biggest e-Grocer in the USA.

To sum it up, to provide attended or unattended reception service under existing store is effective. Order picking is an appropriate way in initial step and the balance of order picking and attended reception is required. Moreover, to use reception box in order to fulfill unattended reception delivery service is the best way in efficiency. Even though pure players using DC closed down their operations, but to build DC is a long run aim for e-Grocers in order to increase efficiency in delivery system.

<Table 1> Evaluation of Different e-Grocery Models

	From Existing Store		Pure e-Grocery	
	Store Picking and Attended Reception	Store Picking and Unattended Reception	DC Picking and Attended Reception	DC Picking and Unattended Reception
Consumer Market Costs				
Investment	Low	Average	High	High
Home delivery costs	High	Low	High	Low
Picking costs	High	High	Low	Low
Purchasing costs	Low	Low	High	High
Customer acquisition	Simple	Simple	Difficult	Difficult
Required customer base	Small	Small	Large	Large
Customer loyalty	Low	High	Low	High
Time constraints	High	Low	High	Low
Possibility to offer other services (VMI)	Poor	Average	Average	Excellent
Examples	Tesco, UK	SOK, Finland	Webvan, USA	Streamline, USA

Source : Vesa Kämäräinen · Mikko Punakivi, "Developing Cost-effective Operations for the e-Grocery Supply Chain", International Journal of Logistics: Research and Applications, Vol.5, No. 3, 2002, p.293.

### III. The Current Situation of e-Grocery Business

#### 1. The e-Grocery Business of Foreign Countries

The e-Grocery shopping is very popular in foreign countries such as USA, Europe and developed countries. Even though the e-Grocery business is one of the fastest growing areas in e-commerce, the share of e-Grocery business in the enormous grocery market is still too small<sup>19)</sup>.

The various different models have been developed in the e-Grocery operations, but it is still hard

19) The e-Grocery market share is only 0.22% of the total grocery market in the USA (Van der Laan, 2000), 0.3-0.7% in the UK (Finch, 2001), and 0.1% in Finland(Päivittäistavarakauppa, 2001). Only 3 percent of US consumers reported that they experimented with online grocery purchasing in 2003. (source: Lim et al. 2004)

to produce the right and profitable operating model. That's why many e-Grocers ceased their business. Let's consider the condition of major e-Grocers in all over the world.

## 1) USA

Since the e-Grocery services have been offered, the e-Grocery business is getting developed continuously in the USA but it still has potential for future expansion<sup>20)</sup>. The grocery sales in the USA are huge<sup>21)</sup> and making grocery even more attractive is the fact that the base of online grocery buyers skews toward young and affluent consumers likely to increase their Internet spending. 56% of U.S. online grocery buyers in the Forrester report were between the ages of 18 and 43(compared with 52% for all U.S. online consumers). Online grocery buyers also have a higher average household income than online consumers are a whole, at \$93,000 to \$86,000, and they are more likely to have a college degree. There are many e-Grocers in three different e-business types in the USA. First type of e-Grocers is internet-pure players. Second type is joint operations between a traditional grocer and an online service provider. Third type is traditional grocers that run multi channels<sup>22)</sup>.

### (1) Internet pure player

Webvan started the business in the San Francisco Bay Area in June 1999. Webvan offered fresh meats, seafood, prepared meals, groceries, office supplies, health, beauty and drugstore merchandise, and range variety of other goods. To reach market dominance, Webvan offered its customers home delivery with attended reception and delivery time windows of 30 minutes<sup>23)</sup>. Furthermore, it aims to generate 8,000 orders a day from each warehouse at an average of \$103 an order, yielding a profit margin of 12% (three times the grocery industry's typical margin). Average orders early on were only \$71 and there were relatively few customers. Its first warehouse was designed to handle the volume of about 18 supermarkets, but it was operating at just 20% of capacity at the beginning. Webvan in

---

20) In 2010, 32% of respondents to an FMI survey said their primary grocery store offered online ordering, and 28% of those respondents said they had done at least some online ordering at those grocers. 4% said they shopped online at those grocers 1-3 times per month, and 2% said at least once a week. But 22% said they shopped online at those grocers less than once a month, with another 73% saying they never shopped there online.

21) According to Commerce Department figures, food and beverage stores accounted for 25% of U.S. retail sales(excluding motor vehicle dealers, restaurants and gasoline stations) of \$2.35 trillion in 2010.

22) Heejin Lim · Richard Widdows · Neal H. Hooker, Web content analysis of e-Grocery retailers: a longitudinal study, *International Journal of Retail & Distribution Management*, Vol.37, No. 10, 2009, p.843

23) Mikko Punakivi, "Comparing alternative home delivery models for e-Grocery business", Dissertation for the degree of Doctor of Science in Technology, *Helsinki University of Technology*, June, 2003, p.11.

the USA has improved picking efficiency by investing in highly automated distribution centers(DC). Low customer density, attended reception, and short delivery time windows together resulted in extremely high delivery costs. In December 2000, Webvan tried to decrease its home delivery costs by cutting down its service level to 60-minute delivery time window. However, the sales of Webvan were declined because of financial pressures<sup>24)</sup>. Finally, Webvan announced on July 9, 2001 that they cease operations, lay off most of its 4400 employees, close their web site, and sell off its physical assets.

Streamline which was the first e-Grocer offering unattended reception by installing refrigerated reception boxes in the customer's garage, built a cost-effective delivery model with reception boxes but could not operate effectively because of its small customer base. Streamline began exploring strategic and financial alternatives in May, 2000, culminating in the sale of its Washington, D.C, and Chicago operating to Peapod, Inc. in September. The break-even point for Streamline distribution centers was 1600 customers and its distribution center were built to serve a maximum of 4000 customers. So, Streamline faced the problem of too-low customer ordering frequency. Streamline's monthly fee<sup>25)</sup> covered only one delivery day a week for the customers. Additionally, Streamline gave few options on the selected day when a customer wanted to receive the order. This order was delivered to a reception box in the customer's garage. One delivery per week might be suitable for some families, but if a wide customer base is the target, more flexible and frequent ordering timetable are needed<sup>26)</sup>. Finally, Streamline ceased its business in November 22, 2000. There are other internet pure e-Grocers such as NetGrocer<sup>27)</sup>, HomeGrocer<sup>28)</sup>, WebHouseClub<sup>29)</sup>, and so forth.

