



Online retailing in the food industry

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Information

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Preface

As part of the study Management and Consumer studies I wrote this Bachelor thesis. I chose to write my thesis at the Management Studies Group, and specific with Jacques Trienekens as advisor, because I wanted to write my thesis about a subject in the field of Supply Chain Management. I came to the subject of my thesis because I am intrigued about the online development of markets in our era. In the Netherlands there are interesting developments in the way supermarket chains give more focus on the online environment. Working on this thesis gave me much new insights and knowledge about the subject. The interest in the subject did make it easier for me to write this thesis.

Furthermore I want to thank Jacques Trienekens for the time and effort he has put in me. He mentored me during the writing of the thesis and helped me when I needed a little push in the right direction.

Abstract

Electronic grocery shopping (EGS) with direct home delivery is gradually becoming an option for busy families. In the United Kingdom and France consumers already embraced this new way of grocery shopping. It takes time before EGS in the Netherlands will be as developed as EGS in the UK, which has the biggest EGS market in the world. There are many success stories (Tesco) and big failures (Webvan) of companies who started online grocery operations. Different methods and strategies of implementing an EGS system have been developed. The most used methods are the “bricks and clicks” method and the “pure-play” method. The bricks and clicks method uses existing supermarkets and pickers assembling the orders which leads to low fixed cost but high variable cost. The pure-play method uses warehouses as dedicated picking centres. The pure-play method has high fixed cost but lower variable cost. When higher sales volume are reached the pure-play method becomes more interesting. EGS provides many benefits for consumers, retailers and the environment. Consumers can save much time and will not have to take the car or bus to a supermarket. Retailers can save cost because with EGS consumers do not have to buy their groceries in a supermarket. Using the pure play method groceries, stored in a warehouse, can be transported to the customers home. EGS can also lead to less greenhouse gas emission which will have positive effects for the environment. But there are also challenges to overcome to develop profitable EGS operations in the Netherlands. The attitude of consumers towards the online shopping of fresh and perishable goods has to be changed. Supermarket chains need to think of ways to develop a profitable EGS system in places with a lower population density in the Netherlands. It is also difficult to develop a profitable home delivery system. With all the benefits and challenges taken together a prediction can be made of growth in the EGS operations in the Netherlands in the next years.

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List of abbreviations

AH	Albert Heijn
B2C	Business-to-consumer
DCOS	Dot com only story
E-commerce	Electronic commerce
EGS	Electronic grocery shopping
E-tailer	Electronic retailer
GHG	Greenhouse gas
M-commerce	Mobile commerce
RFID	Radio frequency identification

Introduction

The internet becomes more and more important for the people in the information age. The digital revolution has changed the way people live. Boundaries are getting smaller, relationships are getting closer and new worlds are discovered. In 1900 it took weeks to deliver a message from Europe to America, now only one second. This new way of living also led to other ways of buying and selling products. Consumers no longer have to be at a physical market to buy products to satisfy their needs. More and more products are getting sold on the internet. Worldwide business-to-consumer (B2C) e-commerce sales will increase by 20.1% in 2014 (figure 1). In 2014 there will be a total amount of \$1,500 trillion e-commerce sales (emarketer, 2014). This number will only increase because of the growing e-commerce and m-commerce. Also the online sales in the Netherlands will increase in the next years. The amount of people buying products online has rapidly increased in the beginning of the 21st century as is displayed in figure 2. Dutch supermarkets also started selling products online. According to consultancy Strategy& (Z24, 2012) the online sales of the supermarkets in the Netherlands in 2013 represented 1 percent of the total sales in the grocery sector.

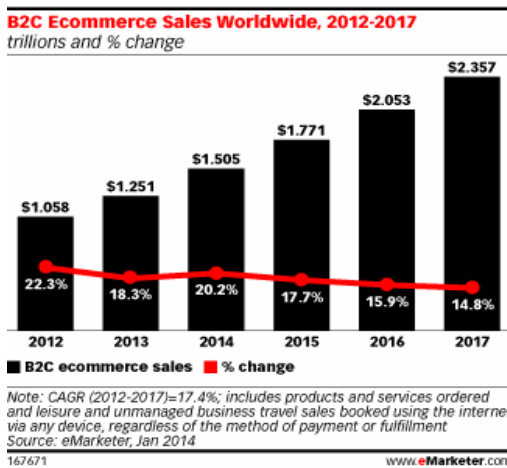


Fig 1. Forecast e-commerce sales worldwide (emarketer, 2014)

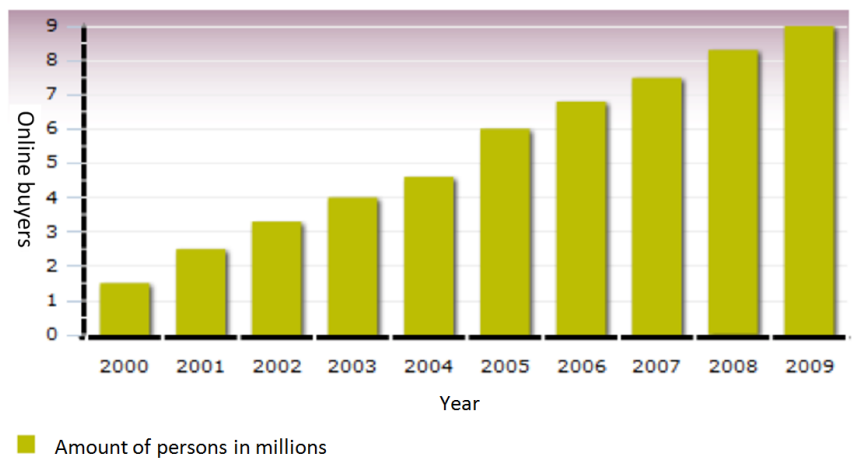


Fig. 2 Number of online buyers in the Netherlands. Thuiswinkel Mart Monitor (2010) (translated)

It is evident that the internet is essential in modern society. Smart businesses invest in ways to expand their online retailing. Albert Heijn (AH) is an example of a business who expends his online retailing. Albert Heijn is the market share leader in the supermarket industry in the Netherlands (Nielsen, 2013). In 2009 AH introduced the mobile application “Appie”. People could download the Appie app on their smartphone for a more convenient and fun shopping experience. Three years later, in 2012, Albert Heijn was the first supermarket chain who gave the consumers the opportunity to buy products on their smartphone and let the products be delivered at home. The mobile application, Appie, was extended with a buy and delivery function. Albert Heijn found a smart way to profit from the growing B2C e-commerce sales. And with the mobile application Albert Heijn will also profit from the growing m-commerce market. According to Liebowitz (2002) the electronic grocery shopping (EGS) operations assumed that space could be overcome, and that first-mover advantages applied. Albert Heijn has the first mover advantage in the Netherlands. If other companies in the same industry do not follow they will lose market share to Albert Heijn. Companies should keep up with the developing markets in order to survive. According to Birtwistle *et al* (2006) constant technological innovation is required to sustain a competitive advantage. First there will be taken a look to the characteristics and developments of EGS in the Netherlands and in the United Kingdom (UK). When more information about the different methods used in EGS is given the benefits of EGS

will be discussed. This part is divided in three sections. The benefits for the consumer, retailer and the environment. After more explanation about the benefits is given a look will be taken at the challenges of EGS. In the shift from traditional retailing to online retailing companies will face several challenges. The opportunities and challenges of EGS together will influence how the future grocery market will look like. In the end of the paper the future of EGS in the Netherlands will be discussed and conclusions will be drawn.

Research design

Research objective

The research objective of this thesis is to get insights in the possibilities and profabilities of online retailing in the food industry in the Netherlands. With insights information about aspects like developments, benefits, challenges and future perspective are meant. With more information of these different aspects a broad view of online retailing in the food industry in the Netherlands can be made.

Research questions

Online shopping was estimated to be the fastest growing area of internet usage (Forsythe and Shi, 2003). Also in the Netherlands online shopping has grown since the 21st century (figure 2). One of the results of this is more people buying their groceries online. According to the IGD (2013) the online grocery sales in the Netherlands will grow in the next years. In 2016 total online grocery sales of approximately €1,6 billion are predicted. For the supermarket chain in the Netherlands the question is; How can we make profit of this growth? This has lead to the main research question.

To answer the main question four sub questions are made. To know how to make profit with EGS operations one has to know more about the origin and characteristics of EGS. The first chapter gives information about the development of EGS and the different strategies used in the online environment. The second sub question gives reasons for retailers and consumers to start electronic grocery shopping. These sub question gives also benefits of EGS for the environment. To develop profitable EGS operations companies will also face challenges. The third sub question discusses these challenges of companies (in the Netherlands) implementing EGS operations. With the knowledge of the characteristics, benefits and challenges of EGS, gained in the first three sub questions, a prediction of EGS in the Netherlands will be made and conclusions will be drawn.

Main question

Can supermarket chains in the Netherlands develop a profitable business in the online grocery sector?

Sub questions

- What are the characteristics and developments of electronic grocery shopping in the UK and in the Netherlands?
- What are the benefits of electronic grocery shopping?
- Which challenges will food retailers in the Netherlands face developing online grocery operations?
- What will be the future of electronic grocery shopping in the Netherlands?

Materials and methods

The methodology employed is a conceptual synthesis of current knowledge retrieved by literature. To acquire this literature scientific search engines are used, mainly Scopus but also Google Scholar and Web of Science. Much of the used literature was published in the International Journal of Retail & Distribution Management. Most of the information used comes from literature about the UK and France. Because of the more mature EGS markets in the UK and France there is more literature written with EGS as topic about these countries.

What are the characteristics and developments of electronic grocery shopping in the UK and in the Netherlands?

A few decades ago nobody had ever heard of online retailing. As a matter of fact, nobody ever heard of “the internet” either. In current Western society this are well known concepts which almost all of the people used in their life. These days there are few people who have never bought something online and have their products delivered at home. According to emarketer (2014) online shopping is getting more and more popular. This is because it has many advantages compared with traditional shopping. The main advantages of online shopping are the speed of the transaction, convenience, selection and price (Rowley, 1996; Donthu and Garcia, 1999). But a look further to the type of products bought online gives the insight that there are none till few food items on the list. This is because low-touch products (such as books, CD’s, computers) sell better online than high-touch products (such as groceries) (Anonymous, 2000b). The possibilities in the Netherlands to buy groceries online are limited. Supermarket chains like Albert Heijn, Jumbo and Plus give the consumers the possibility to buy their groceries online (see Table 1) but not all of these services are as efficient and user friendly as they could be. Among these three supermarkets only Albert Heijn and Plus give consumers the possibility to get their groceries delivered at home (consumers have to pay for this). Consumers who order at Albert Heijn have to order a least an amount of €70.- to have their groceries delivered home. They also have to pay service cost that vary between €3.95 and €12.95, depending on the moment of delivery the customers choose (AH.nl, 2015). Another point of improvement is that not one supermarket chain delivers at home everywhere in the Netherlands. Again Albert Heijn is a good example. According to AH.nl Albert Heijn only delivers at home in the mid and west of the Netherlands, Noord-Brabant and a part of Gelderland.

