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PLEASE SCROLL DOWN FOR ARTICLE
The real estate effects of e-commerce for supermarkets in the Netherlands

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Internet sales are increasing; that is also true for supermarkets. The situation in the Netherlands is no exception. Currently, the turnover in this part of the retail market is still limited, but it is to be expected that also for supermarkets a substantial part will be sold online in the near future. The most important question in this article is how supermarket real estate will be affected by e-commerce. In interviews we asked real estate and e-commerce managers of eight Dutch supermarket chains about their plans and expectations. Although they did not expect major changes in their real estate portfolios, we have seen supermarkets building various pick-up facilities and dedicated pick centres during 2014. Last year also showed a change in the usual market positions. In the past mainly the market leader, Albert Heijn, had been developing special real estate such as dedicated pick centres and pick-up points, whereas the other supermarkets only made changes in the layout of their stores. Since last year, however, the latter category has definitively been catching up.

Keywords: e-commerce; multichannel; pick-up points; supermarkets; the Netherlands

Introduction

Over the last decade, the Internet has been developed into a market place in which many products and services are sold. The consumer demand for online shopping is increasing and the retailer supply is responding accordingly. The influence of e-commerce, however, is not equally strong in every retail sector. In terms of market shares for their online sales, the various retail sectors – books, consumer electronics, clothing and supermarkets – show different percentages and different growth rates in the Netherlands since 2006 (see Table 1). Specific growth rates are impressive, showing online sales in consumer electronics in 2013 approximately twice as much as in 2006; the category books, CDs, DVDs, and games three times as much; and the category clothing four times as much. The online sales in the category books, CDs, DVDs and games even exceeds the offline sales from 2012 onwards; clothing has about a quarter of its total sales as online sales.

In terms of money, the market share of online sales in the supermarkets in The Netherlands is still limited to about 1% of the total supermarket sales, but the development over the past 8 years show a substantial growth rate similar to the clothing category (Table 1; Blauw Research and GfK 2013). The market for online food retail is expanding due to the increasing number of online players, better coverage and growing order possibilities for Dutch consumers. In the Netherlands as well as abroad, new businesses

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and formats have been developed. When supermarket chains start their e-commerce activities, finding the right balance between large offline formats and online channels turned out to be critical as the experiences of Tesco, UK has shown. Nevertheless, the advent of the online channel may jeopardize the euros wrapped up in expensive property portfolios or long-term leases. The rapid expansion of the grocery delivery services of Amazon Fresh and Walmart To Go in the USA demonstrates the promising potential of the online food market, while also new initiatives by start-ups such as Instacart successfully capitalise on the evolving market.

In the Netherlands, Ahold with its Albert Heijn supermarkets is market leader in online sales. They started home delivery, named James Telesuper, as early as the nineties. In 2001 they launched Albert.nl as its non-store format, offering the same products as the Albert Heijn and the related Etos (chemist’s) and Gall & Gall (liquor) stores; about 70% of all households in the Netherlands are within the service area, and products are usually delivered to customers within 24 hours (te Pas 2014c; see also Figure 3). In 2012 Ahold expanded its online sales strategy to the nonfood sector, acquiring the nonfood web store Bol.com. For picking-up Bol.com orders, all the 700+ Albert Heijn stores are already available (Distrifood 2013a). In many stores, the same facilities can probably be used for picking-up food orders.

Although other Dutch supermarkets fail to have online services similar to Albert.nl, many of them are launching online channels with abandon. The optimism is confirmed by consultancy reports, which expect that the advance of online sales will continue in the coming years. According to ABN AMRO (2012a, 29; 2014) the Internet sales will reach 5% of the total supermarket sales by 2015, while ING (2012, 28) is expecting this proportion will be 15% till 20% in 2020 (see also Figure 1).

The growth rate in online sales and the competition among the various chains means that supermarket retailers have to take account of the consequences of online retail. One of the likely consequences of e-commerce is a changing demand for real estate among supermarket chains (Dixon and Marston 2002, 22; Worzala et al. 2002, 143; Dixon et al. 2005, 3; Weltevreden and Boschma 2008, 164; McGoldrick and Collins 2007, 156; Fernie et al. 2010, 904–906; Colla and Lapoule 2012, 843, 847–848, 855–856). The main question, therefore, is what are the real estate effects of e-commerce for the supermarket

<table>
<thead>
<tr>
<th>Table 1. Offline and online sales for different categories in the Netherlands, 2006–2013.</th>
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<tbody>
<tr>
<td>In millions of €</td>
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<tr>
<td>2006</td>
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<tr>
<td>Books, CDs/DVDs, games</td>
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<tr>
<td>Offline</td>
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<td>Online</td>
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<tr>
<td>Consumer electronics</td>
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<td>Offline</td>
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<tr>
<td>Online</td>
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<tr>
<td>Clothing</td>
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<td>Offline</td>
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<tr>
<td>Online</td>
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<tr>
<td>Supermarkets</td>
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<tr>
<td>Offline</td>
</tr>
<tr>
<td>Online</td>
</tr>
<tr>
<td>Sources: 1 Rabobank (2014), 2 Thuiswinkel Markt Monitor (2014), 3 CBS StatLine (2014a), 4 HBD and CBS Statline in ABN AMRO (2012b), 5 GfK (2014, 8). In comparison to other branches, the online sales of supermarkets were difficult to establish and we had to combine various sources. The data comprise the retail categories Levensmiddelen en Persoonlijke verzorging (foods and personal care), derived from Blauw, GfK, Thuiswinkel.org, and HBD in Detailhandel.info (2013).</td>
</tr>
</tbody>
</table>
sector? Would e-commerce result in a shift from stores to logistics real estate? And would it be possible to have smaller stores or a smaller number of store units? Or fewer locations in neighbourhoods and more locations in the periphery of towns and cities? And what would be the effect of e-commerce on the layout and design of existing supermarkets? The supermarket sector has, as the largest sector in the retail with an extensive real estate portfolio, an enormous potential of online customers. These questions stress the urgency to research the impact of Internet sales on supermarket real estate. Our research project therefore describes and analyses the need and use of supermarket real estate in the near future.

In the remainder of this article we will, firstly, discuss the available literature. Insights about supermarkets and consumer behaviour will be described (Previous work). Secondly, we will explain the deployed research method: a comparative case-study design in which our fieldwork mainly consisted of interviews with managers who were responsible for either real estate or e-commerce (Methods). Thirdly, the research findings will be described and analysed. The questionnaire turned out to be effective, in that it was helpful to present the results in a uniform manner (Results). Finally, we will draw conclusions from our empirical research, discuss the possible future developments of online retail for Dutch supermarkets, and advocate some elements of future research. Because the Dutch situation shows two types of online supermarket sales, Albert Heijn and ‘the others’, we will discuss possible future developments according these lines, but we hope to make clear that it is not necessarily a disadvantage to be part of ‘the others’ (Discussion and Conclusions).