---

24) Mikko Punakivi, "Comparing alternative home delivery models for e-Grocery business", Dissertation for the degree of Doctor of Science in Technology, *Helsinki University of Technology*, June, 2003, p.12.

25) Streamline offered its reception box and home delivery service once a week for \$30 a month, and an entrance fee of \$39 was charged when first subscribing to the service.<Source: Mikko Punakivi, "Comparing alternative home delivery models for e-Grocery business", Dissertation for the degree of Doctor of Science in Technology, *Helsinki University of Technology*, June, 2003, p.13.>

26) Vesa Kämäräinen · Mikko Punakivi, "Developing Cost-effective Operations for the e-Grocery Supply Chain", *International Journal of Logistics: Research and Applications*, Vol.5, No. 3, 2002, p.292.

27) NetGrocer, a New York-based online supermarket, also got into troubles. It failed to complete an initial public offering, and then fell into a cash crisis resulting in it laying off a large portion of its staff. <Source: Kim, Nancy J., "Growth plan for e-grocer", *Puget Sound Business Journal*, February 12, 1999.>

28) HomeGrocer was launched in 1998 and Amazon.com owns 22% stake. In the year ended January 2000, HomeGrocer spent \$7.7 million on advertising and promotion and generated \$21.6 million in sales to some 55,000 households.

29) WebHouseClub (Priceline.com), launched on November 1, 2000, allows customers to name their own price for groceries on the Internet and then claim those groceries at local supermarkets, such as A&P, KeyFood, ShopRite, GrandUnion and Stop&Shop.

## (2) A traditional grocer and an online service provider

Peapod is the biggest e-Grocer in the USA and the second largest e-Grocer in the world. Peapod is taking partnerships between pure-play online and brick-and-mortar companies. Brick-and-mortar supermarkets have a large, loyal customer base and an efficient logistics system that allows them to make profits in the narrow-margin grocery business. In August 2001, Peapod had been acquired by the grocery holding company Royal Ahold. This way Peapod has achieved more efficient negotiation and purchasing power. Royal Ahold supplies Peapod with goods, services and fast pick fulfillment centers. What Peapod and Streamline bring to the partnership is e-commerce and home shopping expertise, web-based software and ordering systems, web marketing and additional information technology skills. Ahold's contributions lie in its considerable buying power, real estate, strong store brand recognition, extensive customer base and category management expertise<sup>30)</sup>. Peapod started home delivery services by picking and purchasing items from existing supermarkets<sup>31)</sup>. In the picking operations Peapod relies on both warehouse and supermarkets depending on the market size. In the home delivery operations, providing both attended reception with 2-hour delivery time window and unattended reception, Peapod uses about 600 delivery vehicles<sup>32)</sup>. Furthermore, it performs its picking operations from DCs in addition to Royal Ahold's supermarkets. According to the Internet Retailer Top 500 Guide, Peapod is an e-Grocer among the 50 largest online retailers with \$451.33 million in 2010 sales and is primed to ride a new e-Grocery wave powered by technology developments like mobile shopping applications, digital marketing and a new legion of grocery shoppers who have grown up with the Internet. Recently, Peapod is making online shopping even easier to skip the grocery store and do shopping from the comfort of iPad. Peapod customers can search for items they need by name or by the products Universal Product Code (UPC) and easily add them to their online shopping lists by setting Peapod iPad application<sup>33)</sup>. It has already seen iPad users spending more than the typical Peapod ticket of 150%. It also plans to soon introduce applications to make it easy for customers to share their shopping ideas and lists with friends through Facebook and Twitter. Peapod also uses a

30) Tom Hays · Pinar Keskinocak · Virginia Malcome de Lopez, "Strategies and Challenges of Internet Grocery Retailing Logistics", *Applications of Supply Chain Management and E-Commerce Research in Industry*, 2004, pp.12-13.

31) Vesa Kämäräinen · Mikko Punakivi, "Developing Cost-effective Operations for the e-Grocery Supply Chain", *International Journal of Logistics: Research and Applications*, Vol.5, No. 3, 2002, p.291.

32) Mikko Punakivi, "Comparing alternative home delivery models for e-grocery business", Dissertation for the degree of Doctor of Science in Technology, *Helsinki University of Technology*, June, 2003, p.13.

33) Customers in one of Peapod's 23 US markets can use the iPad application to search, order and schedule a grocery delivery directly to their home or office. Customers can sign up for free and delivery fees range from \$8-\$10 with a minimum purchase of \$60.

truck-monitoring GPS software system from UPS that lets it monitor each driver's location, enabling it to make delivery and routing adjustments if necessary and provide delivery status reports to customers. Moreover, in an effort to improve convenience, Peapod plans to launch a text-message service that will alert customers when their delivery driver is due to arrive within 10 minutes, instead of making customers hang around their homes for a typical one-hour or two-hour delivery window<sup>34</sup>).

### (3) Traditional grocers with multi channels

Safeway, a traditional grocery retailer, provides online shopping and delivery services to their San Francisco Bay area customers as well as other regional markets. Their online shopping service has been successful by leveraging their established infrastructure and a partnership with a UK-based grocery retailer, Tesco, a successful online grocery service<sup>35</sup>).

## 2) UK

In the UK, 11 percent of UK shoppers visit supermarkets only to buy non-grocery items that have an approximate annual growth of 15 percent. According to the Office of National Statistics (2003) Omnibus survey, only 19 percent of Internet shoppers in the UK bought food and grocery online, while 52 percent used the Internet to make purchases relating to travel and entertainment<sup>36</sup>). In the UK, the growth rate of e-Grocery business is the strongest in the world. The Internet or online grocery market in the UK is dominated by four of the UK's major supermarket chains such as Tesco, Sainsbury's, ASDA and Waitrose, and by a fifth supplier, Ocado, which is a warehouse-based online operation and a partner distributor to Waitrose. Outside of these five major suppliers, the market is mainly populated by a wide range of niche, specialized retailers, many of which offer products that are not always available in the major supermarkets. The recent focus of the five major online grocers has seen them expand their distribution networks, improve their stock availability levels and enhance the functionality of their websites.