Supermarket	Market share	Order groceries online	Deliver groceries at home*
Albert Heijn	33,8%	Yes	Yes
Aldi	7,4%	No	No
C1000 ⁺	20,6%	No	No
Jumbo ⁺	20,6%	Yes	No
Hoogvliet ⁺⁺	22,8%	Yes	No
Lidl	9,0%	No	No
Plus ⁺⁺	22,8%	Yes	Yes
Spar ⁺⁺	22,8%	Yes	Yes

Table 1. Dutch Supermarkets in online retailing
Van der Slikke (2015) Derived from Nielsen.

*Supermarkets that do not deliver in every region

⁺ Part of Jumbo Group Holding

⁺⁺ Part of Superunie

How come that there are still such limited possibilities for consumers in the Netherlands to get their groceries delivered at home? To answer this question first the beginning of EGS will be analysed. There will be made links to the United Kingdom because the UK has one of the world’s most developed electronic grocery industries (Keynote, 2007). Subsequently the characteristics and developments of different methods used in online retailing in the food industry will be analyzed. At the end of this sub question information will be given about the current state of electronic grocery shopping in the Netherlands.

The beginning of EGS

Electronic grocery shopping is a possible solution for people who dislike buying groceries at a traditional supermarket or grocery store. According to M. Geuens *et al* (2003) shopping, for example, for men's or women's fashion wear is perceived to be a relaxing activity. Grocery shopping instead has more negative associations. People experience it as a necessity. Even though some consumers experience it as relaxing, it remains something you cannot avoid, something you have to do (Aylott and Mitchell, 1998). According to van Rompaey's research in Belgium (1998) 17% of a representative sample of 1252 consumers experience grocery shopping as a tough job, and 39% claim to want to reduce the time they spend on grocery shopping. Remarkable is that in the same research only 10% of the people would like to have groceries delivered at home all the time. Despite that online shopping would save much time and effort compared with traditional shopping there are few people considering to change their way of buying groceries (Van Rompaey, 1998). The user-friendly and convenient web shops known such as bol.com or AH.nl did not exist before the 21st century. According to Rigdon (1996) in the year 1996, internet retail sites functioned as an unwieldy collection of electronic catalogues. It was not possible for consumers to search on a quick and easy way for a

Illustration of IHS

Judy Jamison sits in front of her home electronic center reviewing her engagement calendar displayed on her television screen. She sees that she has accepted an invitation to a formal cocktail party on Friday night and she decides to buy a new dress for the occasion. She switches to her personal electronic shopper, BOB, and initiates the following exchange:

BOB: Do you wish to browse, go to a specific store, or buy a specific item?

Judy: Specific item

BOB: Type of item?

Judy: Black dress

BOB: Occasion? (menu appears on screen)

Judy: Formal cocktail party

BOB: Price range? (menu appears)

Judy: \$300-\$500

BOB: 497 items have been identified. How many do you want to review?

Judy: Just 5

[Five pictures of Judy in each dress appear on the screen with the price, brand name, and the IHS retailer selling it listed beneath each one. Judy clicks on one of the dresses and it is enlarged on the screen. Another click and Judy views the dress from different angles. Another click and specifications such as fabric and laundering instructions appear. Judy repeats this routine with each dress. She selects the one she finds most appealing. BOB knows her measurements and picks the size that fits her best.]

BOB: How would you like to pay for this? (menu appears)

Judy: American Express

BOB: Nieman Marcus [the firm selling the dress Judy selected] suggests a Xie scarf and Koslow belt to complement this dress.

[Judy clicks on the items and they appear on the screen. Judy inspects these items as she inspected the dresses. She decides to purchase both accessories. BOB then asks Judy about delivery. Judy selects two-day delivery at a cost of \$5.00.]

BOB: Just a reminder. You have not purchased hosiery in 30 days. Do you wish to reorder at this time?

Judy: Yes

BOB: Same shades?

Judy: Yes

specific item. It was also very difficult to compare products. Pioneers, buying products online, could use tools like "Fido the Shopping Doggie" or "Anderson Consulting's Bargain-Finder" to find the products they wanted to buy (Alba *et al*, 1997). The first site has its domain for sale and the second does not exist anymore. In the nineties online shopping was just in its first steps. But researchers did had a clear view of how online shopping should be. Alba *et al* (1997) called it "interactive home shopping" (IHS) and defined it as: "Interactivity as a continuous construct capturing the quality of two-way communication between two parties" (Journal of Marketing Vol.61 (July 1997), pp. 38). The researchers made an example of a futuristic form of IHS (see figure 3). The scenario portrayed in figure 3 is highly interactive. That level of interactivity was not available at internet retail sites in 1997. The vision of Alba *et al* about online retailing in the future was very accurate. With this clearer view of online retailing in the late nineties the findings of van Rompaey (1998) can be taken more in perspective. The low percentage of people that would like to buy their groceries online and have them delivered could be a cause of the view people had of online retailing in 1998. Alba *et al* (1997) did research on the dimensions affecting relative attractiveness to consumers of alternative retail formats.

Fig. 3 Illustration of IHS. Alba *et al* (1997).

Within these retail formats they included the current internet retailers in 1997 and the IHS format (as described in figure 3). According to the information in table 2 the “current” internet retailers scored worse than the IHS format. These results confirm the statement that the different view of online retailing did affect the attractiveness to consumers to buy their groceries at an online retail store instead of a supermarket.

Dimension	Supermarket	Department Store	Current Internet Retailer	IHS Format
Providing Alternatives for Consideration				
Number of Categories	Medium	Medium	Low	Low or High
Alternatives per Category	Medium	Low	Low	High
Screening Alternatives to Form Consideration Set				
Selecting Consideration Set	Medium	High	Low	High
Providing Information for Selecting from Consideration Set				
Quantity	Medium	Medium	Medium	High
Quality	High	High	Low	Low or High
Comparing Alternatives	Medium	Medium	Low	Depends on Supplier
Ordering and Fulfillment: Transaction Costs				
Delivery Time	Immediate	Immediate	Days	Days
Supplier Delivery Cost	Low	Low	High	High
Customer Transaction Cost	High	High	High	Low
Supplier Facility Costs	High	High	Low	Low
Locations for Placing Orders	Few	Few	Many	Many
Other Benefits				
Entertainment	Low	High	Low	Medium
Social Interaction	Medium	High	Low	Low
Personal Security	Low	Low	High	High

Table 2. Dimensions affecting relative attractiveness to consumers of alternative retail formats. Adapted from Alba *et al* (1997).

According to Table 2, especially in the dimensions Providing Alternatives for Consideration, Screening Alternatives to Form Consideration Set and Providing Information for Selecting from Consideration Set, the IHS format is more attractive to consumers compared with the internet retailer in 1997 and the supermarket. People already saw the possibilities of electronic grocery shopping.

The attitude towards the internet and online grocery shopping changed in the first decade of the 21st century. The scale at which home delivery has been attempted is new in the development of electronic grocery shopping (Murphy, 2007). Research of Hackney *et al* (2005), Hackney and Burn (2004) and Ranchod *et al* (2004) stated that the internet is seen as an additional channel for branding, transactions and customer relationship management. With rivalry getting bigger, such an additional channel becomes more interesting. According to Murphy (2004) a virtual grocery store could potentially offer a wider range of items than even the largest grocery store. The virtual grocer could do this at lower cost than was previously possible, given sufficient order volume to offer economies of scale and scope. A good example of a country where supermarkets have moved to online retailing is the United Kingdom (UK). IGD reported in 2004 significant growth for the future of the UK online grocery market. According to Birtwistle *et al* (2006) the largest UK grocery retailers (Tesco, Sainsbury, ASDA and Morrisons) already operated online activities in 2005. Also new companies were created that sold groceries online. Most of these new companies failed. This was

not because of flaws in the technology of the internet, instead it was due to the lack of understanding of the medium and the market place (Birtwistle *et al*, 2006). Kalyanam and McIntyre (2002) state that technology does not change consumption, it changes the interaction between the organisation and the consumer. Business knowledge and experience are necessary to create a successful online grocery shop. According to Gratzner and Wimiwarter (2003) the essential factor to achieve a competitive advantage is the ability of the firm to create or capture value.

Different EGS strategies

According to Murphy (2007) there are three types of e-tail systems that occurred in the internet-enabled home delivery of food during the late 1990's. These three methods used are the "bricks and clicks", "pure play", and "the infomediary". Each of these methods of electronic grocery shopping will be explained.

Bricks and clicks

The bricks and clicks method is the quickest and cheapest method of in-store fulfilment. In this type an existing retailer utilizes his established store network. (Murphy, 2002, 2003; Currah, 2002; Oinas,



Fig. 4 A picker at work at Tesco

2002). The largest supermarket chain in the UK, Tesco, began bricks and clicks operations in 1996. In this model "pickers" have a computerised order scanner which helps them to find the ordered products. Pickers walk through the (super)stores of Tesco with the scanners locating the next item they have to pick. The model of Tesco works with multiple orders at the same time. Different bins representing different customers. Computer systems divide the orders by multiple pickers. In this way the orders can be completed fast. A

disadvantage of this is that pickers could pick the wrong item or the wrong number of items for an order. The next step is assembling the completed orders in the "Home Shopping" area of the supermarket. After the orders are assembled they are loaded into custom-built trucks that have multiple temperature departments installed. The head office computers calculate which routes the trucks have to follow. For this calculation they use a least-cost algorithm. This bricks and clicks model was very successful for Tesco. In 2006 Tesco.com sold for £950 million of groceries and other products. This was an increase of 32 percent compared with the previous year. Profit increased that year by 54.9 percent to £56.2 million. On average there were 200,000 online orders per week (Tesco, 2006). On the Tesco press release on the 5th of December 2002 they said Britain had accepted online supermarket shopping as a normal part of day-to-day life. Other supermarket chains who use or have used the "brick and clicks" EGS operations are ASDA, Sainsbury, Ahold and Carrefour.