**Previous work**

Today, the consumer makes use of various retail channels to buy goods and services, causing a change in the service the consumer expects from retailers (Chatterjee 2010, 445). In response to the changing consumer preferences most retailers employ a multichannel strategy, in order to offer the consumer a choice of possibilities (Fernie et al. 2010, 909). The combination of different channels in one integrated distribution system provides retailers an advanced and more flexible market position than when they would have deployed just one channel (McGoldrick and Collins 2007, 156; Strategy&PWC 2014, 5). The growth of e-commerce, however, can jeopardize the existing store supply, because sales generated online may have a negative effect on the turnover in existing stores. (Worzala et al. 2002, 143; Dixon and Marston 2002, 21; Weltevreden 2007, 205; Williams 2007, 205; Weltevreden 2007, 205; Williams 2007, 205).
However, retailers who actually manage to integrate the various channels of home delivery, picking up and common stores will achieve synergy in which the various channels reinforce instead of threaten each other (McGoldrick and Collins 2007, 156; Williams 2009, 226, 234, 242). In the supermarket sector it is expected that traditional retailers will develop a multichannel strategy, because the online channel provides an important service for customers (Colla 2004, 65). With respect to the business strategy, the change to ‘brick and mortar’-formulas will be crucial for all supermarkets (Picot-Coupey et al. 2009, 451). Thereby both retail formats and websites will experience consequences of the clustering of the different channels (McGoldrick and Collins 2007, 156).

In the supermarket sector the physical organisation of online operations and in particular its real estate has a crucial role (Hackney et al. 2006, 355). The first and biggest question to date is whether existing stores or dedicated distribution centres must be deployed for order picking and home delivery. Traditional supermarkets predominantly manage their online operations with their current business models and existing infrastructure, which are not initially designed to perform these new tasks. However, new logistic formats, order picking systems and home delivery services are considered necessary for an optimal performance of the online channel (Raijas and Tuunainen 2001, 264). New store formats and designs may also be needed in order to combine and integrate store sales and Internet sales (Fernie et al. 2010, 905). Extension of distribution space and the adaptation of existing facilities seem necessary to cope with the increased flow of goods and number of operations in the online channel (Fernie et al. 2010, 903). Shifts from store space to distribution space among multichannel retailers in the recent past due to the advent of the online channel are not established as yet (Dixon and Marston 2002, 37; Worzala et al. 2002, 154; Dixon et al. 2005; Weltevreden 2007, 205). With a changing level of online sales this might change.

An important second question is what the preferred mode of distribution will be Dutch households prefer home delivery over pick-up of groceries from physical stores, although consumer preferences are shifting (Deloitte 2014). Four fifth of the households preferred to have groceries delivered to their home; this is, however, significantly less than in the previous year. The main reason to favour pick-up over home delivery is the flexibility for the online customer to collect the ordered groceries at their preferred times. Price is also an important factor. According to Deloitte, consumers consider the price level as the most important aspect of a good supermarket, and consumers are less willing to pay the delivery fee that is charged by supermarkets for home delivery. A quarter of the households is willing to pay extra (on average 2.88 euros) to pick up groceries, while three fifth is willing to pay extra (on average 3.87 euros) for home delivery. In view of the importance of price, a larger shift from home delivery to pick-up may be expected.

Research by SyndicatePlus (2014) shows that the development of online grocery retail in Europe is still at an early stage, but its popularity is growing. The online food market in the UK is most developed and mainly relies on home delivery services of e-grocers. In 2013, the online grocery sales in the UK constituted 3.8% of the total grocery sales and were worth 7.8 billion euros. Progressiveness of UK consumers, high levels of in-market competition and vast amounts of industry experiences are considered the main factors for the success of online grocery retail in the UK. Unlike the UK, the online food market in France is driven by the pick-up distribution model. In 2013, the online grocery market in France was valued at 6.7 billion euros and accounted for 3.1% of the revenue of the total French retail market. The extensive pick-up point network consists of more than 2500 drive-through services across the country. According to SyndicatePlus, an important factor, explaining the Dutch situation is the low level of competitiveness with only one main player, Albert.nl, which controls approximately 70% of the market. However, the entry of Jumbo (the second largest
supermarket chain) in e-grocery is expected to change this situation. The differences between the countries mentioned here are already not extremely large, as online sales constituted between 1.0% (the Netherlands) and 3.8% (UK) of the total grocery sales in 2013 (SyndicatePlus 2014; EFMI Business School 2014a). Moreover, supermarkets in the UK and France have a larger share of non-food in their assortment than Dutch supermarkets, rendering a true comparison between countries difficult.

Available research mainly focused on the real estate effects of online sales for retail as such (Dixon en Marston 2002, 38; Weltevreden and Boschma 2008, 173). However, these general findings cannot be translated to the supermarket sector easily, because food retail has special features (Raijas and Tuunainen 2001, 255; Fernie et al. 2010, 904). The e-commerce effects on the space needed for supermarkets may therefore divert from the general picture. Also, the research questions were mainly focused on the comparison between in-store distribution and dedicated fulfilment centres (Fernie et al. 2010; Colla and Lapoule 2012). Hence, the consequences for existing stores were not revealed in detail. Moreover, the researched countries were limited to France and the United Kingdom. Although the growth of online sales has attracted attention in professional magazines such as Distrifood over the last years, the Netherlands was rarely the research subject in scientific journals. Furthermore, available studies mainly went into how e-commerce is intertwined with real estate quantitatively (Baen 2000; Hendershott et al. 2000; Miller 2000; Worzala et al. 2002; Dixon and Marston 2002; Weltevreden and Boschma 2008). Research findings based on this research strategy do not usually reveal the reasons and motivations of the expected changes. In comparison to previous research, this research project was focused on the supermarket sector and was carried out with a qualitative research strategy: the motivation behind changes of need and use of supermarket real estate were central. Finally, this article is an effort to monitor the effects of e-commerce; its rapid pace of development will make all available research the proverbial snapshots in time (cf. Worzala et al. 2002, 156; Weltevreden and Boschma 2008, 176).

Based on the literature and media reports, the conceptual framework in Figure 2 was developed to structure and guide the analysis (cf. Miles and Huberman 1994, 18–22). The influence of e-commerce was measured with the following indicators: logistics, distribution centres, number of stores, store size, store locations and store design/layout. The framework shows the expected coherence between the different components that play a part in the relationship between e-commerce and supermarket real estate. E-commerce, logistics and the real estate of supermarkets influence each other. The more the volume of online sales increases, the greater the pressure will be on physical store turnover and thereby, theoretically, on the number of stores. The more home delivery services and pick-up points expand, the greater the need for more and/or larger distribution centres to support these services. Finally, integrating pick-up points in stores is assumed to cause alterations in store layouts, store size and store locations. This study aims to describe to what extent and how these relationships in the conceptual model occur or will occur in the supermarket industry.