---

34) Paul Demery, "Peapod keeps on truckin'- Web grocer Peapod gains traction, potentially triggering a massive expansion of e-commerce into the last bastion of store-based retailing", *Internet Retailer*, March, 2011.

35) Heejin Lim · Richard Widdows · Neal H. Hooker, "Web content analysis of e-grocery retailers: a longitudinal study", *International Journal of Retail & Distribution Management*, Vol.37, No. 10, 2009, p.848.

36) Ronan De Kervenoael · Didier Soopramanien · Jonathan Elms · Alan Hallsworth, Exploring value through integrated service solutions: The case of e-grocery shopping, *Managing Service Quality*, Vol. 16, No. 2, 2006, p.186.

### (1) Tesco.com

Tesco is a global grocer and general merchandise retailer headquartered in Cheshunt, UK. It is the third-largest retailer in the world measured by revenues (after Wal-Mart and Carrefour) and the second-largest measured by profits (after Wal-Mart). In May 1984, in Gateshead, England, the world's first recorded online home shopper, Mrs. Jane Snowball, purchased groceries from her local Tesco store in the world's first recorded online shopping transaction from the home. Tesco became involved in Internet grocery retailing in the USA when it obtained a 35% stake in GroceryWorks in July 2001. Tesco operates a grocery home-shopping service, as well as providing consumer goods, telecommunications and financial services online. Tesco has operated on the Internet since 1994 and was the first retailer in the world to offer a robust home shopping service in 1996. "Tesco.com" was formally launched in 2000. Tesco in the UK has attained near-national coverage at a reasonable cost. It has chosen a store-based fulfillment model that makes it possible for the company to offer a full product range and to use its existing assets to the maximum. Tesco is the leading e-Grocer in the UK, with sales of £125million (0.6% of Tesco's total sales in the UK). It has first mover advantage in the UK market<sup>37)</sup> and its model allows it to quickly move into new area and cities. Thus this is a fast way to increase the sales volume. However, because products are picked from existing supermarkets, operating costs tend to increase faster than revenues at high volumes, thus the picking efficiency is the issue of Tesco. Tesco has a successful customer acquisition. Its e-Grocery model is based on picking from the existing supermarkets. This is not necessarily the most effective way of picking, but on the other hand this model does not require high investments. In addition, this way Tesco can use its existing network of supermarkets in customer acquisition. It has linked its web site to store databases so that customers can easily reorder products they have previously purchased online or in a supermarket<sup>38)</sup>. The online market share of Tesco UK in 2009 was 30.5%<sup>39)</sup> and online grocery sales have exceeded £1 billion for the first time in the UK alone. By September 2007, online sales in the first half of the year were £748 million, a 35% year-on-year increase, and profit increased by 62% to £54.7 million. Tesco.com now receives over 300,000 orders each week and also offers more

37) Kämäräinen, Vesa(2000), "Supply Chain for e-Commerce and Home Delivery in the Food Industry", Helsinki University of Technology. This document contains some ideas presented by the speakers at the CIES "Supply Chain for e-Commerce and Home Delivery in the Food Industry" conference May 18 - 19.

38) Vesa Kämäräinen · Mikko Punakivi, "Developing Cost-effective Operations for the e-Grocery Supply Chain", *International Journal of Logistics: Research and Applications*, Vol.5, No. 3, 2002, p.291.

39) ASDA was 16.9%, Sainsbury's was 16.3%, Murrison's was 12.3%, Waitrose and Ocado were 4.2%.



intangible offerings such as e-diets and music downloads. In the UK, nearly 1860 vans operate out of 294 stores. Drivers deliver between 9am and 11pm, and the staffs start picking customers' orders from 6am. Recently, Tesco.com's new application includes a barcode reader that enables customers to add items to their online shopping basket more quickly and simply than ever before. To improve revenues, Tesco expanded its product selection beyond groceries to include higher margin products, such as books, CDs, DVDs, games, flowers, baby items, home furnishings, and clothes that online customers seem more willing to mix with food than do customers in the supermarket.

In <Table 2>, the different e-Grocers' service models are shown.

<Table 2> Service Models in the e-Grocery Business (2001)

	Tesco (UK)	Webvan (USA)	Peapod (USA)
Product Range Offered	Groceries, video rentals, laundry, postal services	Groceries, office supplies, etc.	Groceries, health and beauty products, etc.
Fulfillment	From stores	From DC	From DC and stores
Picking	Manual	Automated	Manual/Automated
Reception Type	Attended reception	Attended reception	Reception box and attended reception
Available Delivery Hours	Two-hour time windows 13 daily from 8am-10pm	One-hour time windows 14 daily	To the boxes: 6am to 1pm and 4pm to 9:30pm Attended reception: 2-hour time windows 13 daily
Delivery Window	2 hours	1 hours	2-7 hours
Lead Time	Next day	Next day	Next day
Delivery Charge or Minimum Order	\$7, regardless of the order size	Free delivery for orders of \$100 or more. \$4.95 for deliveries of \$75 to \$100 \$9.95 for deliveries of less than \$75	Free delivery for orders of \$100 or more. \$4.95 for deliveries of \$75 to \$100 \$9.95 for deliveries of less than \$75 Minimum order \$50

Source: Vesa Kämäräinen · Mikko Punakivi, "Developing Cost-effective Operations for the e-Grocery Supply Chain", International Journal of Logistics: Research and Applications, Vol.5, No. 3, 2002, p.288.