Pure play

With the pure play method a company constructs a purpose-built e-commerce fulfilment warehouse. The US company Webvan is a good example of a company who used the pure play method. In the end of the nineties Webvan had built warehouses of 300,000 square feet (three times the size of a large supermarket). These warehouses were built to pick an order as quick as possible. Miles of conveyor belts and computer controlled rotating racks were installed to realize this (Perman, 2000;

Cassidy, 2002). The pure play method is a very expensive method with high fixed cost. The warehouses of Webvan cost up to \$40 million each to build. The pure play method of Webvan was not successful and they closed the virtual shop. According to Murphy (2003) other retailers such as quick.com tried the pure play method but they also did not have success. UK supermarket chain Ocado is an example of a company who did accomplish to develop a successful business with the pure play method.

After several years of using the brick and clicks method Tesco also started using the pure play method. Tesco build a Dot Com Only Store (DCOS). In a DCOS they only deal with online orders. The first DCOS was located in Aylesford and opened in October 2008. Quickly after the first DCOS a second DCOS in Greenford became operational in 2010. According to Vanderlande warehouse automatisation a DCOS will have a quick payback time because there will be no expensive retail sales space needed, the accuracy will be improved and the profit margin will be higher. Tesco build these DCOS because the online grocery market has grown since Tesco started their online operations. According to Birtwistle *et al* (2006) store-based models, like the bricks and clicks method, achieve break-even earlier than warehouse models, like the pure play method (figure 5&6). But beyond the break-even point profits will be lower when you use a in-store model compared with the warehouse model. Store picking was a logical option at the beginning because of the lower sales volumes but when the sales volumes became higher it was necessary for Tesco to move to the warehouse model (Creevy, 2010). Warehouses require high fixed cost investment but because they are operationally more efficient they incur lower variable cost. This is displayed in figure 5 and figure 6. In figure 5 the break-even point lays around a sales volume of 1350. The break-even point in figure 6, the figure of a in-store model, lays round a sales volume of 750. This is almost half of the sales volume of the break-even point of a warehouse model.

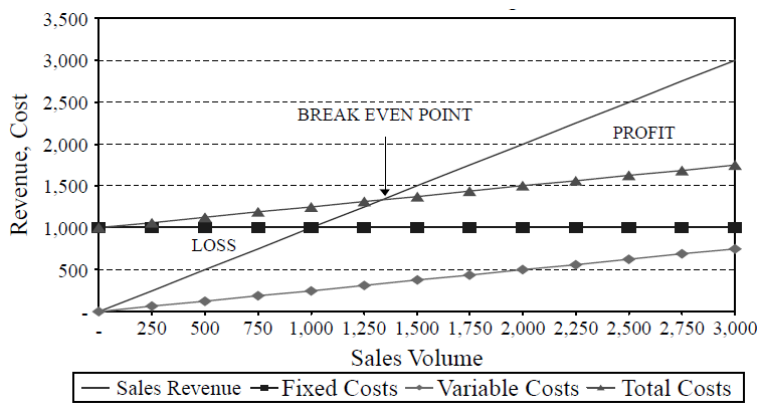


Fig. 5 Warehouse Business Model. Adapted from Davis (2002).

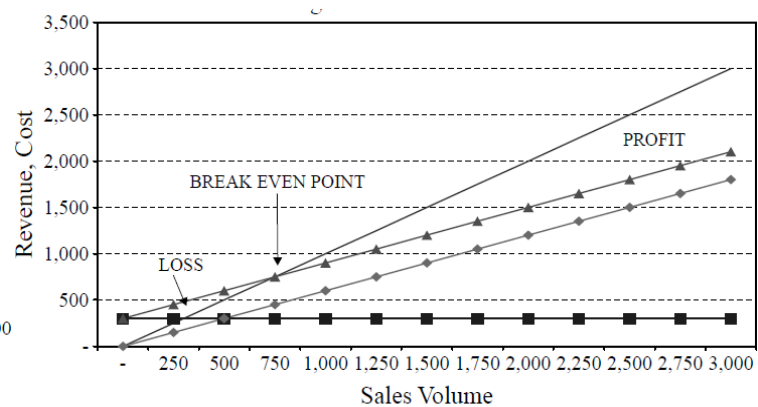


Fig. 6 Store Picking Business Model. Adapted from Davis (2002)

The infomediary

The third method, the infomediary, is often used by small existing retailers. With this method customer management functions and web ordering are contracted out to an intermediary (Murphy, 2007). The infomediary method makes use of bricks and clicks or pure play operations but with this method companies do not handle the physical fulfilment. The focus is on managing the links between the customers and retailers. An infomediary host the web page and retail database of a virtual store. The orders received on this virtual store will go to the infomediary who passes them on to the retailer. It is the task of the store to pick the goods and pack and deliver them at the customers. The supermarket has the advantage that they do not have to spend money on developing and marketing their own web store.

In conclusion, electronic grocery shopping is very promising and there is much room for advantage. According to Murphy (2007) there are many good reasons to expect that online food retailing will continue existing. In the United Kingdom all the major food retailers already operate an electronic grocery service (Tesco 2014). And according to Tesco (2014) a continued growth of EGS is expected in Central Europe and Asia. More details about the emerging EGS markets will be given in the second chapter. EGS is a long-term solution for many people (Murphy, 2007).

EGS in the Netherlands today

In the beginning of this chapter, in table 1, there was shown which supermarket chains in the Netherlands give the consumers the ability to order their groceries online and have the order delivered at home. Remarkable is that big market players (figure 7) like C1000, Jumbo (both part of the Jumbo Holding Group), Lidl and Aldi do not have a home delivery service. This makes Albert Heijn the only big market player in the Netherlands who delivers groceries at home. Compared with the United Kingdom, all the big market players (figure 8) (Tesco, Sainsbury's, Asda and Morrisons) have a home delivery service. As earlier said, they already operated online activities in 2005 (Birtwistle *et al*, 2006). Albert Heijn makes use of the pure-play method. They have three warehouses, called Home Shop Centers, located in Rotterdam, de Meern and Almere which are specially used for their online grocery operations (Aspeslagh, 2015). Besides these Home Shop Centers Albert Heijn has a few locations where groceries are transported from big lorry's to smaller delivery trucks which deliver the products to the customers' home (Albert Heijn, 2015).

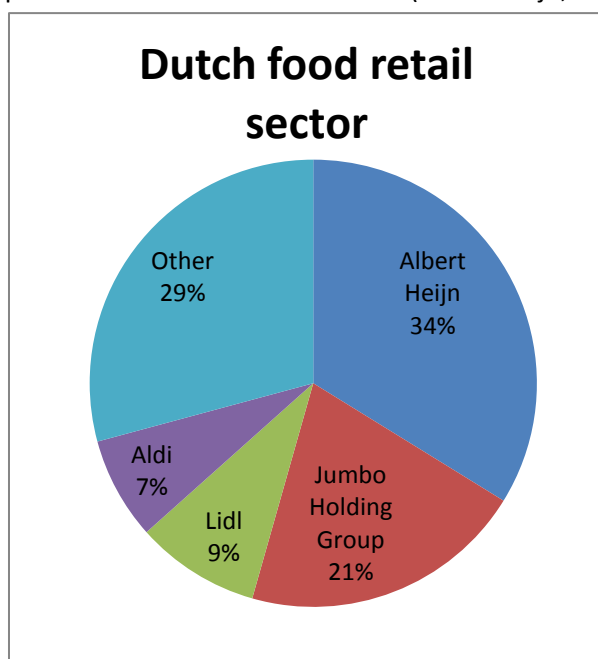


Fig. 7 The major players in the Dutch food retail sector and their market share. Nielsen (2013).



Fig. 8 The major players in the UK food retail sector and their market share. IBIS world industry research report (2013)

Besides the home delivery service Albert Heijn also has "Pick Up Points" throughout the country (figure 9&10). A Pick Up Point is a location where consumers can pick up their groceries. Consumers have to order their groceries online. After the order is received the items get picked and the consumers can pick up their groceries at a chosen time and location. Other supermarkets who have Pick Up Points are Jumbo, Hoogvliet, Plus and Spar. Further information will be given about the Pick Up Points of Albert Heijn and Jumbo. Consumers of Albert Heijn can choose between circa 22.000

products online (Albert Heijn, 2015). Products of Etos and Gall&Gall are also included in the online offer of AH.nl. Jumbo offers the same products online as in-store with exception of flowers, fresh baked bread, fresh sliced cheese, meat and the daily newspaper (Jumbo, 2015). In total Albert Heijn has 34 Pick Up Points. Albert Heijn has Pick Up Points specially built for this service and Pick Up Points at a Albert Heijn supermarket or another store. In order to collect their products, consumers have to drive to the assigned Pick Up Point. At the specially built Pick Up Points the ordered groceries will be placed in the consumer's car by the company's employees. For the service of a Pick Up Point the customers have to pay between €1.95 and €3.50 for an order between €0 and €70 and when the order cost more than €70 consumers get a €1 discount. There is no minimal order limit when a consumer wants to make use of this service (Albert Heijn, 2015). Jumbo distinguishes three types of Pick up Points (Jumbo, 2015). They have a Solo Pick Up Point (figure 9). These Pick Up Points are located next to important roads. At these Pick Up Points the groceries will be placed in the car for the consumer. Furthermore they have Drive Through Pick Up Points. This is the same concept as the Solo Pick Up Point except these Pick Up Points are located at Jumbo Supermarkets. The third kind of Pick up Point is the Walk-in Pick Up Points. At these Pick Up Points customers can pick up their online ordered groceries themselves at a Jumbo supermarket. Jumbo has 28 Pick Up Points and announced they will build more. The costs of using the Pick Up service will vary between 0 and 3 euro, depending on the moment customers want to pick up their orders.

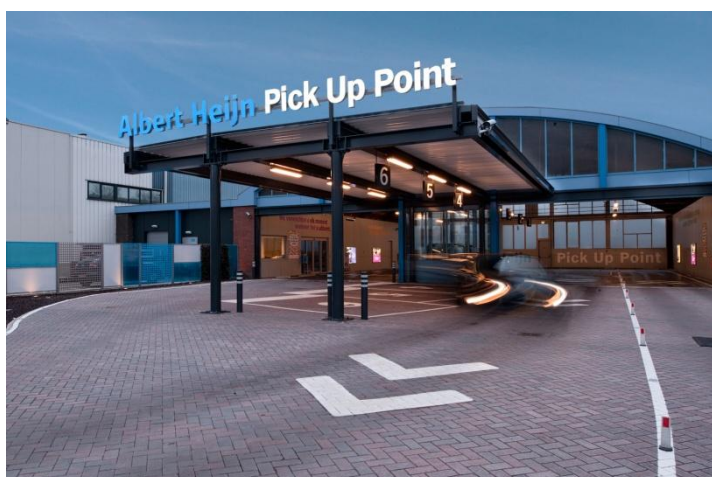


Fig. 9 Albert Heijn Pick Up Point. Amsterdaily.nl (2014).