**Methods**

The main purpose of the underlying research was to picture the effects of e-commerce on the supermarket real estate in the Netherlands. Considering the ongoing debate in e-commerce literature about the effects of multichannel approaches on the retailers’ demand for real estate, we formulated three expectations:
The advent of e-commerce in the supermarket industry will pose a threat to the offline sales in supermarket stores. The demand for physical retail space will decrease for supermarket chains with an online sales strategy, which will lead to less retail real estate in their portfolio. The demand for distribution space will increase for supermarket chains with an online sales strategy, which will lead to more logistics real estate in their portfolio.

To probe the perception of Dutch supermarkets on the relationship between e-commerce and real estate, we employed a qualitative research strategy and a multiple case-study design with interviews (Bryman 2012, 36, 74–75, 528). This research strategy was chosen because of the exploratory phase of the investigation (Shavelson and Townes 2002). Our approach more or less matched the first phase of the research carried out by Colla and Lapoule (2012).

In our research, we focused on large supermarket chains in the Netherlands because they have the most stores in the retail real estate market. Therefore, small supermarkets with only a few stores were not sampled. The larger chains were also expected to have the largest variety of facilities, ranging from different types of distribution centres, stores and online sales. Thus, changes in the real estate strategies of these supermarkets will likely have the largest impact in the supermarket sector.

In the spring of 2013, we approached 19 supermarket chains that operated within the Netherlands to participate in our research about Internet sales strategy and its influence on the real estate of the supermarket company. Eventually, we carried out 12 separate interviews among 8 supermarkets, which resulted in a response rate of 41%. The non-response seemed to coincide with the phase of development of the supermarkets approached. The supermarkets which did not have a website, did not want to collaborate.

Figure 2. Conceptual model. Source: authors.
with our research either. Face-to-face interviews were held with the responsible managers from e-commerce and real estate departments from eight supermarket companies:

- Five multichannel retailers, who had both brick stores and an online channel. From this selection, four retailers were in the top eight ranking list measured in market share in The Netherlands (Nielsen 2013).
- Three brick-only retailers, who only had stores at the time of the interview but had plans to open an online sales channel soon after.

In this research, face-to-face interviews were preferred to written questionnaires, because it enabled us to obtain a more in-depth and interpreted understanding on the relatively new and unknown phenomenon of e-commerce in the supermarket industry (Ritchie and Lewis 2003, 22). Our fieldwork comprised a semi-structured questionnaire with which it was possible for the respondents to motivate their choices and expectations (Bryman 2012, 468–499). All our respondents were well-informed representatives of the supermarket companies who were able to provide information on all relevant topics including the e-commerce plans for the near future. At the supermarkets that did not have a separate e-commerce department at the time when the research was carried out, the real estate manager was our only source of information. These real estate managers were nonetheless always involved in the e-commerce activities. With the other supermarkets, we interviewed both the manager of the real estate department and the manager of the e-commerce department. We did so, in order to check for the possibility of different viewpoints.

Internet sales are a ‘hot topic’, as several of the interviewees literally said. Therefore they were more than willing to tell us about them. Without exception, all our questions were approached with openness and enthusiasm. In addition to fact-driven descriptions, the interviewees were asked after their personal views as well. As far as we could assess, no information was held back. Reticence of any sort was not noticed. Hence we consider the results a true part of the existing strategies of supermarkets in the Netherlands. To inform the reader about the concrete visions supermarkets had and to illustrate the atmosphere which existed during the interviews, we have incorporated quotes from those interviews in our report. For the convenience of the English speaking audience we translated these quotes; for brevity reasons, however, we left out the original Dutch texts.

The conceptual model with the most relevant variables that are related to real estate and e-commerce led to the composition of our questionnaire. The questionnaire itself consisted of six sections each corresponding with one of the six indicators mentioned above. See Appendix 1 for the interview schedule. The respondents were asked about the relation between the existing or planned online channel and each of the six variables; and each interviewee was asked whether the Internet strategy had a positive, neutral or negative influence, meanwhile asking explicitly probing questions about the main motives and reasons (Gorden 1992, 145–172). Our interviews lasted 60 min on average. They were fully recorded and then transcribed. With the volume of the interviews and in order to encourage disclosure of complete information and emergent patterns, the software package Atlas.ti was deployed for data-analysis (Cooper and Schindler 2011, 421). This package turned out to be a powerful and supportive tool during our processes of coding and analysing.

Results

The findings concerning the impact of e-commerce on the supermarket chains’ need for real estate are presented as follows: (1) expectations of the future growth of e-commerce, (2) implications for the logistical organisation, (3) the effects on distribution centres,
(4) consequences on the number of stores, (5) implications for store size, (6) influence on retail locations, and (7) effects on store layouts.

Expectations of the future growth of e-commerce

All managers we interviewed have positive expectations about online food retail in the long term. The general expectation is that the market share of online sales will grow towards 5–10% of the total Dutch supermarket turnover in 2023 and the interviewees believe that the growth of the online format will take place at a slow and gradual pace. Only a small number of respondents did not venture to make any predictions at this early stage of e-commerce. However, all managers emphasised that they are convinced that the market share of e-commerce will continue to increase in the supermarket sector in the next few years with the opening of more pick-up points and home delivery services. Thereby, e-commerce will be a substantial part of their business and, most managers feel the need for urgent action. ‘Actions speak louder than words’, many said.¹

The moderate estimate of online sales is based on the limited number of customer groups that is expected to embrace e-commerce. Two-income households, families with small children, disabled consumers, and small-scale businesses are most frequently mentioned as important customer groups to adopt the online format. More generally, the respondents state that especially the younger generation of consumers, which is pressed for time and have grown up with Internet and computers, are likely to make most use of online food retail. However, the majority of the consumers will continue to collect their own groceries from the shelves in the supermarket. These traditional in-store consumers will only occasionally use the online channel for specific events (e.g. parties, barbecues, birthdays, and Christmas). The customers whom the respondents had in mind correspond with identified customer groups of previous studies about online grocery shopping behaviour (Morganosky and Cude 2002; Hansen 2005; Teller et al. 2006; Strategy&PWC 2014, 11).