## 2. The Present Situation of Korean e-Grocery Business

The e-Grocery business is not common in Korea comparing to foreign countries. Korean grocery market is run by traditional market system mainly. However, the sales products of online shopping stores are limited because they depend for their product delivery on parcel delivery service. So, in case of fresh grocery, it is kind of difficult goods to sell via online because it requires vehicle established refrigerator and freezer. Recently several Korean supermarkets such as Emart, Homeplus and Lottemart started to provide home delivery service which is a basic service in the grocery business and the competition is getting intensely. Around year 2000, the supermarkets like Emart, Homeplus and Lottemart are attacking online market through the integrated online and offline delivery system. The supermarkets settled their own delivery system using their local store and they are trying to increase the market share in online market for attacking the niche market such as fresh-cut products. Recently, home delivery service industry in Korea has been growing rapidly with the highly consistent annual growth rate of over 7% (KDI, 2006). Especially, growth of delivery service related e-business (online customer business) is remarkable<sup>40</sup>. Let's see the current situation of several Korean supermarkets' e-Grocery.

### 1) Homeplus

#### (1) Background of e-Grocery Business

Homeplus entered into online market opening internet shopping mall in March 2002. At the beginning, they started one node store in Yeongdeungpo and it has been expanded to 47 stores in 2010 and the sales also exceeded over 100 billion won in 2009. Moreover, the strength of Homeplus shopping mall is the knowhow of Tesco, the head office of Homeplus<sup>41</sup>), which is running its internet supermarket in England successfully. Homeplus starts an accurate CRM based on the buying data of 12 million family card members such as custom-built coupon and DM (direct mail). They also offer custom-built coupon and information for goods considering the buying pattern and lifestyle of each customer like baby club, kids club. Moreover, they opened the shopping information site called

40) Jae-Woan Jeon · Hun-ku Ha · Chang-Youl Choi, "A Study on Service Quality for Customer's Profitability in Home Delivery Service", *The e-Business Studies*, Vol.1, No.1, December 2007, p.21.

41) The largest international business of Tesco, Homeplus, already generates £5 billion revenue. If Homeplus were to grow to have the same proportion of the total retail market that Tesco has achieved in the UK, the business would be more than three times as large as it is today.

'homeplusstory.com' in February 2009 and they are reinforcing an integrated marketing between online and offline. Homeplus is trying to improve the quality of delivery service and the degree of freshness and to expand the delivery store to nationwide branches.

## (2) Online Services-Home Delivery

Homeplus has expanded the home delivery service from 4 times to 10 times a day in online shopping delivery since May 13, 2010 for the first time in Korea, in other words the delivery window is 2 hours and the available delivery hours are from 11 am to 10pm. Additionally, because offline stores are increasing continuously, 2 hour delivery window will be expanded further. And the number of direct delivery goods also increased from 15,000 on open date to 30,000. So customers can expect the convenience. In case of delivery time, if a customer is done to pay before 1pm, the customer can get the ordered good on the same day, but the reservation for the day of delivery is possible to be full early. They also inform the estimated time of arrival to the customers in advance by cell-phone message and in general, they can receive goods within 2 to 4 hours after receiving the cell-phone message. Moreover, the delivery costs are applied to the customer differently from 1000 Korean won to 4000 Korean won based on the delivery time<sup>42</sup>). If the customers buy a pass called "free and joy", the delivery charge will be free when the customers' order over 50,000 won each time<sup>43</sup>). They also offer the delivery delay compensation system<sup>44</sup>). The home delivery service has been providing in around 50 stores in all over the country such as 30 stores in Seoul and Kyungkido, 12 stores in Yeongnam area, 3 stores in Chungcheng area and 3 stores in Honam area. And they can select the packing method for ordered goods between collecting box and shopping bag<sup>45</sup>). Furthermore, Homeplus provides the service that workers of online part in offline store select the products, which they got ordered from customers, pack and deliver to the customers by themselves. According to the recent news of 2011, customers can order fresh groceries during their commute through their smartphone and the food arrives when they get home, so there's no need to waste time at the grocery store<sup>46</sup>).

42) If the customers select the delivery time which many customers order, the delivery costs are expensive than other delivery time. The total costs are less than 30,000 won, the delivery costs are 4000 won all the time.

43) A pass for 3 months is 5,000 won, for 6 months is 8,000 won, and for 12 months is 12,000 won.

44) If the delivery is delayed, the delivery costs are waived in the next order.

45) The collecting box is free charge, but the shopping bag is 50 Korean won per shopping bag.

46) Kristina Bjoran, "Grocery store? South Korea uses smartphone apps instead", 「Technology Review」, The Christian Science Monitor, 2011.

In HomePlus's virtual store, each image of a grocery item is accompanied by a quick-response(QR) code, a boxy geometric image that encodes data-the product and its price. When each code is scanned the item goes into an online shopping cart.

## 2) Emart

### (1) Background of e-Grocery Business

Emart launched the Internet shopping mall in May 2005 and they keep renewing the website. Emart built 3 teams such as e-MD, e-Marketing, e-Customer Management as an online business expert department through renewing. This renewing was focus more on 'customer oriented' and 'quality discrimination in goods.' They strengthen the tools such as shopping basket by drag and drop, automatic discount which customers can use conveniently, and also reinforce the grocery competitiveness such as premium goods and regional specialties. They are going to build multi-channels which connect online-offline-mobile through releasing mobile application for mobile web. Furthermore, they are planning to aggressively attack online market with about 7000 kind of fresh goods which is hard to be handled by online shopping mall. Emart gives an effort to develop 'the online only goods' and in 2009, the sales on online part was 94 billion won increased by 35% than 2008<sup>47)</sup>. The sales aim of Emart in 2010 is 300 billion won and 1 trillion won by 2012.

### (2) Online Services-Home Delivery

Emart also serves home delivery booking services in about 100 stores all over the country, and delivery window is 2 hours, they also deliver the ordered products 10 times a day. The customers can order the goods by telephone<sup>48)</sup> and online. The customers can select the delivery ways among home delivery booking services, parcel delivery service from store, parcel delivery service from each company, pickup service<sup>49)</sup>. In case of pickup service, the customers make an order to the store which the customer want to pick up, and they can pick them up by themselves<sup>50)</sup>. And when the ordered goods are ready to pick up, they send a cell-phone message to the customer and the customer can

---

Customers then use their phones to pay before hopping the train to work.