Fig. 10 Jumbo Pick Up Point. Jumbo.nl (2015).

In figure 11 all the locations of the Pick Up Points of Albert Heijn and Jumbo are displayed. The figure displays that most Pick Up Points are in the provinces Noord-Holland, Zuid-Holland and Noord-Brabant. With Albert Heijn more concentrated in Noord-Holland, Jumbo more concentrated in Zuid-Holland and both almost equally concentrated in Noord-Brabant. Around big cities like Amsterdam, Den-Haag and Eindhoven there is a higher concentration of Pick Up Points. And in six of the twelve provinces there are no Pick Up Points. These places are Zeeland, Limburg and the Northern Region of the Netherlands. AH and Jumbo first focus on places with a high population density before expanding to other locations. This is in line with the home delivery service of AH. Albert Heijn provides their home delivery service to customers in the Middle and West of the Netherlands, Noord-Brabant and a part of Gelderland (AH.nl, 2014). According to the annual report of Ahold (Albert Heijn is part of Ahold) in 2013 albert.nl (the precursor of AH.nl) served 70 percent of the Dutch households with their home delivery service. The ambition of Albert Heijn is to reach 95 percent of the Dutch households with their home delivery service (Aspeslagh, 2015). ING bank estimated albert.nl had a total of €150 million sales in 2011. The online strategy of Ahold has three elements: More customers,

more places and more choices. They want to expand in new regions and also expand the online offer for the consumers. An important step to accomplish these goals was acquiring the company bol.com in the year 2012. The acquisition of bol.com lead to an increase of online sales and a bigger offer of products.



Fig. 11 Location of the Jumbo and Albert Heijn Pick Up Points in the Netherlands. Van der Slikke (2015) Derived from AH.nl (2015) and jumbo.com (2015).

What are the benefits of electronic grocery shopping?

According to Forsythe and Shi (2003) online shopping was estimated to be the fastest growing area of internet usage. This is because online shopping has many benefits. Not only the consumers but also the retailers are enthusiastic about e-tailing. According to Siikavirta *et al* (2002) e-commerce might even offer relevant tools for coping with the climate challenge. In this chapter the benefits of online retailing in the food industry will be divided in the sections “benefits for the retailers”, “benefits for the customers” and “benefits for the environment”, in this given order.

Benefits for the retailers

In the first chapter “What are the characteristics and developments of online retailing in the food industry?” some examples are given of retailers who started electronic grocery shopping services. Examples of companies who developed a successful EGS system are Tesco and Ocado, but there are also plenty examples of failures, Webvan maybe as the best example. EGS can be beneficial for retailers if it is implemented right. EGS requires other order fulfilment systems and database management skills than traditional retailing in the food market (Alba *et al*, 1997). Existing retailers have to realize this. According to Boyer and Hult (2005) most failed internet grocers overlooked that a marketing strategy of offering low prices needs to be matched with an operations strategy that actually achieves low cost. With low cost it is possible to make profit in the online grocery market. Later in this section ways of achieving low cost with online grocery operations will be given. The successful companies marketed their services as convenience added option for the customers. The customers had to pay more for this extra convenience, which gave the companies extra funds to support operations aimed at providing convenience, such as timely delivery. Online grocers who adopted to the electronic grocery market now benefit from it. The online grocery market continues to grow strongly. As is written in the first chapter, in the United Kingdom all the major food retailers operate a grocery home shopping service (Tesco 2014). According to the annual report of Tesco (2014) EGS is still in its infancy in Central Europe and Asia, but a continue in growth is expected. For example, the value of the online food market in Poland doubled in size from 2008 to 2011, and the expectations are that it is more than doubled again by 2014. According to Steve Bishop of Brick Meets Click (BMC) online grocery sales are projected to range between \$80 billion to \$123 Billion by 2023 (figure 12). To understand the size of those numbers, online grocery sales in 2014 are estimated about \$27 billion by BMC. According to Bishop (2014) “it’s a good time to step up your online game”.

PERCENTAGE OF MARKET-LEVEL SPENDING

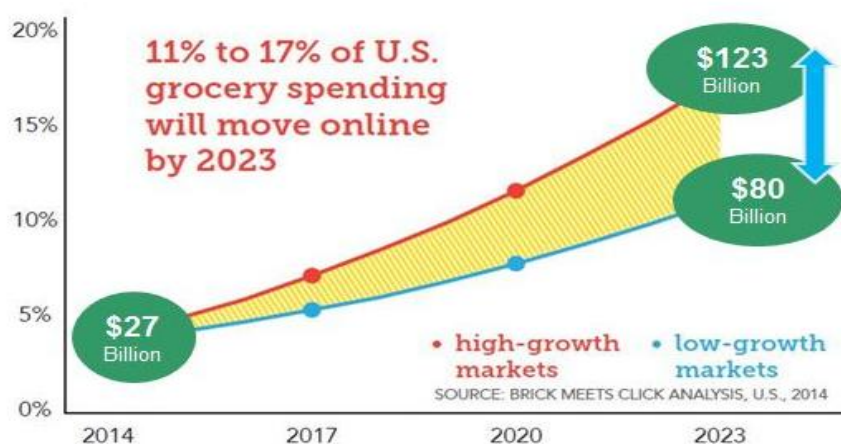


Fig. 12 Expected growth for online grocery sales. Brick Meets Click Analysis (2014)

Companies have to compete to capture the growing online sales. The market-level spending of online grocery store sales is expected to rise from 4% to an amount between 11% and 17% by 2023. This growth in EGS is the biggest benefit for retailers.

According to Keh and Shieh (2001) online grocers require less capital than traditional grocers. As previously described, the variable cost of online grocers are lower than the variable cost of bricks-and-mortar stores. For example, with people ordering and paying their groceries online cashiers are no more needed. Contrary, the fixed cost of online grocers using the pure-play method are high. Online grocers using the pure play method have to invest in a warehouse and for a home delivery service a truck float is needed. If large sales volumes can be generated there will be potential for big returns. A benefit of a warehouse compared with a traditional supermarket is location. A warehouse is likely to be placed where land is cheaper. A traditional supermarket is often located in a population center which makes it more convenient for customers to visit. When a home delivery service is used a convenient location for the customers is not needed. Warehouses get build near transportation routes. That is because in this way trucks can move in and out fast to deliver their orders. These places are out of everyday circulation and vision of most customers. However the trucks used to deliver the orders to the customers are often brightly coloured (figure 13&14). According to Murphy (2007) companies use their trucks to improve awareness. They can also be used as rolling advertising boards. The drivers of the trucks can act as sales agents. They can, for example, answer questions from people and hand out flyers and samples. The truck drivers are also encouraged to drive through desirable neighbourhoods to spread the message.



Fig. 13 A Tesco delivery truck. www.flickr.com (2006)



Fig. 14 A Sainsbury delivery truck. Len Rogers Collection (2007)

Benefits for the consumers

According to Kämäräinen *et al* (2001) consumers do not like, or not know, how to calculate the total cost of getting to the grocery store, or the opportunity cost of the labour while they are in the grocery store. Online food retailers give the customers a new possibility of grocery shopping with their EGS systems and home delivery service. Ordering their groceries online will save the consumers time they otherwise spent in the car or in the supermarket (Schubert *et al*, 2011). They do not have to bag the groceries through a supermarket and transport them to their home. Most home delivery services of online grocers even carry the goods into the kitchen themselves. This is an important change in the way of grocery shopping. An online grocer had the following stated on this site:

“In the past grocery stores were built of bricks and mortar anchored to huge parking lots. They had few marketing means to coax you into their stores. The coloured insert in our daily paper, the endless jingles and TV ads describing the reasons to visit bigger and bigger food stores. But no matter what, we still had to spend hours each month, waiting in line, while we inched closer and closer to the check out clerk. Once there, scanners have made the clerks’ work easier, but we still

wait and wait [...] now we have to wait until all the products are scanned [...] come to think of it, in the last 20 years, not too much has happened to make the grocery shopping experience better for the consumer just better for the store! (Quick.com, prior to its 2001 delisting)."

Online grocery shopping can make the grocery shopping experience better for the consumer. According to Kalakota and Whinston (1997) and Bunker and Macgregor (2000) the consumers are expected to benefit most of EGS compared to traditional grocery shopping. Online shopping makes it possible to order groceries from anywhere at any time, in-store shopping cannot offer this convenience (Huang and Oppewel, 2006). M. Guens *et al* (2003) did research and made a list (table 3) of the positive and negative associations consumers frequently mentioned about grocery shopping. Looking at the negative associations mentioned, many of them could be avoided by doing groceries online. For example, consumers ordering their groceries online will not have to wait in line a store. They also do not have to search for a parking spot or have to move through narrow aisles in a grocery store.

Positive associations	Negative associations
Animations	Waiting lines
Demonstrations	Out-of-stocks
Decorations	Decayed products
Gadgets or gifts	Melting products
Discovery	The crowd of people
Meeting of other people	Old people
	Annoying music
	Mistakes in the check
	No parking space
	Badly manoeuvrable trolleys
	Bringing back trolley on rainy days
	Narrow aisles
	Unfriendly personnel
	Ignorant personnel
	Stress before closing hour

Table 3. Positive and negative associations with grocery shopping. M. Guens et al. (2003).

Potential customer groups	Expected benefits
Suburban family commuters around large cities	Reduced time Reduced effort Placing orders independent of time of the day Lower prices
Bargain seekers in large cities	Price comparability Value added services
Wealthy adults seeking for high quality 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 savings Efficiency New possibilities for services

Table 4. Potential customer groups of EGS and their expected benefits. Raijas (2002).

The time saved with EGS may be the biggest benefit for consumers. Online grocers can remember what customers previously ordered online. The next order they could suggest the same items to purchase again. This makes grocery shopping more convenient for the consumer and creates a closer relationship between a consumer and a specific online retailer, which is also a benefit for the retailer (Keh and Shieh, 2001). Not surprisingly companies like LeShop (A Swiss online food retailer) perceive young families and working mothers as their core customer base (Schubert *et al*, 2011). These customer targets are people who have a busy life with time-intensive jobs and/or social live. They would rather spend their time, wasted on grocery shopping, on other things. Table 4 displays different potential customer groups for EGS. Expected benefits for each potential customer group are given. Another group of people for who EGS is very attractive are the disabled and elderly people (Murphy, 2007). These people have difficulties visiting a supermarket. Because of their condition they have to find other ways to buy groceries. A home help, friend or a family member often have to help these group of people out. EGS gives them the opportunity to buy their own groceries and can help giving them a sense of independence (Keh and Shieh, 2001). Other people who have difficulties visiting a supermarket are people without a driving license or car, for these people EGS is also a convenient solution. According to Raijas (2002) there are also consumers who started using EGS without an important reason. They just wanted to try something new.