In the past it has been frequently claimed that within a few years 5% of the total supermarket turnover would be generated by online sales. However, in 2013 the market share of online sales in the Dutch supermarket industry was still limited (Blauw Research and GfK 2013). Therefore questions have been arisen whether the expectations of the respondents about the growth rates of e-commerce are realistic. ING (2012, 28) has predicted that 15–20% of the Dutch supermarket turnover will be realised over the Internet in 2020, while Molenaar (2011) expects closure of a third of the stores in the Dutch retail sector because of cannibalisation. The managers we interviewed suggested that both claims are too far-reaching for the Dutch supermarket industry. The anticipated calm pattern of future developments is more in line with the theory of Williams (2009, 244) that in e-tailing the evolutionary approach prevails over the revolutionary approach.

E-commerce and logistical organisation

Only one of the supermarket chains implemented major changes in its logistical model because of having an online sales strategy. It is Albert Heijn who has developed specialised logistics real estate for online retailing. Three dedicated pick centres, 12 ‘solo’ drive-ins, and 13 pick-up points attached to existing stores were built by this retailer for online food retail. In addition, Albert Heijn franchisees have another 29 pick-up points attached to stores (Reijn 2014a; Meijsen 2014f). Thereby, most supermarket chains deploy a strategy in which online retailing is started up at a modest scale, in order to grow from there at a steady pace, depending on the success of their online channel. ‘For the time
being, we will anchor the e-commerce activities in our stores and will not build a separate logistic system, because the scale does not allow large investments at the moment’, a manager said, reflecting a widely held view.2

Table 2 presents the distribution models of the respondents for online grocery products. There are two important findings. First, over the years, home delivery has been considered a cornerstone of e-commerce, but supermarkets are poised to convert this part of the logistics into a more profitable approach. Second, the logistical processes show a majority for in-store picking and only a few dedicated pick centres.

Home delivery is provided by five of the eight supermarket chains. Figure 3 below especially shows Albert Heijn’s success in terms of delivery rates. Two respondents set up dedicated pick centres to pick and deliver online orders to customers’ homes, while three other supermarket chains use their existing store network to prepare these online orders. The latter group casts doubt on home delivery due to the high costs and logistical complexity that is involved in the service. Both these drawbacks are confirmed by the respondents at supermarket chains that already have home delivery service in use. The respondents admitted that their home delivery services were not profitable at the time of the interviews, but only kept operational because of customer contact and competition motives. A manager at Albert Heijn, the supermarket chain with the largest home delivery service in the Netherlands but still loss making after 20 years, told us: ‘With home delivery in food retail the last meters are extremely expensive, thus making good logistics is a complicated puzzle.’3 Other managers told the same story.

Recent analyses show that the costs of online orders are about 13 euros higher to those made in supermarkets. Currently, the fee Albert Heijn is asking varies between about 4.95 and 8.95 euros, depending on the hour the order must be delivered. Picking-up is more promising in terms of costs, as long as order picking by the retailer can be done on a large scale (Strategy&PWC 2014, 7; Garstenveld 2014b). The findings on the limited commercial viability of home delivery services correspond with developments in online food markets in other countries, where only a few supermarket chains can claim to be profitable with their online channel (Fernie and Sparks 2009, 223; EFMI Business School 2012; Meijsen 2014a). Due to the costs, pick-up points are the preferred option for retailers in both France and the UK (Garstenveld 2014a).

In order to cope with the expensive distribution costs, Albert Heijn has recently shifted focus from home delivery to pick-up. Instead of expensive delivery vans, driving to separate

Table 2. Distribution models of the supermarket chains interviewed.

<table>
<thead>
<tr>
<th>Distribution of online orders</th>
<th>Store pick model</th>
<th>Hybrid model</th>
<th>Dedicated pick centre model</th>
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<tbody>
<tr>
<td>Pick up by consumers at stores (‘in-store’ pick-up spots, ‘attached’ pick-up spots or ‘attached’ drive-ins)</td>
<td>Plus Coop Dekamarkt Dirk Jan Linders Vomar</td>
<td>Ekoplaza</td>
<td>Albert Heijn</td>
</tr>
<tr>
<td>Pick up by consumers at ‘solo’ drive-ins Home delivery from stores</td>
<td>Plus Coop Vomar</td>
<td>Ekoplaza</td>
<td>Albert Heijn</td>
</tr>
<tr>
<td>Home delivery from dedicated pick centres</td>
<td></td>
<td></td>
<td>Albert Heijn Ekoplaza</td>
</tr>
</tbody>
</table>
addresses, this adapted model consists of several pick-up points and dedicated drive-ins. In this model the customer will take care of the last meters in the distribution chain. Research concerning Dutch online supermarkets suggests that this strategy is effective and complies with the current consumer needs (Deloitte 2014; Distrifood 2014b; Deloitte 2013). In 2012, 4% of the online consumers chose picking up their orders, whereas in 2013 this percentage increased to 9%. Meanwhile the popularity of home delivery decreased from 78% to 72%, meaning, although the majority of shoppers are still in favour of home delivery, the group of shoppers that prefers the pick-up option is growing.

On the basis of the interviews, we have identified four main types of pick-up points in the Dutch supermarket industry: (1) ‘In-store’ pick-up spots, which are special desks that are set up inside stores to hand over online orders. (2) ‘Attached’ pick-up spots, which comprise special parking spaces on an existing parking lot of a store, often located near the warehouse or entrance of the supermarket, whereby consumers do not need to get out of their cars as goods are delivered to the boots of their cars by staff. (3) ‘Attached’ drive-ins, which have several fast lanes that cover a particular area of an existing parking lot of a store, and whereby the goods are loaded into the car by employees. (4) ‘Solo’ drive-ins, which are separate and purpose-built facilities on strategic locations that consist of a small warehouse and several fast lanes. Orders that are distributed by the first three types of pick-up are picked in the local store itself or in a dedicated pick centre. Orders for the last type of pick-up point, however, are picked in a dedicated pick centre.

The pick-up model is adopted by nearly all the supermarket chains now. Pick-up by consumers at stores will be possible at all supermarket chains, while pick up by consumers at ‘solo’ drive-ins is only possible at Albert Heijn, Deen, and Jumbo. ‘Within five years, we expect to have hundreds of pick-up points in stores and about hundred “solo” drive-ins’, a manager at Albert Heijn said. The other supermarkets such as Vomar, Jan Linders and Dirk do not consider setting up ‘solo’ drive-ins, because these are not considered to be...
profitable at the current scale of e-commerce. The expansion plan of ‘solo’ drive-ins by Albert Heijn is contrary to the hesitance showed by the other supermarket chains.