47) The sales of Emart are 55 billion won in 2007, 69.5 billion won in 2008, and 94 billion won in 2009.

The sales of Homeplus are 21 billion won in 2007, 46 billion won in 2008, and 100 billion won in 2009.

<Source: MK Economy, "The possibility of the top in online shopping mall for Emart is retention in offline growth and "all in" in online", 2010.7.28>

48) The customers can order by telephone from 9am to 9pm on Monday to Friday, and from 9am to 6pm on Saturday, Sunday, and holiday. They have to pay by credit or debit card and they can select the delivery time.

49) The store pickup system is the cheapest and easiest way for e-grocer to apply to the customer, but only Emart in Korea use this system, but it has not been so widespread.

50) If the customer orders the goods before 10 am, the customer can pick them up after 1 pm on that day.

If the customer orders the goods before 1 pm, the customer can pick them up after 6 pm on that day.

If the customer orders the goods before 4 pm, the customer can pick them up after 10 am on next day.

take the goods with order number which sent by cell-phone message and identification. However, Emart also charge 2000 won for preparing goods and the customers can order goods at only room temperature except cold-storage goods and frozen food. Through Emart adds 'online store only' goods<sup>51)</sup> of 70,000, they are planning to expand order possible goods up to 100,000 (online only goods will be expanded up to 170,000 by the end of 2010) and also to offer the service that customers can receive their ordered products within 2 hours through Emart stores. If the customers are not at home, the ordered goods will be returned to the store, and if the customer wants to re-delivery, the customers have to be charged for re-delivery. In case of the delivery delay, Emart also compensate through accumulated money.

### 3) Lottemart

#### (1) Background of e-Grocery Business

Lottemart launched February 2007 and they reinforced their services through renewal in May 2010. From this renewal, Lottemart added delivery goods by companies and node stores are increased from 24 to 70. Lottemart got 30 billion won in sales last year and the aim of this year 2010 is 100 billion won. Moreover, they are planning to open 'online shopping center' for special goods such as Toys"R"Us, DigitalPark and so on.

#### (2) Online Services-Home Delivery

Lottemart is focus more on delivery on the same day because 80% of online customers in Lottemart require this service. For the day delivery service, order time for the day delivery is postponed from 3pm to 5pm. The customers can book the delivery time, but it will be limited based on processing ability of each store. If the customers cannot reserve the delivery time, the goods will be delivered within 3 to 4 hours after order. And the delivery costs are charged based on the total payment<sup>52)</sup>, they also offer the coupon book and the customers can collect the points, which turn into money, by using Lotte card. Also they focus on exposure event and best goods effectively, and expand the office goods and baby goods which occupy high sales scale. The strong point of Lottemart shopping mall is that website provides a page for details of goods<sup>53)</sup>. Moreover, in case of related products, they

---

51) Emart has 20 people of online expert MD (managing director).

52) If the customers order over 30,000 won, it is free, but they will charge 4000 won for less than 30,000 of total payment.

recommend highly related goods based on the offline display not depending on sales order.

<Table 3> Delivery Service Models in the e-Grocery Business(2011)

	Homeplus	Emart	Lottemart
Reception Type	Attended Reception	Attended Reception	Attended Reception
Store Picking	No	Yes (available for goods at room temperature)	No
Available Delivery Hours	10 times a day, from 11am to 10pm	10 times a day, from 10am to 9pm	11 times a day or 3 times a day based on stores from 11am to 9:30pm
Delivery Windows	Two-hour time windows	Two-hour time windows	Two-hour time windows
Delivery Box	box packing: free shopping bag: 50won	box packing: free	box packing: free
Delivery Charge	store: less than 30,000won: 4,000won more than 30,000won: 1,000-4,000won(based on delivery time) parcel: 50,000won: 4,000won 50,000-80,000won: 3,000won over 80,000won: 2,000won a pass: over 50,000: free a pass price: 3 months: 5,000won 6months: 8,000won 12months: 12,000won	store: less than 30,000won: 4,000won more than 30,000won: 1,000won more than 40,000won: put into your account as accumulated money parcel: over 50,000won: 2,000won 30,000-50,000won: 3,000won less than 30,000won:4,000won store pickup: 2,000won express: 10,000won(2 boxes)	store: less than 30,000won: 4,000won more than 30,000won: free

Source: The website of Homeplus ([www.homeplus.co.kr](http://www.homeplus.co.kr)), Emart ([www.emartmall.com](http://www.emartmall.com)), Lottemart ([www.lottemart.com](http://www.lottemart.com))

53) In case of the unstandardized goods which customers hardly make decision, they give a measuring standard, for instance, 'Og a person' in order to help customers' understanding.

<Table 4> The Condition of Online Shopping Store of 3 Supermarkets(2009)

	Emart	Homeplus	Lottemart
Website	www.emartmall.com	www.homeplus.co.kr	www.lottemart.com
Shopping mall launching date	May 2004	March 2002	February 2007
Number of Products	30,000	30,000	25,000
Delivery stores	72	47	70
Aim of sales this year	300 billion won	188 billion won <sup>54)</sup>	100 billion won

Source: Yun, Eunyong, The strategy of on/off multi-channel in logistics: ready to attack online grocery market, Retail Magazine, 2010, p.49.

These supermarkets are maximizing the buying experiences and satisfaction of customers and the saving in logistical costs through TMS (Transportation Management System) solution which automatically plans the shortest delivery route avoiding traffic jam<sup>55)</sup>.