Another benefit of online food retailing for the consumers is the convenience of comparing products and stores. With EGS the search cost for customers are lowered (Alba *et al*, 1997). Few customers will visit a second store after they are done with grocery shopping at the first store. EGS has made it very easy to compare the price and quality of products from different retailers.

Benefits for the environment

Climate change is one of the greatest environmental challenges. Change is needed to be able to achieve reductions in greenhouse gas (GHG) emissions. According to Siikavirta *et al* (2002) E-commerce might offer relevant tools for coping with the climate change. In 1999 Romm and colleagues studied the internet economy as a potential solution to global warming. A big advantage of online retailing is the home delivery service. According to Cairns (1999, 1998) it is possible to reduce the distance driven in the food service sector up to 70% or 80%. These numbers will be explained later in this section. Other effects of electronic grocery shopping on the GHG emissions in the food production and consumption system can be divided in the sections sourcing, production, and retailing. These sections will be further discussed starting with sourcing.

Information technology can be used by companies to share information. When this is done rapidly and effectively it is possible to acquire smaller buffer inventories. Retailers will have better information about which amounts of different products they have to buy for a specific time span. This is very convenient for retailers in the food industry because many products have a relative short expiration date. Because of the “replace of inventory with information” a more effective inventory planning is possible. This will lead to less dumping of unsold products (Siikavirta *et al*, 2002).

Sainsbury is an example of a company that reduced spoilage with the use of information technology. According to Burnell (2000) and Boxall (2000) Sainsbury achieved improved control of the perishable food supply chain, reduced the spoilage problem and increased their handling efficiency by effective use of information technology. An example of information technology is a radio-frequency identification (RFID) tag. According to Prater *et al* (2005) RFID is a very compact technology. A RFID tag is as large as a pinhead and consist of two main components. A chip that contains an electronic product code and an antenna (figure 15). Compared with traditional barcodes RFID tags can provide more information. For example the RFID tag can tell what the product is, when and where it is made, when it might perish and where the components of the product came from. Another huge benefit is that unlike barcodes, a RFID tag does not have to be in sight to read it (figure 16). Incoming products can be read faster and simpler with RFID tags. With RFID capability grocery stores can know exactly what its in-stock inventory is in near-real time (Prater *et al*, 2005). Better knowledge of the inventory stock will reduce the spoilage.

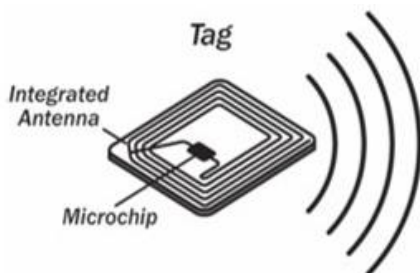


Fig 15. A RFID tag and its components. BarcodesInc.

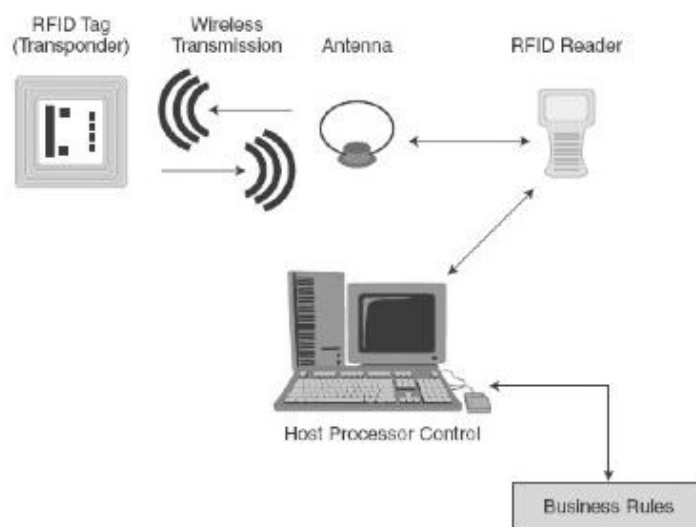


Fig.16 How RFID works. Turban

According to Prouty (2000) e-commerce places heavier pressures on cost and lead times. This will lead to a situation where pull-controlled manufacturing is the most viable option for production companies. A pull-controlled production will follow the fluctuation of demand more accurately. Because producers can match the needed quantities better, overproduction can be decreased. The third section where EGS has effects on the GHG emissions is retailing. In business-to-consumer commerce normal supermarkets are used in the food retailing industry. With e-commerce a warehouse is often used. A warehouse can contain far more products per square meter than a supermarket. According to Romm *et al* (1999) a warehouse also uses far less energy per square meter than a retail store. With that given, groceries sold over the internet would consume less energy per product than groceries sold at a traditional supermarket (Romm *et al*, 1999).

According to Siikavirte *et al* (2002) EGS home delivery services may have a strong impact on the development of the traffic environment in population centers. This will lead to an effect of the amount of GHG emission. The increase in the amount of overall road traffic could be slowed down or even reduced by introducing home delivery services of food retailers. Siikavirte *et al* (2002) carried out a case study with five different cases of home delivery simulations. The simulation results were obtained using a routing software tool named RoutePro (CAPS logistics, 2001). This routing software tool has algorithms that utilize digital maps of the selected area. RoutePro then gives exact simulation outcomes such as distance driven. The routing has constraints in time windows, vehicle characteristics and volume of orders. The constraints used in the described case study are:

- Maximum of 60 orders per route.
- Maximum of 3.000 L per route. (The real volume of the van is normally 10 to 12 m³)
- Working time maximum of 11 hours per van.
- Working time maximum of 5 hours per route.
- Loading time per route: 20 minutes.
- Drop-off time per customer: 2 minutes.

Case 1 and 2 of the home delivery simulations did require attended reception. By using a customer-specific reception box (figure 17) in case 3 and 4 unattended reception was enabled. This reception box contains a refrigerator-freezer unit designed for frozen and chilled food products. Because of the electronics, the refrigerator and the freezer a customer-specific reception box is a high investment. A reception box can be installed in the customer's garage or yard, therefore the customer does not have to be at home at the time of delivery. This is convenient for the customers because they are no longer dependent of delivery time windows. The five cases used for simulation in the case study are described in table 5.



Fig. 17 A customer-specific reception box. Siikavirte *et al* (2002).

Case	Description
1	E-grocery home delivery in three two-hour time slots between 17:00 and 21:00.
2	E-grocery home delivery in one-hour time slots between 12:00 and 21:00.
3	E-grocery home delivery to reception boxes between 08:00 and 18:00.
4	E-grocery home delivery once a week per customer between 08:00 and 18:00 to reception boxes.
5	All orders delivered separately, simulating the situation where households do the shopping themselves using their own cars.

Table 5. Descriptions of the cases in the simulations of home delivery.

Adapted from Siikavirte et al (2002).

As described in table 5 case 5 is the situation without the possibility for the customers to get their groceries delivered at home. In this case the customers have to go to the supermarket by themselves using their own car. According to Siikavirte et al (2002) this is by far the most inefficient one of the five cases. In figure 18 the average number of orders per route and average distance driven per order are displayed.

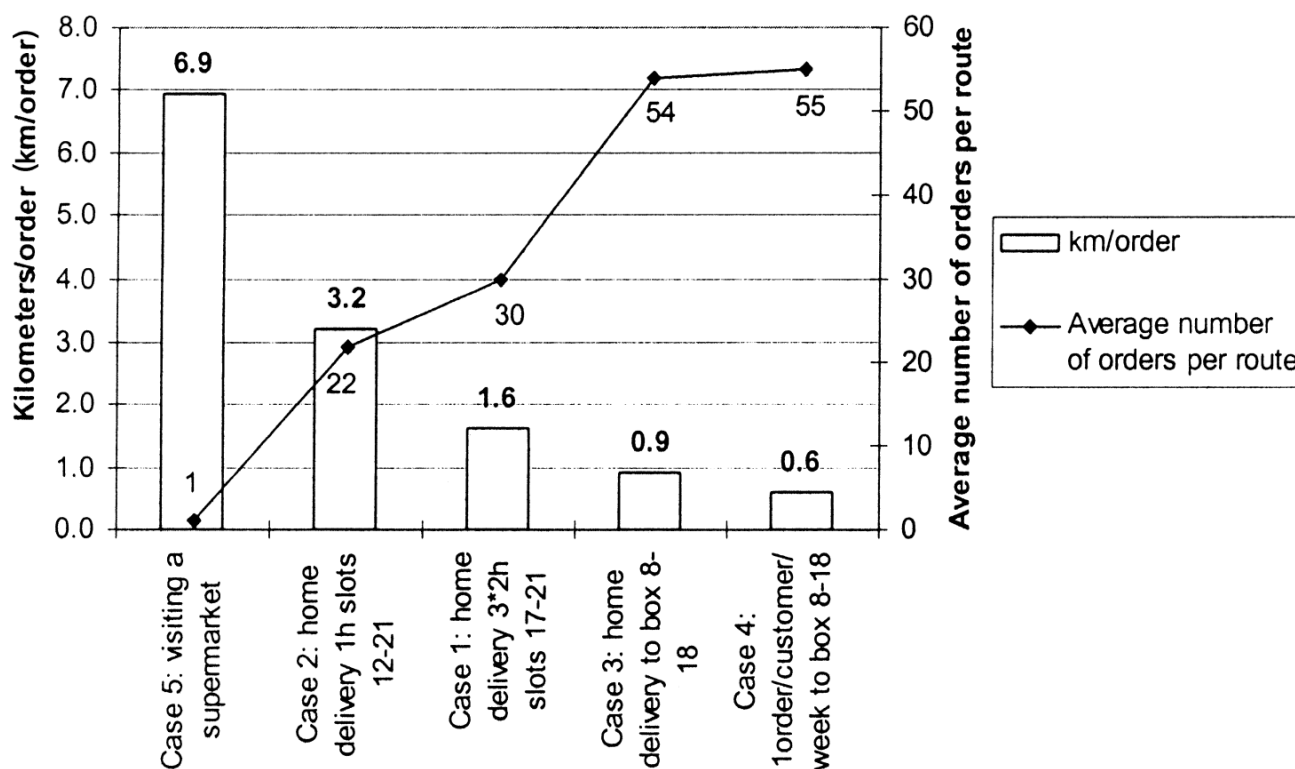


Fig. 18 Average distance driven per order and average number of orders per route. Siikavirte et al (2002)

Table 6 gives a summary of the results and also gives comparisons of the first four cases compared with case 5. In table 6 the total distance driven for all 1,639 order is given. Additional information about the vehicle type and GHG emissions is also displayed. For the reduction in distance driven and reduction in GHG emissions comparisons with case 5 are made. The results in figure 18 and table 6 show that home delivery service in the food retail industry creates a significant potential for traffic reduction. With unattended delivery (case 4) a 92 percent reduction of the distance driven compared with traditional shopping (case 5) is possible.