The advent of the pick-up model is also noticeable in other European countries. The UK and France are considered as pioneers in terms of online food retail. In the UK online food retail has grown particularly by home delivery; however, the last few years the number of ‘click and collect’ approaches is expanding rapidly (van der Marel 2013). The pick-up market in France is most developed and consists of about 2500 ‘attached’ and ‘solo’ drive-ins at present (SyndicatePlus 2014). Although there is moderate optimism about the pick-up model among the managers we interviewed, some respondents made remarks whether pick up of groceries will be interesting enough for Dutch consumers. Compared to other countries such as France, the Netherlands is a highly urbanized country, where consumers have good accessibility of supermarkets (Weltevreden and van Rietbergen 2009, 282; SyndicatePlus 2014; te Pas 2014b). In the Netherlands the average distance to a supermarket is 0.9 km, and per million inhabitants there are 220 supermarkets available. In the UK the distance is more than twice as long and the number of available supermarkets is equally smaller (see Table 3). Skeptical managers therefore argue that the main reasons to buy groceries online, convenience and time-savings (Picot-Coupey et al. 2009), might not apply to most of the consumers in the Netherlands. One manager told us:

Of course there is a demand for pick-up points in stores; otherwise we would not set them up. I am fully confident in solo drive-ins at a few strategic locations, but the Netherlands are only a small country with highly accessible shopping facilities, which makes it questionable whether there will be a demand for hundreds of separate pick-up points.5

E-commerce and distribution centres

Online retailing is not going to have a significant impact on the size, layout and location of distribution centres of supermarket chains in the short term. The respondents do not have plans to expand the square meters of their distribution centres in the coming years. Jones Lang LaSalle (2013) predicted a sharp increase in logistics space for retailers in Europe over the course of the next 5 years because of increased online sales. For the Dutch supermarket industry, however, this does not seem to be the case, because the vast majority of the supermarket chains will not expand their existing distribution centres, nor set up dedicated pick centres for their e-commerce activities.

The limited influence of online sales strategies on existing distribution centres can be explained by the distribution models that are used by the supermarket chains. The vast majority utilises their local stores as a base to pick, package and distribute online orders (see Table 2). In the long run, once the volume of online sales has been increased significantly, the strategy of the respondents is to move the preparation of online orders to dedicated pick centres, so that large volumes of small orders can be handled efficiently (cf. Garstenveld

<table>
<thead>
<tr>
<th>Country</th>
<th>Average distance between households and supermarkets</th>
<th>Density; number of supermarkets per million inhabitants(^c)</th>
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<tbody>
<tr>
<td>Netherlands</td>
<td>0.900 km(^a)</td>
<td>220</td>
</tr>
<tr>
<td>UK</td>
<td>2.292 km(^b)</td>
<td>90</td>
</tr>
<tr>
<td>France</td>
<td>--</td>
<td>200</td>
</tr>
</tbody>
</table>

\(^a\) CBS Statline (2014b).
\(^b\) DEFRA (2013).
The respondents admitted that, as the volume of online sales expands, picking online orders in stores will increasingly interfere with traditional retailing operations. Due to service and costs advantages, the dedicated pick centre model eventually becomes superior to the store pick model. As an exception, only Albert Heijn was able to invest heavily at an early stage, as market leader with capital, in three dedicated pick centres during the past few years, to offer online customers delivery speed and product guarantee.

All managers made the same point: ‘When online has become successful in the future, every formula will have two distribution processes, because online sales have to be facilitated and managed efficiently.’ Conventional distribution centres for stores are not capable to pick small orders for online customers, because all products in there are packaged in boxes of 24 items and lined up on a substantial distance from each other. In the event of two separate logistical processes, dedicated pick centres will deliver orders directly to customers’ homes, or indirectly to stores and ‘solo’ drive-ins for pick up by customers. A manager at Albert Heijn told us: ‘Our company does not want out-of-stock once a customer has ordered something online. Therefore the logistics of online sales are dealt with in dedicated pick centres, which allow picking separate items.’ As pointed out already, others have been following the same pattern. All this could involve supermarket chains to organise their logistics real estate in four different ways in the future: (1) dedicated pick centre decentralised, (2) dedicated pick centre centralised, (3) pick facility integrated in existing distribution centre, and (4) reorganisation (see Table 4).

The strategies of the supermarket chains are in line with earlier claims by Fernie and Sparks (2009, 221–223), Fernie et al. (2010, 906) and Hackney et al. (2006, 359) that the store-based model is the most appropriate approach for a multichannel retailer to start e-commerce activities, due to the relatively low risk and small amount of investment involved in this model. The UK has shown that several British supermarket chains such as Sainsbury, Somerfield and Asda set up dedicated pick centres at an early stage of their entry in the online food market, but soon had to close them down due to low level of online sales. Tesco, by contrast, proved to be successful at the same time with the store pick model (Hackney et al. 2006; Murphy 2007; Fernie et al. 2010). After the volume of online sales had grown over time to a substantial proportion, Tesco adopted a hybrid approach by using order picking both in stores and in dedicated pick centres.

### E-commerce and the number of stores

Adopting an online sales strategy does not have an effect on the number of stores in the near future. The respondents argued that other factors are more prominent for the closure of stores, such as the ongoing price war, fierce competition between supermarket chains, store accessibility and location change. These results seem to be in line with earlier research by Worzala et al. (2002, 151) and Weltevreden and Boschma (2008, 174), which

| Dedicated pick centre decentralised | Dedicated pick centre for online sales that is not located near the existing ‘store’ distribution centre. This option is already reality for Albert Heijn. |
| Dedicated pick centre centralised | Dedicated pick centre for online sales that is located near the existing ‘store’ distribution centre. |
| Pick facility integrated in distribution centre | Department for order picking of online orders in the existing ‘store’ distribution centre. |
| Reorganisation | Transformation of one of the ‘store’ distribution centres into dedicated pick centre for online orders. |
found that, at the time of their studies, pursuing an online sales strategy hardly affected the demand for physical retail space of retailers in the UK, the USA and the Netherlands.

The managers we have interviewed pointed out a number of reasons for the limited influence of e-commerce on the number of stores. First, the current market share of online sales is nominal. Thereby, the cannibalising effect on physical sales remains limited, as the respondents believe that the vast majority of consumers will still prefer to visit physical stores in the future. Second, a format’s own customer group that is interested in online ordering groceries will not be lost to competitors, when this supermarket opens its own online channel. Third, a large amount of the online revenues that is generated is kept by local stores because these outlets are used as a base to pick, package and distribute the online orders.