#### 4) Other e-Grocers in Korea

There are several small-medium sized online companies to serve fresh-cut products and B2B business in e-Grocery business such as CJ. As a fresh-cut product providers, Hansalim is a cooperative organization dealing with environmental friendly organic products (EFOP) under the present environment which is more concerned with health, safety, nutrition. Hansalim was founded in December 1986. Hansalim has about 130,000 members and its sales is about 93.6 billions won in the end of 2006. Hansalim has 19 stores in all over the country and also has a logistics center in 2006. Hansalim makes a decision such as management directions and organization structures with producer's organizations and consumer's organizations all together. Hansalim pursues the eco-friendly, safety, discrimination, creativity through self production and self logistics standard. More importantly, the distribution route of Hansalim is a direct distribution through logistics center. Hansalim tries to increase the simplification and efficiency in supply chain. For resource saving, Hansalim reuses collected delivery boxes and empty bottles<sup>56)</sup> as a green marketing strategy. For the fresh-cut products, they use

54) The online sales of Homeplus in 2009 is the top among supermarket online stores. The sales aim of Homeplus in 2013 is over 1 trillion won.

55) Ha Junchul, "A big changes in logistic market through on/off integrated delivery system", October 13, 2010.

56) Kim, Ho, "Implications and Situation of Hansalim's Green Marketing for Environmentally Friendly Agri-Products", Korean

ice-box to keep the quality of products. By present time, the members and the sales are increasing<sup>57)</sup>.

### 5) The Increase of Online Users for Shopping

Considering of the current situation of Korea, the visitors into supermarkets which offer home delivery services are getting increasing <Table 5> and to offer e-Grocery services is the way for Korean supermarkets and SSM (Super Supermarket) in order to survive in stiff competition. Moreover, as analyzing above, Korean e-Grocers are recently providing only home delivery service.

<Table 5> The Number of Visitors into Supermarket and SSM

Rank	Name	Website	visitors
1	Emart	www.emartmall.com	483,934
2	Homeplus	www.homeplus.co.kr	309,421
3	Lottemart	www.lottemart.com	173,276
4	GS retail	www.gsretail.com	66,835
5	Lottesuper	www.lottesuper.co.kr	49,507
6	Megamart	www.megamart.com	16,090

According to the description of the Electronic Grocery Store-customers in the study<sup>58)</sup>, women to use electronic grocery store is 73% and 18-35 years old is 46% and 36-45 years old is 42%. Comparing to social status, leading position, white collar and housewife are 13%, 67% and 7% respectively. High income family use e-Grocery stores more and a family with children use e-Grocery stores more than one or two persons household. Here, considering the present trend of Korea, we can predict that Korean potential e-Grocery users might be very similar to the result of above study considering the environmental changes in Korea.

*Journal of Organic Agriculture*, Vol.15, No.1:25-42, March 2007, P.33.

57) The annual increase of membership and the sales increase are about 30.2% and 38.9% for 19 years from 1988 to 2006 respectively.

58) Source: Anu Raijas, The consumer benefits and problems in the electronic grocery store, *Journal of Retailing and Customer Services* 9, 2002, pp.110, <Table 2>: The description of the EGS-customers in the study.



## IV. The Alternatives for the Development of Korean e-Grocery Business

Even though there exist some problems in e-Grocery business, the users in e-Grocery haven't been reduced. Through providing the mobile application, the users will be increased. To develop Korean e-Grocery business, e-Grocers have to develop new alternatives which increase picking speed and offer their customers more value than traditional grocers. However, it is very hard to satisfy customers' needs because their needs are all different<sup>59)</sup>.

Most of Korean e-Grocers serve only attended reception home delivery services. In order to receive the delivery, the customer has to be at home, and it restricts the number of potential customers. However, e-Grocers in foreign countries offer several kind of delivery services tools in order to satisfy their customers.

Here, we would like to suggest alternatives to attract potential customers based on the hybrid model which is a success model used by Tesco.com. In our point of view, the hybrid model of Tesco.com is appropriate in Korea because most of Koreans get used to go shopping to traditional stores in present and the lifestyle of Korean customers is in a transition period such as getting close to online and mobile. There are several alternatives for home delivery service and the development of e-Grocery business.

First, as an alternative for home delivery service based on hybrid model, picking services which are the easiest and cheapest way for the e-Grocer have to be offered. This service is offered by only Emart

59) Potential Customer Groups of Electronic Grocery Shopping

Potential customer groups	Expected benefits
Suburban family commuters around large cities	Reduced time / Reduced effort Planning orders independent of time of the day
Bargain seekers in large cities	Lower price / Price comparability
Wealthy adults seeking for high quality services	Value added services Broad selection of special and high quality products
Rural area dwellers	Accessibility of shopping services Broader selection of products
Elderly, or disabled people relying on social services	Accessibility of shopping services Broader selection of basic products Indirect cost savings to the public sector
Computer literate generation	First, easy access to the shopping services Later, same benefits as groups one and two
Business-to-business customers	Cost saving/Efficiency/New possibilities for services

in Korea right now. In Korea, there are many dual income households recently. The working wives don't have much time and energy for grocery shopping after getting off work. It can be the way to pick up the ordered groceries on the way home after work. The customers can save time to go shopping and also be convenient. Although picking services require the space in a local market to keep until the ordered goods are picked up by customers, it can be a good way for dual income households than attended or unattended home delivery.

And home delivery service also has to be offered. In general attended or unattended home delivery services are used in present. In Korea, most of e-Grocers are based on attended home delivery service, but for the efficiency of delivery, e-Grocers are done with customers' connivance. In order to improve the quality of home delivery, to use the shared reception box will be the best way. The reception box model is not yet widespread because of high cost of investment. In Korea, supermarkets are using cotton boxes, plastic baskets and shopping bags but to receive the goods, customers have to be at home. Considering the lifestyle pattern of Korea, many people live in apartment and young people, who are friendly with Internet, are preferred to live in apartment. To establish the shared reception box in apartment like mailbox could be a way to develop e-Grocery business. To establish the reception box requires lots of costs, but e-Grocers can do a joint investment for establishing reception box and customers can share the reception boxes. If so, it is possible to drop off many orders at one stop, e-Grocers don't need to collect delivery boxes and also reduce the delivery time per customer. For customers, they cannot be at home to receive the delivery and most importantly don't need to worry about the quality of groceries and also customers can expect to save delivery charge sharing a reception box.