Case	Distance driven (km) per 1,639 orders	Reduction in distance driven compared with case 5	Vehicle type	GHG emissions, tons of CO ₂ equivalent	GHG reduction compared with case 5
1	2,676	76.5%	Van, diesel	0.80	58.2%
2	5,267	53.7%	Van, diesel	1.58	17.7%
3	1,525	86.6%	Van, diesel	0.46	76.2%
4	822	92.8%	Van, diesel	0.25	87.2%
5	11,365	0	Car, gasoline, cat.	1.92	0

Table 6. Summary of results. Siikavirte *et al* (2002)

Compared with the situation where every customer drives with their own car to the supermarket, GHG emissions can be reduced by 18 to 87 percent, depending on which home delivery model is used (table 6). What is not displayed in Figure 18 is the type of vehicle used in each case. As described in table 5 only in case 5 customers drive their own car. But in the cases 1 till 4 a delivery van is used to deliver the groceries at home. The type of vehicle, its fuel efficiency and the fuel used also have a strong impact on GHG emissions. The delivery vans of case 1,2,3 and 4 use diesel as fuel and the cars of case 5 use gasoline as fuel. According to Siikavirte *et al* (2002) the CH₄ and N₂O emission per km is less for a delivery van than for a car, this is also displayed in table 6. A delivery van has a lower impact on the amount of GHG emission.

Which challenges will food retailers in the Netherlands face developing online grocery operations?

Despite that online shopping would save much time and effort compared with traditional shopping there are few people considering to change their way of buying groceries according to Van Rompaey (1998). And even people who buy their groceries online will not let loose the traditional way of grocery shopping. According to Hand *et al* (2009) almost all the consumers continue to shop in-store for groceries in tandem with EGS. Like every innovation electronic grocery shopping has challenges to overcome. In this chapter different challenges for online retailing in the food industry are discussed and there will be given specific challenges for online retailing in the food industry in the Netherlands.

Attitude consumers

Mintel (2007) came to the conclusion that online grocery shopping remained a niche market.

According to Hansen (2005) online grocery shopping is arguably a discontinuous innovation. A discontinuous innovation requires a significant change in behaviour (Robertson, 1967). Retailers need to understand what triggers consumers to change their purchase behaviour and the extent to which their online shopping experience reinforces the adaptation process to develop online grocery shopping beyond its current “niche” size. Only discontinuous innovations have a longer (and possibly more problematic) process of adaptation than continuous innovations (Hand *et al*, 2009).

Hand *et al* (2009) did research to gain more in-depth understanding of the motives of consumers to start electronic grocery shopping and the extent to which their online shopping experience encourages them to continue or to stop EGS. Furthermore they tried to find the role of situational factors in the initial start and discontinuation of EGS. They came to the conclusion that many customers started their EGS after a change in lifestyle (table 7). In the research 20 statements describing situational variables to start EGS and 18 reasons to stop EGS were derived. The respondents were asked to evaluate each statement against a five-point upward scale where 1 stands for “no influence” and 5 stands for “very strong influence”. To determine whether differences between the clusters were significant an effect size measure η^2 was used. The larger the value of η^2 , the bigger the difference between the clusters.

	Cluster 1 mean	Cluster 2 mean	Cluster 3 mean	η^2
Mobility problems	1.1659	4.3806	1.3000	0.730
Health problems	1.2749	4.2839	1.3750	0.620
Shopping too tiring	2.0774	3.2387	2.1333	0.090
Had a baby	1.1422	1.0774	4.1750	0.680
Changed family circumstances	1.5608	1.7355	3.9917	0.300
Avoid shopping with children	1.6193	1.3226	3.8750	0.320
No time to shop	3.0727	2.0000	3.3917	0.090
Wanted more convenience	3.3365	3.1419	3.6750	0.010
Wanted more flexibility	3.0521	2.7871	3.3333	0.010
Avoid shops	2.4123	2.2000	2.5667	0.005
No car	2.1722	2.4516	1.6000	0.020
Recommendation	1.8025	1.6968	1.6250	0.003
Got broadband	1.7441	1.6581	1.6083	0.002
Got internet connection	1.7235	1.9484	1.5167	0.009
Changed working hours	1.4787	1.1935	1.3250	0.010
Got PC for first time	1.4360	1.5484	1.2417	0.007
Started working	1.3223	1.1032	1.1833	0.010
Changed job	1.3191	1.0452	1.0583	0.020
Moved house	1.2433	1.2194	1.7917	0.040
Got a pet	1.0948	1.1935	1.0583	0.005

Notes: Cluster 1 (“no reason”), $n = 633$; cluster 2 (“health”), $n = 155$; cluster 3 (“kids”), $n = 120$; total, $n = 908$

Table 7. Situational variables influencing decision to start online grocery shopping. Hand *et al* (2009).

In table 7 there is made a distinction between three clusters. “Convenience” and “Flexibility” have a high mean in all three clusters. Cluster 1 represents a “no real reason” cluster. The respondents in this cluster were unable to explain what motivated them to start EGS. In the second cluster “Shopping being too tiring”, “Health problems” and “Mobility problems” have the strongest influence. And in the third cluster there are high means for the situational variables “Changed my family circumstance”, “Avoiding shopping with children” and “Had a baby”. Like said before, many situational variables indicate a change in lifestyle. Other examples of lifestyle changes are breaking a limb, getting a job, moving house or elderly parents dying. These situational factors are not only important triggers for the start of EGS, they are also important triggers for diminishing the frequency, or stopping, of EGS when the initiating situation had reverted back to normal (table 8). Also in table 8 there is made a distinction between three clusters. Cluster 1 has scored low means on every variable. In the second cluster “Preferred to shop in stores”, “Delivery charges too high” and “Found better prices in store” were important reasons for the consumers to discontinue online grocery shopping. And in the third cluster “Concerns about product quality”, “Problems with internet deliveries” and “Problems with internet orders” were important variables.

	Cluster 1 mean	Cluster 2 mean	Cluster 3 mean	η^2
Preferred to shop in stores	1.5150	3.4876	2.3302	0.37
Delivery charges too high	1.9571	2.7107	2.6604	0.06
Found better prices in store	1.2790	2.5950	1.9057	0.21
Problems with internet orders	1.3777	1.5702	3.7830	0.53
Problems with internet deliveries	1.2318	1.4215	3.4906	0.49
Concerned about product quality	1.4077	1.9917	3.1698	0.28
Preferred to have social contact when shopping	1.3262	2.1570	1.4245	0.12
Concerned about internet security	1.1459	1.4628	1.7170	0.08
New store opened nearby	1.2017	1.6612	1.4245	0.05
Internet connection too slow	1.2961	1.3388	1.7642	0.04
Internet shopping too complicated/difficult	1.2103	1.2727	1.5849	0.04
Got a car	1.4421	1.0992	1.1226	0.04
Family circumstances changed	1.7382	1.2810	1.3962	0.03
Stopped working	1.3605	1.1322	1.0943	0.02
Moved house	1.3262	1.0496	1.2453	0.02
Changed working hours	1.2189	1.1074	1.2264	0.005
Did not have internet connection	1.4034	1.2562	1.3302	0.003
Changed job	1.1416	1.1074	1.1509	0.00

Notes: Cluster 1 (“disinterested stopper”), $n = 233$; cluster 2 (“prefer offline”), $n = 121$; cluster 3 (“internet problems”), $n = 106$; total, $n = 460$

Table 8. Variable influencing decision to stop online grocery shopping. Hand *et al* (2009).

Among the respondents, other reasons Hand *et al* (2009) discovered for the discontinuing of EGS are the loss in trust of the reliability of their online grocer. Products were regularly omitted from the delivery. Also there were delivered substitute items that were considered unsuitable. Some respondents did find the two-hour delivery slot too long and many respondents complained about deliveries that were too late.

Another reason for the findings of Van Rompaey could have a relation with the fresh food products people buy at grocery stores or supermarkets. In supermarkets there are many fresh food departments like a bakery, butcher or vegetables area. According to Keh and Shieh (2001), Baker (2000) and Citrin *et al* (2003) grocery items such as vegetables and fruits belong in the

see/touch/smell category. Consumers want to see if the apples have no bruises or if a melon feels firm. They want to personally choose their own vegetables and fruits. Buying online will create the risk that the product received may not meet the expectation of the consumer. It is difficult to change this mindset. Furthermore M. Geuens *et al* (2003) found that people attach a lot of value to being helped by expert personnel when they buy products at a fresh food department. When they buy their groceries online consumers will not have experts around who they can ask specific questions. Another challenge to overcome is the lack of instant fulfilment with online shopping. The market leader in the Netherlands, Albert Heijn, has a delivery time of one day. Because of this separation of purchase and delivery there is less guarantee of receiving the products in time (Huang and Oppewal, 2006). For example, when people have an important dinner party the next day or when they follow a specific diet the level of situational involvement will be higher than for a normal breakfast. According to Dowling and Staelin (1994) the perceived product performance risk varies with the intended usage of the products and the purchase goals. The high situational involvement of, for example, that important dinner party will result in a greater awareness of possible negative consequences. Negative consequences can be ordered products missing with the delivery, or a delay in the scheme of the delivery truck which causes delivery after the important dinner party. This could lead to a greater level of perceived risk for the online channel compared to in-store shopping. Huang and Oppewal (2006) also found that the purpose of a trip to the grocery store has an effect on the difference in perceived enjoyment of online-shopping or in-store shopping.