Sharing benefits from online sales, however, has become an important issue in a conflict between Albert Heijn and its franchisees over the last 2 years. Franchisees seek compensation for their loss of sales due to online orders (Dröge 2014; Louws 2013; Reijn 2014b; Rijlaarsdam, 2014). In 2013, they took the initiative to erect their own online channel, AH-afhaalpunt.nl, separated from Albert Heijn’s Albert.nl, and to date, 29 franchisees have introduced their own pick-up point. Franchisees comprise a substantial part of the Albert Heijn stores, and it is obvious that Albert Heijn has to solve this problem to further its online sales. The urgency to do so has been increased after Albert Heijn’s main competitor, Jumbo, managed to settle an agreement with its franchisees on the same issue (te Pas, 2014d, 2014e; Table 5). The two Albert Heijn websites offer different assortments and set out slightly different conditions related to their online orders, and misunderstanding among customers should be avoided (Distrifood 2013b; Meijssen 2014d; te Pas 2014a). The current conflict, however, is a bit more complicated than just a competition between ‘online’ and ‘offline’. Conflicts between franchisor and franchisees are often about turnover. Albert Heijn is indeed underperforming over the last 2 years in comparison to other supermarkets, but the decrease in turnover has likely been caused by competition from chains like Lidl and suppliers who offer complete meals online (Meijssen 2014b, 2014c, 2014e; cf. Distrifood 2014a).

All managers agreed that the number of stores will not decrease in the near future, although growth of online sales is eventually at the expense of physical sales. The level of consumer expenditure per week is expected to remain on the current level, and once the volume of online sales will reach a certain level, it is inevitable that e-commerce has a negative impact on the size of the retail floor space in the supermarket industry. However, the respondents do not expect online sales to grow explosively in the next years, as has happened in nonfood sectors. Meanwhile the managers were rather explicit about the

<table>
<thead>
<tr>
<th>Chain</th>
<th>Sales (in billions of €)</th>
<th>Market share (%)</th>
<th>Number of stores</th>
<th>Number of franchise stores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Heijn</td>
<td>11.500(^1)</td>
<td>33.8</td>
<td>936(^1,a)</td>
<td>231(^2)</td>
</tr>
<tr>
<td>Jumbo</td>
<td>3.800(^1)</td>
<td>20.6</td>
<td>339(^2)</td>
<td>140(^2)</td>
</tr>
<tr>
<td>C1000(^b)</td>
<td>3.422(^2)</td>
<td>9.4</td>
<td>345(^2)</td>
<td>–</td>
</tr>
<tr>
<td>Plus</td>
<td>1.990(^1)</td>
<td>5.8</td>
<td>254(^1)</td>
<td>254(^4)</td>
</tr>
<tr>
<td>COOP</td>
<td>0.975(^3)</td>
<td>2.8</td>
<td>249(^3)</td>
<td>131(^3)</td>
</tr>
<tr>
<td>Spar</td>
<td>0.528(^4)</td>
<td>1.8</td>
<td>275(^5)</td>
<td>275(^5)</td>
</tr>
</tbody>
</table>

Sources: \(^1\)Distrifood (2014c); \(^2\)FSIN (2013, 10–11); \(^3\)COOP (2013); \(^4\)PLUS (2014); \(^5\)Jongen (2012).

\(^a\) Distrifood (2014): included are C1000 (81), AH to Go (52), AH XL (35).

\(^b\) FSIN (2013, 10–11): in 2015 the C1000 formula will disappear due to a merger with Jumbo.
balance between bricks and clicks: ‘Stores will wither as soon as the online sales constitute 10% of the turnover.’ Another manager mentioned 15% as the threshold to affect the number of supermarket stores.

E-commerce and store size
The size of stores is not affected in the near future by the advances in online food shopping. Online retailing does not lead to an enlargement or reduction of the floor space of existing stores, since all activities can be accommodated in the current outlets. This is contrary to developments in France, where a number of supermarket chains have opted to attach dedicated pick warehouses to their stores (Colla and Lapoule 2012, 855). The possibilities to expand outlets with pick facilities are limited in the Netherlands, since supermarket stores are concentrated in residential areas with few possibilities for growth. In the long term, the respondents therefore expect to set up freestanding dedicated pick centres at industrial sites at the outskirts of towns and cities, similar to the fulfilment centres in the UK that are constructed on separate sites (Fernie et al. 2010, 905).

The managers we have interviewed reported that some features of online retailing have a negative impact on the size of stores, while other features will cause store space to grow. Together four factors were identified that are likely to have different effects on the size of stores in the near future. First, once physical sales drop because of online sales, a smaller amount of in-store stock is necessary, so that stores will need less space for their conventional retailing operations. Second, more warehouse space per store is needed to be able to pick, package and store online orders. Third, the scaling up in size of supermarket stores is an autonomous development that is expected to continue in the coming years. Due to formulacriteria and potential loss of in-store customers, it is not possible to cut much in in-store assortments. Finally, stores can increase their number of supplies in order to lower the pressure on their warehouse capacity. The combination, most respondents argued, will counterbalance the different effects, so that the eventual average size of stores will remain the same.

The multichannel approach offers potential advantages in terms of store size and assortment, according to a number of managers. In the Netherlands, supermarket stores are relatively small in size because of their location in residential areas where possibilities for growth are limited. However, multichannel retailers have the ability to broaden their range of goods in existing distribution centres or future dedicated pick centres. These extra products can be distributed to customers through pick-up points in stores. Thus, supermarkets are able to offer customers a larger assortment, without having to expand their store size. In that way, both channels complement each other (cf. Strategy& PWC 2014, 5). ‘Today, customers have more differentiated needs concerning specials, organic food, vegetables, fruit, and kitchen utensils. With in-store pick-up points and a dedicated distribution centre these products can be part of the assortment without actually having them in your store’, a manager said. Another manager stated.

E-commerce and retail locations
Store locations
The advent of e-commerce does not lead to changes in existing store locations or new ones. Despite advances of pick-up points, the main criteria for determining store locations
remain accessibility, competition, market area, visibility and parking. Having an online sales strategy makes that accessibility and parking become even more critical factors for the location of a store. However, only one of the interviewed supermarket chains is taking its e-commerce activities into account when new locations are assessed.

In general, the managers we interviewed mentioned three reasons for the limited influence of pick-up points on their store locations. First, supermarket outlets remain an amenity in neighbourhoods, as the managers believe that the vast majority of consumers will continue to purchase groceries in stores. Second, pick-up points can easily be integrated in existing stores. The location criteria for stores and pick-up points – comprising a varied category that consists of ‘in-store’ pick-up spots, ‘attached’ pick-up spots, ‘attached’ drive-ins, and ‘solo’ drive-ins – are similar, as both types of facilities need to be established on locations with good accessibility and sufficient parking space. According to the respondents, a substantial part of the existing stores is already suitable to contain ‘in-store’ pick-up spots, ‘attached’ pick-up spots and, to a lesser degree, ‘attached’ drive-ins. Therefore, there is no priority in setting up ‘solo’ drive-ins in order to be accessible for pick-up customers, as existing stores, equipped with ‘in-store’ pick-up spots, ‘attached’ pick-up spots or ‘attached’ drive-ins, are already within easy reach of consumers. Third, retail planning legislation limits changes in store locations. In the Netherlands it is usually not allowed to open supermarkets in the periphery of cities. This means that ‘solo’ drive-ins cannot be opened outside residential areas in combination with a store. It is therefore unlikely that store locations will shift from residential areas to the periphery of cities, unless alterations are made to the planning regulations.