Furthermore, as a partnership model of Peapod which is a successful e-Grocer in USA, partnership or merge between online pure-players and brick-and-mortar companies has been increasing recently. Customer acquisition has been a big problem for many players, especially for pure e-Grocers. According to the previous e-Grocers' data, pure e-Grocers such as Streamline and Webvan already ceased their operations because of small customer base and a cost-effective delivery model required high investment. Therefore, the above partnership model based on high volume of customers, efficient logistics system will be the best way to provide better home delivery service to the customers. In general to build DC(distribution center) as a cost-effective delivery model is very expensive, so it will be a longrun plan for e-Grocers. However, through partnership, better service for customers will be

guaranteed.

Second, as an alternative for the development of e-Grocery business, it is necessary to improve home delivery service awareness and to offer high quality of services than traditional stores. According to the survey for online delivery service, 75% of customers never use online service for ordering grocery. It means that the awareness of e-Grocery business is too low. The e-Grocery shopping is still a new idea for Korean and also online shopping does not provide the credibility to customers yet. To develop the e-Grocery business in Korea, as initial step to use the delivery operations explained the above, e-Grocers should concentrate on extensive marketing research verifying people ability and willingness to switch into online grocery shopping. After verifying its ability for profitability within a certain market, majority of marketing and advertising efforts should be concentrated on the most accommodating and accepting new idea of online grocery market segments. Those segments would consist of:

- Parents of young children
- Disable and Handicap people with inability for ease commuting
- Professional interesting in any time saving ideas

And the most successful markets for e-Grocers would be located around major cities and they have to be applied toward advertising and marketing within previously mentioned highly populated areas.

Moreover, to keep the loyal customers in e-Grocery business, the sanitation and safety of products and convenience must be guaranteed. According to many studies, online shoppers mainly focus on safety and convenience than price. In general, the quality of fresh-cut products delivered by online grocers is lower because of the small business scale and the complex of distribution. Therefore, e-Grocers have to get rid of the insecure of online ordered goods in order to attract the potential customer and to keep current customers. Furthermore, in order to provide convenience to the customers, e-Grocers have to consider the accuracy of ordering such as getting incorrect items and forgetting to order items. The method which Tesco is using will be a solution. The customers can order by mobile phone anytime through scanning barcode, so they don't need to take some time to order goods. And customers can be compensated about getting incorrect items by e-Grocer through the compensation system.

## V. Conclusion

With the introduction of electronic grocery shopping services, the Internet retailers are able to anticipate to changes in consumers' shopping behavior. Recently, Korean e-Grocers are also considering new changes in grocery environment.

The aim of this paper is to introduce the e-Grocery business and to suggest alternatives for the development of Korean e-Grocery business based on the analysis on the present situation of Korean e-Grocery business because there are many studies on the different e-Grocery concept on the market, but there is no research related to e-Grocery business in Korea yet.

For e-Grocers, cost-efficient logistics are necessity if profitability is to be found. However, most of the failed e-Grocers have been pure Internet player without the support of a traditional retailer's business relationships. The online grocery shopping is nascent in Korea and Korean e-Grocery business is recently carried out by supermarkets. Given the mixed success of online grocery retailers, it is vital for supermarket operators to understand how people decide whether they will use online grocery services. Considering the analysis, Korean e-Grocers as a second mover follow the right way to offer home delivery service to their customers. However, in order to develop the e-Grocery business, Korean e-Grocers have to prepare a right solution for further increasing the service quality such as fast delivery, low costs, and so forth.

In this paper, we suggest some alternatives related to home delivery in order to satisfy customers for the development in e-Grocery business. First, as a basic model for home delivery service, order picking is efficient in Korea for working mothers. As another model for home delivery service, in order to improve the quality of delivery services, to build a reception box is the way to provide better home delivery to the customers even though it needs high investment. And a shared reception box will be another alternative compensating high costs. Moreover, to build automated DC (distribution center) will be the last way to provide high quality of home delivery service but it requires high costs. So, through partnership between pure-players and brick-and-mortar companies, it is possible to provide high quality of services.

Second, as an alternative for development of e-Grocery business, for the first time, e-Grocers have to make effort to persuade customers who don't believe online shopping by marketing and advertising. Furthermore, the sanitation and safety of products and convenience of using online delivery must be

guaranteed in order to keep the loyal customers and to attract new potential customers. Recently, the applications of smartphone can help customers to order goods easily. In our opinion, to provide differentiated services from conventional stores is the way to entice potential customers and increase sales.

In conclusion, looking at the operational costs of e-Grocers, to use shared reception boxes based on the partnership model between pure-player and brick-and-mortar companies will have a clear benefit compared to other home delivery solutions. Therefore, further research will be taken to analyze the efficiency in different operation systems for home delivery services in e-Grocery business and also to analyze the consumers' satisfaction on e-Grocery service by survey.

## References

- Andrew J. Murphy, "Grounding the virtual: The material effects of electronic grocery shopping," *Geoforum, ScienceDirect, Elsevier* Vol.38, 2007.
- Anu Raija, "The consumer benefits and problems in the electronic grocery store," *Journal of Retailing and Customer Services*, 2002.
- Heejin Lim · Richard Widdows · Neal H. Hooker, "Web content analysis of e-Grocery retailers: a longitudinal study," *International Journal of Retail & Distribution Management* Vol.37, No. 10, 2009.
- Jae-Woan Jeon · Hun-ku Ha · Chang-Youl Choi, "A Study on Service Quality for Customer's Profitability in Home Delivery Service," *The e-Business Studies* Vol.1, No.1, December 2007.
- Johanna Smaros · Jan Holmstrom · Vesa Kämäräinen, "New Service Opportunities in the e-Grocery Business," *International Journal of Logistics Management* Vol. 11, No.1, 2000.
- Johanna Smaros · Jan Holmstrom, "Viewpoint: Reaching the consumer through e-Grocery VMI," *International Journal of Retail & Distribution Management* Vol.28, No.2, 2000.
- Junchul Ha, "A big changes in logistic market through on/off integrated delivery system," October 13, 2010.
- Kim, Ho, "Implications and Situation of Hansalim's Green Marketing for Environmentally Friendly Agri-Products," *Korean Journal of Organic Agriculture* Vol.15, No.1, March 2007.
- Kim, Nancy J., "Growth plan for e-grocer," *Puget Sound Business Journal* February 12, 1999.
- Kristina Bjoran, "Grocery store? South Korea uses smartphone apps instead," *Technology Review, The Christian Science Monitor*, 2011.
- Mikko Punakivi, "Comparing alternative home delivery models for e-Grocery business," *Helsinki University of Technology, Ph.D Dissertation*, 2003.
- Mikko Punakivi · Juha Saranen, "Identifying the success factors in e-Grocery home delivery," *International Journal of Retail & Distribution Management* Vol.29, No.4, 2001.
- Mikko Punakivi · Kari Tanskanen, "Increasing the cost efficiency of e-fulfillment," *International Journal of Retail & Distribution Management* Vol.30, No.10, 2002.
- Ronan De Kervenoael · Didier Soopramanien · Jonathan Elms · Alan Hallsworth, "Exploring value through integrated service solutions: The case of e-Grocery shopping," *Managing Service Quality* Vol.