Website

One of the most important challenges for online food retailers is developing a convenient and user friendly online environment where consumers can buy groceries quick and easy. There are two kind of shoppers, utilitarian shoppers and hedonic shoppers. Utilitarian shoppers perceive shopping as work, they want to do it fast and have it done. Hedonic shoppers strive for fun and entertainment in shopping (Babin *et al*, 1994). The online shopping environment does not only have to be convenient and quick-to-use, it also has to give a nice shopping experience. Freeman *et al* (1999) say that the use of virtual reality and interaction in online shopping enhances the shopping experience for online consumers. Especially hedonic shoppers will attach value to these extra virtues in online shopping. A well-organized web site may be the most critical factor for success in the online grocery industry. In the online food industry the competition is just a click away. If an online grocer does not make a good first impression to a consumer there is a small chance the consumer will make a repeat purchase. An online grocer has to make the first impression count. According to Keh and Shieh (2001) it is far more difficult and costly to lure consumers back to a web site than acquiring those consumers in the first place. Things that contribute to the formation of a good website are ease of navigation, up-to-date information, security, user-friendliness, desirable interface and useful links. When a consumer buys his groceries online he will not want to do much research. With in-store shopping the location of products is one of the most frequently asked questions to store personnel. With online grocery shopping the "location" of a product is just as important. The website needs to contain an advanced search engine that helps to find the items on the list of the consumers, and maybe some items the consumers did not knew they needed. The first online shop of a consumer can take much time, but customers will familiarise with the virtual store design and ordering and delivery system (Murphy, 2007). Companies can reduce the time to provide their customers options of reuse and alteration of previous online orders. A good website also provides their customers the opportunity to give feedback. A good feedback mechanism gives the e-grocer the knowledge to continually offer

what their customers deem important (Keh and Shieh, 2001). One of the reasons Tesco.com is one of the best online grocery stores is because they value their customers' feedback and interview 1000 Tesco.com shoppers every three months (Kornum and Bjerre, 2005). Important in the process of developing a website is to keep the consumers in mind. Grocery shopping is a routine. When consumers become comfortable with a specific site, they are likely to stick with that site rather than search around for another site with lower prices (Keh and Shieh, 2001). A convenient site is the first step to generating repeat business. And repeat business is a key to success for any e-tailer.

Strategy

In the first chapter information is given about the different methods of online grocers. One of the most important decisions an online grocer has to make is which strategy it will pursue. Online grocers often choose between the brick and clicks method and the pure-play method. With the information of chapter one it is clear how these different methods work and what is needed to make these methods successful. Both methods have their advantages and disadvantages, specifically looking at the logistic challenges. In this chapter we will look at the different challenges the bricks and clicks method and the pure-play method face.

Bricks and clicks

When a retailers integrates his conventional and online operations this could have negative consequences for both traditional and online customers. An online shopper will have no access to a dedicated inventory. A particular product may be available in the store when the customer places the order online, but it is possible that in-store shoppers have purchased all the available stock when pickers start collecting the online order. The online shoppers then have to rely on the retailer to make a suitable (or no) substitution. According to Fernie and Sparks (2009) substitution rates are significantly higher for in-store fulfilment systems than for e-grocers using a warehouse model. Ocado, an online retailer in the UK who uses the pure-play method, claims that it can achieve substitution rates of less than 5 percent. Competitors using the bricks and clicks method sometimes have substitution rates more than twice this level (McClellan, 2003). However, there should be made allowance for the differences in product range. Ocado has a range of circa 12.500 products, which is less than half of the range of the biggest competitors engaged in online shopping. There are also doubts about the long-term sustainability of a in-store fulfilment model. When the volume of online sales will grow it is likely that conflicts between conventional and online retailing will intensify (Fernie and Sparks, 2009). Aisles become too crowded with more staff picking orders for the online customers.

Pure-play

The challenge of using the pure-play method is to acquire enough sales to get at least break-even. To be cost-effective dedicated picking centres must handle a large throughput. The breadth of the product range will also influence the threshold level of the throughput. In the early stage of online grocery retailing, when the sales volumes are still low, it is costly to offer an extensive range of products. An online grocer can choose to offer a limited range of products, but this will make it more difficult to lure consumers from traditional grocery shopping. Another problem using the pure-play method is that dedicated picking centres encounter difficulties with the disposal of excess stocks of short shelf-life products (Fernie and Sparks, 2009). When a in-store model is used consumer demand

can be stimulated at short notice by using price reductions. In a warehouse, which consumers never visit, it is more difficult to clear excess inventory.

Home delivery

The greatest logistical challenge faced by companies in the food industry is providing a home delivery service for their customers. Fernie and Sparks (2009) describe this challenge as follows:

“They must typically pick an order comprising 60–80 items across three temperature regimes from a total range of 10–25,000 products within 12–24 hours for delivery to customers within one to two hour time-slots.”

In this quote all the logistic challenges of the home delivery service of an online grocer can be found. Many items in a grocery store are perishable. Therefore rapid picking and delivery is needed when the groceries need to be delivered at home. A localized order picking in an existing shop or a dedicated pick centre is required. The ideal situation for consumers would be deliveries made urgently at a precise time with 100 percent reliability. In this ideal situation the consumers will have a minimal waiting time and will experience less inconvenience of the obligation to stay home to receive the order (Fernie and Sparks, 2009). However, this is simply not possible. According to Xing and Grant (2006) online shoppers typically have high logistical expectations. They demand a rapid and reliable delivery at a convenient time. With more supermarkets entering the online market delivery time will become an area of intense competition (Keh and Shieh, 2001). Because consumers do not always plan their meals ahead of time they expect speedy delivery. Especially bigger households have little time and persons with different daily schedules that are hard to predict. A large percentage of people is willing to buy groceries online but the fact that the groceries cannot be delivered immediately is an obstruction for them.

The cost will get higher the more the consumer can select the home delivery time window (Punakivi *et al*, 2001). This is because with smaller time windows the delivery truck needs to drive back and forth in the service area to meet the promised delivery time. The average number of orders per route will be lower with a smaller delivery time window (figure 18). More delivery trucks and longer working hours will be needed to provide the consumers' smaller delivery time windows and this will lead to a higher amount of total cost (figure 19) (Yrjölä, 2000; Punakivi and Saranen, 2001). As is displayed in figure 19 the time slot of 1 hour has the highest transportation cost. The transportation cost are the lowest with solution 3 and 4a who make use of unattended delivery. In solution 3 they use an unattended reception box. This box is a normal box with no refrigerator or freezer unit. And in solution 4 they use a delivery box. Unattended delivery will solve the problem of the urge of the customer to be at home when the delivery arrives. But unattended delivery faces also many challenges like the investments that have to be made.

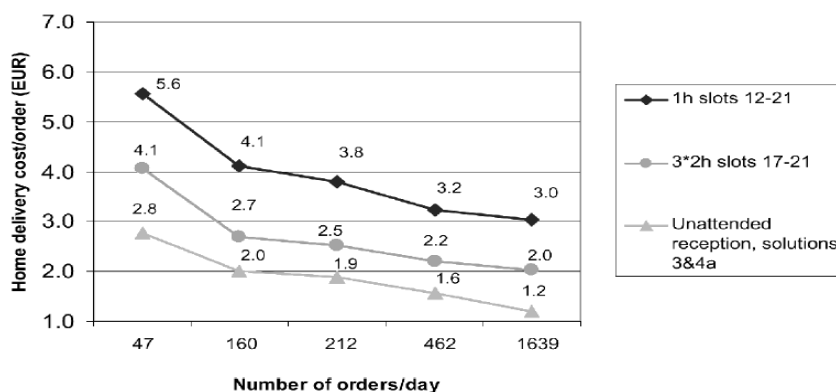
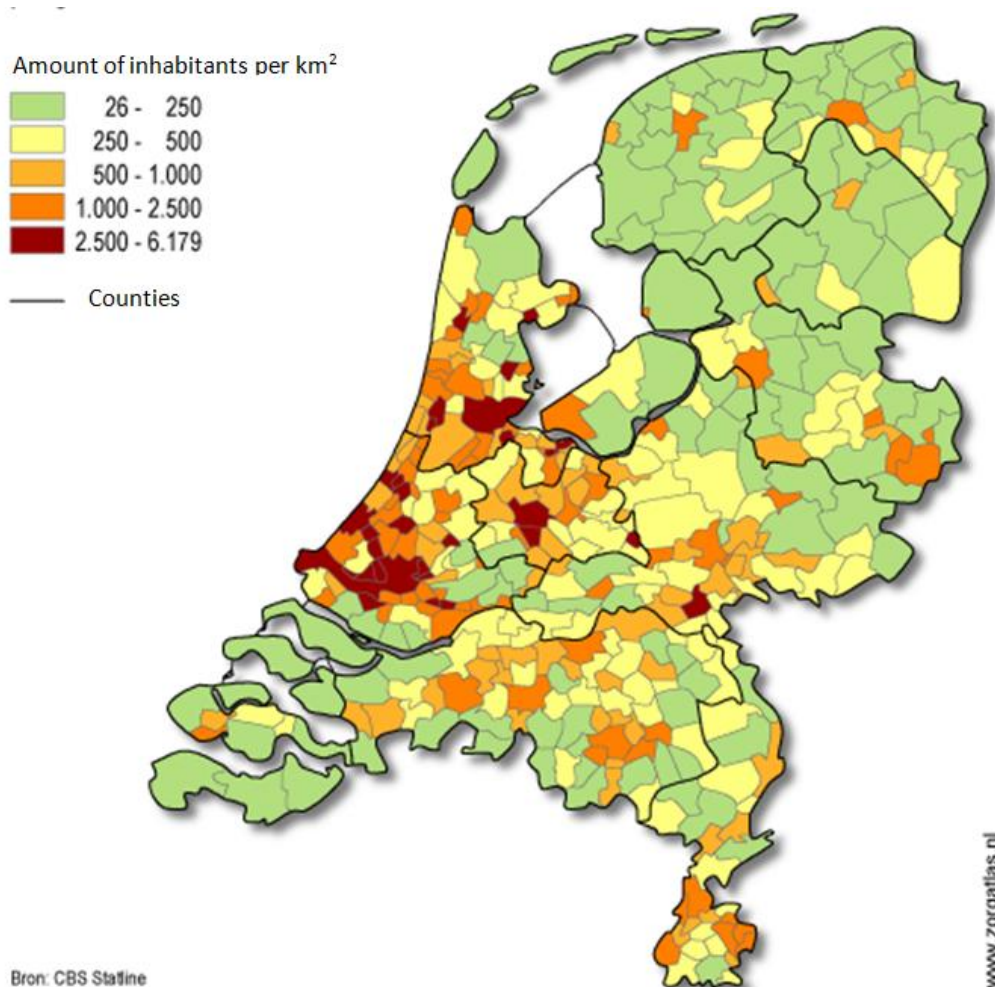


Fig. 19 The transportation cost levels of the home delivery solutions (€22,5-hour). Punakivi *et al*,(2001).