An experienced manager told us the following:

> Our main principle is that a supermarket should be located at places where customers are, which is not at city edges. Supermarkets are located in the centre or at the periphery of neighbourhoods, because these are natural places for customers to do their shopping: you have to build supermarkets where customers live.11

This view was widely supported by all the managers we interviewed. ‘Most supermarkets are already at good locations,’ another manager said.

> When we are looking for a new supermarket, we want that store to be at thoroughfare, and a location with good accessibility and sufficient parking places. This is not always feasible, but there are many locations that comply with these criteria that make it convenient for consumers to pick up their online groceries.12

**‘Solo’ drive-in locations**

The vast majority of respondents do not feel the need to arrive early in the market of ‘solo’ drive-ins. Investing in a premature stage in ‘solo’ drive-ins in order to beat rivals for the best locations, is not considered as a factor of central importance, which is contrary to the view of a number of French supermarket chains (Colla and Lapoule 2012). Albert Heijn is the only supermarket chain that operates a substantial number of ‘solo’ drive-ins and admits to open more of them in the near future, partly in order to ‘snap up the best locations on the outskirts of towns and cities, thereby making it harder for competitors to get themselves engaged in the market of “solo” drive-ins’.13

All other managers are not concerned about a potential battle for locations of ‘solo’ drive-ins. Most managers had the following view:

> Our first step is to link pick-up points with existing store locations which are spacious enough to accommodate the new features. Only when the sales volume would allow the high investments concerning independent pick-up points, it is time to develop these pick-up points outside the existing stores.14
In addition to this, one manager told us: ‘I do not believe there will be a shortage of locations for “solo” drive-ins; there are so many locations in towns and villages suitable for independent pick-up points’.15 According to the managers we interviewed, the main location criteria for ‘solo’ drive-ins are accessibility and parking. As a result, locations outside the city centre such as thoroughfares and slipways of city ring roads are considered good locations for ‘solo’ drive-ins. And motorways, traffic intersections, industrial sites, carpool sites, vacant offices and petrol stations may serve as locations at a regional level.

E-commerce and store layouts

Division between warehouse and sales area in stores

Modest changes seem to be on their way for the layout of stores in terms of warehouse space, sales space and parking facilities, while the division of bulk and fresh products on the shelves is likely to remain unchanged. The managers, nonetheless, had mixed opinions about their needs for warehouse space per store under influence of online retailing operations. In the short term, all managers agreed that e-commerce activities hardly affect the division between warehouse and sales area in stores, as online sales are not yet significant enough. In the wording of one of the interviewees,

In the long term, theoretically, e-commerce must have consequences for the balance between warehouse space and sales space. In the short term, however, I seriously doubt whether that will actually happen. I do not see us move warehouse separation walls as the sales area would be limited.16

Once the market share of online food retail would have grown considerably, the mixed opinions about warehouse space per store remained. The managers of three supermarket chains suggested that the sales area per store will decrease, while the warehouse area per store will increase. It is argued that, once e-commerce expands, the number of packages that have to be stored in the warehouse of stores will increase. Furthermore, these respondents mentioned that order picking in the warehouse of stores is more efficient than order picking on the sales floor of stores. Regardless of the future size of e-commerce, the managers of the other five supermarket chains do not expect adjustments in the division between warehouse and sales area of stores. If online retailing results in a reduction of sales areas in stores, it will only concern small adjustments to a limited number of stores.

Division between bulk and fresh products in stores

The majority of respondents reported that the balance between bulk and fresh products in the store layout is not affected by the advent of e-commerce. The managers indicated that the percentage of bulk products in online sales is on average slightly higher than in store sales. However, e-commerce is not expected to result in more space for fresh products in stores in the short term. Bulk products remain necessary on the store’s shelves. Thereby, the view of a number of managers at French supermarket chains is not shared, that e-commerce frees up space in stores as a greater emphasis is put on voluminous and frequently purchased products in online sales (Colla and Lapoule 2012, 858; Picot-Coupey et al. 2009, 452).

E-commerce is not about bulk goods. When we compare the online and offline sales, the online sales show a slightly higher share of bulk goods. But it is not true that consumers just order bulk goods online; they order the complete content of their shopping carts

one manager said.17
Parking lot

Most of the managers we interviewed put forward that e-commerce will lead to alterations of the parking lots around their stores. The managers of five supermarket chains argued that it is important to support the pick-up of groceries with a redesign of the parking space. Some managers told us that,

consumers employ the pick-up opportunity just because of the fast way of shopping it offers. It is important then that this online customer can find a parking space quickly and not have to face a full parking lot. In the latter case the added value of online shopping would be vanished soon.\textsuperscript{18}

As mentioned before, all supermarket chains will soon have pick-up services at their existing outlets. Therefore, the group of managers that foresees changes on the parking lot argued that it makes sense to create special parking spaces (‘attached’ pick-up spots) or fast lanes (‘attached’ drive-ins) for customers that specifically come to pick up groceries. These pick-up locations need to be located at a short distance from the store. By doing so, the added value of picking up groceries, speed and convenience (Picot-Coupey et al. 2009) will be supported. Preferably, the special parking spaces or fast lanes should be located near the warehouse, usually at the back side of the store, so that both flows of in-store and pick-up customers do not hinder each other. If this is not possible, most managers argued that it is desirable to locate the pick-up spots near the front side of the store, so that customers will be able to pick up their orders as quickly as possible. In inner city areas, parking spaces can be designated as loading and unloading locations, dedicated for pick-up customers only. The managers of the three other supermarket chains do not expect to build special infrastructure on their parking lots for online retailing in the short term.

Discussion and conclusions

This paper has addressed the key question of how e-commerce is going to affect the demand for and the use of real estate in the supermarket sector, by investigating the real estate requirements of eight supermarket chains in the Netherlands that adopted an online sales strategy. In interviews we discussed six indicators with e-commerce and real estate managers in order to assess the impact of having an integrated multichannel approach.