16, No. 2, 2006.

Tom Hays · Pinar Keskinocak · Virginia Malcome de Lopez, “Strategies and Challenges of Internet Grocery Retailing Logistics,” *Applications of Supply Chain Management and E-Commerce Research in Industry* 2004.

Vesa Kämäräinen, “The reception box impact on home delivery efficiency in the e-Grocery business,” *International Journal of Physical Distribution & Logistics Management* Vol. 31 No.6, 2001.

Vesa Kämäräinen · Mikko Punakivi, “Developing Cost-effective Operations for the e-Grocery Supply Chain,” *International Journal of Retail & Distribution Management* Vol. 29, No.1, 2001.

Vesa Kämäräinen · Johanna Smaros · Jan Holmstrom · Tomi Jaakola, “Cost-effectiveness in the e-Grocery business,” *International Journal of Logistics: Research and Applications* Vol.5, No. 3, 2002.

Yun, Eumyoung, “The strategy of on/off multi-channel in logistics: ready to attack online grocery market,” *Retail Magazine* 2010.

MK Economy, “The possibility of the top in online shopping mall for Emart is retention in offline growth and “all in” in online”, 2010.7.28.

Annual Report and Financial Statements 2011 of Tesco.

Peapod Website: [www.peapod.com](http://www.peapod.com)

Tesco Website: [www.tesco.com](http://www.tesco.com)

Homeplus Website: [www.homeplus365.co.kr](http://www.homeplus365.co.kr)

Emart Website: [www.emartmall.com](http://www.emartmall.com)

Lottemart Website: [www.lottemart.com](http://www.lottemart.com)

## 국문초록

# 한국의 e-Grocery 배송서비스 대안에 관한 연구

구종순\* · 이정선\*\* · 전동화\*\*\*

정보과학기술의 발달은 식료품산업에서도 큰 변화를 가져왔는데, 그것은 바로 기존의 전통적인 슈퍼마켓 형태의 배송체계에서 온라인 방식의 배송시스템을 접목한 것이다. 현재 한국의 전통적인 슈퍼마켓들은 소비자를 만족시키기 위한 하나의 방편으로 오프라인과 온라인 서비스를 동시에 제공하고 있다.

본 연구는 과거 1990년대 후반부터 2000년대 초반까지 선진국에서 주로 이루어진 선행연구들을 기초로 하여, 온라인 식료품 산업의 개념과 운영(operation)모델을 설명하고, 전 세계 온라인 식료품 회사와 한국 대형 슈퍼마켓의 온라인 식료품 서비스 현황 분석을 통해, 한국 대형 슈퍼마켓의 성공적인 온라인 식료품 서비스 제공을 위한 배송방법들과 기타 대안들을 제안하고자 한다.

본 연구에 따르면 한국 대형 슈퍼마켓들은 현재 집 배송(home delivery) 서비스를 제공하고 있으나 선진국들에 비하면 아직 초기단계에 머물러 있다. 배송 서비스의 대안으로서, 가장 기본이 되는 것은 저렴한 비용의 점포픽업서비스이다. 점포 픽업서비스는 인터넷을 통해 가까운 대형마트에 원하는 상품을 주문하고 매장을 방문하여 주문한 상품을 인도받는 형태이다. 또 다른 대안으로 배송서비스의 질을 향상시키기 위해 리셉션박스라는 특수한 박스를 이용하는 방법이 있다. 이 박스는 신선식품과 같은 신선도가 생명인 상품의 질을 유지하기 위해 박스의 온도 조절과 자물쇠처리를 통해 안전하게 고객에게 상품을 전달하는 방법이다. 마지막 대안으로는 배송서비스의 질적 향상을 위한 DC(distribution center)를 구축하는 것이다. 그러나 DC구축은 높은 투자자본이 요구되므로 구축에 어려움이 있다. 그러나 미국 온라인 식료품 기업인 Peapod이 기존 전통기업과 온라인 식료품 기업의 합병이나 파트너십을 통해 DC를 구축한 것처럼 한국 대형 슈퍼마켓들도 DC구축이 가능할 것으로 보인다.

\* 충남대학교 경상대학 무역학과 교수 (주저자)

\*\* 충남대학교 경상대학 무역학과 초빙교수 (공동저자)

\*\*\* 충남대학교 경상대학 무역학과 박사과정 (공동저자)



위에서 제시한 배송서비스를 실현하기 위해서는 기본적으로 대규모 주문량을 확보하여야 하며, 이를 위해서 홍보를 통한 온라인 잠재고객의 유인이 반드시 필요하다. 아울러 온라인 식료품 배송 서비스에서 고객들이 기대하는 식품 위생과 안전성의 보장 그리고 편의성을 제공하여 충성스런 고객(loyal customers)을 계속 유지하는 것 또한 대형 슈퍼마켓들이 온라인 식료품 산업에서 성공을 위해 고려해야하는 중요한 요소라 하겠다.

주제어 : 온라인 식료품, 집배송서비스, 리셉션 박스