Delivery boxes need to contain a refrigerator and freezer unit when an online grocer gives the possibility to order products which are best stored cooled or frozen. It does also take time and cost to install and pick up a delivery box after an order has been received. Consumers will not feel responsible to pay for this extra cost. Nowadays, traditional in-store shoppers pay the cost of the home delivery, consisting of time and travelling cost. Another name for this is the cost of the “last mile”. In many EGS systems the cost of the last mile will be paid for by the grocery chain and they will charge the cost to the customer in the form of service cost or as a part of the price of the products. This gives many challenges. According to Yrjölä (2001) it will be very difficult to get the customer to realise that driving to the grocery store actually cost money. Also most of the people find it strange to set a price on leisure time.

Population density

According to Yrjölä (2001) the most descriptive factor to explain the home delivery cost in the electronic grocery shopping business turned out to be sales per km². With a higher amount of sales the cost will be lower. As is displayed in figure 20 in the Netherlands the population density is high in the provinces Noord-Holland, Zuid-Holland and Utrecht, and high to medium in big parts of Gelderland and Noord-Brabant. In these parts of the Netherlands it will be possible to develop a successful, profitable EGS operation. But in the Northern region of the Netherlands and in the provinces Zeeland and Limburg it will be difficult to develop profitable EGS operations because of the low population density.



Bron: CBS Statline

Fig. 20 Population density in the Netherlands in 2013. CBS Statline.

What will be the future of electronic grocery shopping in the Netherlands?

In this final chapter a prediction will be made about the future of electronic grocery shopping in the Netherlands.

The EGS market in the Netherlands is still small compared with the markets in the UK and France. But the market is growing rapidly. According to the IGD (2013) the online grocery sales in the Netherlands were €0.6 billion in 2012 and a growth is predicted with sales of €1.6 billion in 2016. The UK market had €7.1 billion online grocery sales in 2012 and the prediction for 2016 is to reach €13.7 billion. And in France the online grocery sales were €5 billion in 2012 and the predictions for 2016 are an increase to €10.6 billion. In Europe the online grocery sales will increase rapidly. Especially the new generation of grocery shoppers will be responsible for these increasing sales. According to ShopperVista (2013) more young people in the UK from the age of 18 to 24 years old will start EGS, rising to a total of 29 percent in this age category. Online grocery shopping in the Netherlands is still not as popular as in the UK. According to consultancy Strategy& (de Boer, 2014) the online sales of the supermarkets in the Netherlands in 2013 represented 1 percent of the total sales. In the UK the online sales represented 5 percent of the total sales in the same year. According to Joanne Denny-Finch, director of the IGD, the technology will change the way customers do their groceries fundamentally (Volkskrant, 24 Oktober 2013).

It is hard to predict how long the online grocery market in the Netherlands will continue to grow and how big the online grocery market will become. Supermarkets have announced that they will build more Pick Up Points throughout the country. In the future it is likely there will be build more Pick Up Points in other provinces than Noord-Holland, Zuid-Holland and Noord-Brabant to serve people living in other parts of the Netherlands. Especially big cities with a high population density like Groningen, Maastricht and Arnhem are locations where Pick Up Points have the potential to be profitable. Furthermore it seems Jumbo does not have plans to start a home delivery service near upon. According to consultancy Strategy& (de Boer, 2014) it is hard for supermarkets in the Netherlands to develop a profitable home delivery service. In a recent survey of consultancy Deloitte Dutch consumers said the need to hold a product in their hand and the extra service cost are the most important reasons to do not buy their groceries online (de Boer, 2014).

The ambition of Albert Heijn to reach 95 percent of the Dutch households with their home delivery service will be tough. One of the difficult challenges to overcome will be to convince the customers to pay for a delivery fee (Yrjölä, 2001). This delivery fee is necessary to pay for the cost of a home delivery service. In the Netherlands, on average, the closest supermarket to a household is 680 metres (figure 21). It may be hard to convince consumers to pay a delivery fee with supermarkets in such close distance to their homes.

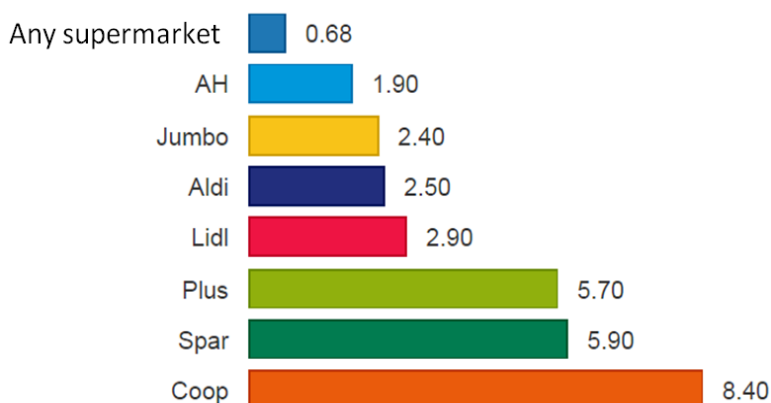


Fig. 21 Average distance to a supermarket in The Netherlands in km. Z24 (2014)

Figure 22 displays the service cost of the home delivery service of Albert Heijn. In the cheaper delivery times of €4.95 there is a time window of 5 or 6 hours. It is inconvenient for the consumers to have the restriction to stay at home and wait for the delivery truck for such a long time (Punakivi *et al*, 2001). In the time windows of 2 hours consumers perceive less inconvenience of the restriction to stay at home but the service cost are significantly higher, starting from €5,95. According to Hand *et al* (2009) “High delivery charges” was an important factor to discontinue electronic grocery shopping for many consumers.

	<	zo 8 feb	ma 9 feb	di 10 feb	wo 11 feb	do 12 feb	vr 13 feb	za 14 feb	>
08:00-10:00					7,95				
08:00-14:00				4,95	4,95	4,95		6,50	
09:00-11:00					8,95			8,95	
10:00-12:00				7,95	7,95	7,95		7,95	
11:00-13:00				7,95		7,95			
12:00-14:00				5,95		5,95			
16:00-18:00							8,95		
16:00-21:00			6,95		4,95	6,95	7,95	5,95	
17:00-19:00					5,95		8,50	6,95	
18:00-20:00			7,95		7,95	8,95		6,95	
19:00-21:00			7,95			8,95			

Fig. 22 Amount of service cost of the home delivery service of AH at different delivery times (From Sunday 8 February 2015 to Saturday 14 February 2015), AH.nl (2015)

Albert Heijn will benefit their decision to pursue the pure-play method in the future. As displayed in figure 5 and figure 6 the variable cost using the pure-play method are lower than using the bricks and clicks method. Once the break-even point is reached higher profit can be reached with the pure-play method. For the competitors of Albert Heijn it will be costly to invest in warehouses and dedicated picking centres because fixed cost are very high. To develop a home delivery service with low risk they will more likely use the bricks and clicks method. It will cost time for competitors like Jumbo to develop a home delivery service the size of Albert Heijn. Albert Heijn already has a head start. According to consultancy Deloitte (2014) from the total 6 percent of consumers who buy their groceries regularly online 4 percent chooses market leader AH.nl.

Conclusion

Electronic grocery shopping continues to be more embraced by the consumer. In the beginning of EGS people were reluctant to buy their groceries online because of the lack of faith, service cost or bad experiences. Today it is acknowledged that EGS is a long-term solution for many people. Most consumers who order their groceries online continue going to a traditional supermarket. Electronic grocery shopping should be used as an additional channel by the retailers. Most online grocers in the UK and in the Netherlands use the bricks and clicks method or the pure-play method. EGS can be beneficial for the consumers, retailers and the environment. Consumers can save much time, retailers can sell more products at this growing market and the greenhouse gas emission can be reduced. It cannot be said how profitable EGS is for the retailers in the Netherlands right now. Also there are no indications that the greenhouse gas emission in the Netherlands is reduced as consequence of EGS. To develop profitable EGS operations companies have to face some challenges. It takes time for consumers to get used to a discontinuous innovation. Convenient websites need to be developed and a profitable home delivery service has to be developed using the best possible method. The Bricks and Clicks method is for the smaller supermarket chains the best method to start their online grocery operations. If the sales grow and the break-even point is reached it can be more profitable to build dedicated picking centres. Population density is also a challenge for the food retailers in the Netherlands. The retailers will first focus on locations with high populations density where the circumstances are better to develop a profitable business and then will expand their operations to other locations in the Netherlands. The online grocery market in the Netherlands will continue to grow in the next years. The biggest players in the grocery market Albert Heijn, Jumbo and supermarkets part of the Superunie like Hoogvliet, Plus and Spar already have online operations. There will be expected an increase in their online sales. To really compete with traditional supermarkets the service cost of EGS need to get lower. Consumers have many options of supermarkets in close distance and will buy their groceries there instead of buying their groceries online and pay high service cost. It will take time for the people in the Netherlands to fully embrace electronic grocery shopping. Today few people in the Netherlands buy their groceries online but with the continued growth of the online grocery market supermarket chains in the Netherlands can develop profitable business in the online grocery sector.

Discussion and further investigation

This thesis is written based on information obtained from literature research. In order to get more insight and knowledge about the developments and possible future of electronic grocery shopping in the Netherlands actual quantitative and qualitative research has to be done. Some researches conducted in other countries can also be performed in the Netherlands. Like the research of Siikavirtte *et al* about the effects of e-commerce on greenhouse gas emissions in Finland. Because the online grocery market is still small in the Netherlands it is likely that EGS has little effect on the greenhouse gas emissions. Also the research of Hackney *et al*, "The UK grocery business: towards a sustainable model for virtual markets" could be performed in the Netherlands. In this research the strategies of the different major retail organisations are evaluated. When a comparable observation will be conducted in the Netherlands it is possible that the supermarket chains in the Netherlands use different strategies than the major retail organisations in the UK.

Furthermore, in this thesis much information comes from tests and research performed in the UK. Like the research of Ramus and Nielsen, "Online grocery retailing: what do consumer think?" Focus groups in the UK and Denmark are used in this research. Or the research of Huang and Oppewal, "Why consumers hesitate to shop online", who conducted a survey among 152 supermarket shoppers in South England. It is possible that the attitude towards electronic grocery shopping of the consumers in the Netherlands is different than the attitude of the consumers in those countries. Caution has to be made with the generalization of the results from researches performed in other countries. To get fully insight in the attitude of the consumer in the Netherlands towards EGS more research has to be done in the Netherlands. To get more information qualitative research with focus groups can be performed. Also qualitative interviews can be conducted with consumers or managers off supermarket chains who have a job concerning EGS. Quantitative research in the form of a survey can give more information about the attitude of Dutch consumers towards EGS.

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