 Generally, the managers we interviewed seem relaxed about the advent of e-commerce. Responses have confirmed the upward trend in online sales, although the general expectation is that this growth will continue at a gradual but steady pace, by which the cannibalising effect of online sales on physical sales is considered to be minimal. In spite of these moderate expectations, traditional supermarket chains are increasingly launching online initiatives, resulted in the doubling of pick-up facilities during 2014. They did so mainly out of defensive motives, that is to prevent a potential loss in sales to competitors.

The demand for retail real estate will remain high among the supermarket chains we interviewed, despite having an online sales strategy. The respondents indicated that adopting a multichannel approach does not influence their number of stores in the foreseeable future, while also the size of stores is not affected by online retailing. Further, no changes are planned by the supermarket chains in the location of their existing or future stores, although many the pick-up points have been set up. ‘In-store’ pick-up spots, ‘attached’ pick-up spots and, to a lesser degree, ‘attached’ drive-ins are integrated in the existing locations, while ‘solo’ drive-ins are not part of the short-term plans of the vast majority of respondents, due to the high costs involved and the insufficient volume of online sales. Similarly, the supermarket chains have reported that their demand for
logistics real estate will stay the same in the short term. To support e-commerce activities, existing distribution centres of the respondents will not be altered in terms of size, layout and location.

Yet, minor changes may be expected in the near future for the layout of stores in terms of the division between warehouse and sales area, and the parking facilities of supermarkets. These changes will probably take place within the existing number of square meters. As far as a number of managers were concerned, it is likely that online retailing operations will result in a slight expansion of warehouse space within their stores in order to facilitate the process of picking, packaging and storing online orders, with simultaneously a slight reduction of sales area in those stores. However, once the volume of online sales will increase drastically, the majority of managers considered it more effective and efficient to build dedicated pick centres to prepare online orders. Also, most respondents indicated that changes to the layout of parking lots around their stores can be expected, such as specially created parking spaces (for ‘attached’ pick-up spots) and fast lanes (with ‘attached’ drive-ins) near the front side (entrance) or back side (warehouse) of those stores in order to ease and promote pick up of groceries by consumers.

The only relationships that currently stand out in the conceptual model for the Dutch situation (see Figure 2) are those between online consumer and online turnover, between online consumer and home delivery services, and between online consumer and pick-up points, since the factors involved have been gaining an increased importance in the supermarket sector because of e-commerce. The respondents confirmed the relevancy of the other relationships between the variables in the conceptual model, although these do not play a part at the moment of writing. Major changes in these relationships will only take place at a larger scale of e-commerce, which is not yet the case. But these are general conclusions for a changing market comprising a dominant innovative market leader, Albert Heijn, and many followers.

In an international context, the online food markets in several nearby countries seem to be ahead of the Netherlands in terms of size and scale. The differences between the countries in terms of online sales show similar outcomes (SyndicatePlus 2014). This indicates that the Dutch online food market is still relatively immature. According to a recent inventory, however, Dutch supermarkets have 288 pick-up points available (Figure 3); another inventory made by the professional magazine Distrifood exhibits more than 400 pick-up points. In addition, not only Albert Heijn but also other retailers such as Deen, Ekoplaza, Hoogvliet and Jumbo have been building their dedicated pick centres (Meijzen 2014f). Nevertheless, it is remarkable to see that Albert Heijn and others have opted for the dedicated pick centre model instead of the store pick model. Experience in the UK has shown that this strategy failed for various British supermarket chains in the initial phase of e-commerce at a low level of online sales, which is still the case in the Dutch supermarket industry. Dedicated pick centres have proved to be more competitive in a later phase of e-commerce. Considering the slow growth of online sales that is expected and the current lack of profitability of its own online sales channel, it will be interesting to see whether Albert Heijn has chosen for the dedicated pick centre model at the right time.

Reconsidering e-commerce predictions

The outcomes of the fieldwork suggest that several e-commerce predictions must be reconsidered for the supermarket industry in the Netherlands. Let us discuss the three hypotheses, formulated earlier in the ‘Methods’ section.
First, the advent of e-commerce in the supermarket industry will pose a threat to offline sales in supermarket stores. E-commerce is however not considered as a serious threat. The interviewees argue that, despite the online channel, consumers will continue to have a strong need for supermarket stores near their homes. It is believed that online shopping of food will only appeal to a select number of customer groups (e.g. two-income households with demanding jobs or small children and small-scale businesses), and that traditional in-store customers will occasionally make use of the channel for specific events. Although it is difficult to predict the future market share of online sales in the long term, the respondents estimated that about 5–10% of their turnover will be realised over the Internet in 2023. It should be mentioned that similar predictions in the past turned out to be unrealistic.

Second, the demand for physical retail space will decrease for supermarket chains with an online sales strategy, which will lead to a less retail real estate in their portfolios. As the pressure from online sales is expected to be small in the near future, retail property however remains crucial in the sales strategies of the supermarket chains. This is underlined by the large-scale investments by all respondents in renovation projects of their existing stores, in order to upgrade retail formats and improve shopping experience. The existing retail structure plays an important role in the distribution of online orders, as long as the items will be picked in local stores by the majority of supermarket chains we interviewed, and subsequently be picked up by customers at the store or from the store delivered to customers’ homes. Online sales are for the most part considered as turnover of stores, which implicates that their viability is not at risk in the short term.

Third, the demand for distribution space will increase for supermarket chains with an online sales strategy, which will lead to more logistics real estate in their portfolio. The vast majority of supermarket chains will continue to organise online retailing operations in local stores in the next few years. Based on the positive expectations of online sales on the long term, the need for more and better distribution systems will probably grow. Once online sales will expand, order picking in local stores increasingly disturbs traditional retailing operations in outlets. Hence, respondents argued that the future is likely to favour a shift towards order picking in dedicated pick centres as Albert Heijn and some other chains (Deen, Ekooplaza, Hoogvliet and Jumbo) already have showed. In the short term, however, the use of e-commerce does not lead to the expansion of logistics real estate for almost all supermarket chains we interviewed.

**Implications for the competitive landscape**

The research results show a major difference among Dutch supermarket retailers. The development of online supermarket sales shows two different trajectories, exhibiting different tempos and different market shares. Albert Heijn fulfills a pioneering role in the online food market in the Netherlands. This supermarket chain is absolute market leader in terms of online sales. It has already opened 3 dedicated pick centres, 12 ‘solo’ drive-ins and 13 ‘attached’ pick-up points (Figure 4). In addition, the Albert Heijn franchisees have launched their own pick-up facilities. Together they have 54 pick-up points and have achieved an availability of approximately 70% of the households in the Netherlands (Reijn 2014a; Meijssen 2014c; Figure 3). Other supermarkets are followers, but at the present stage of development not necessarily occupying a disadvantaged position.

Based on this uneven development we can make new assumptions about the future, but the general picture of online and offline sales in the Netherlands is a complex one, considering the three issues below. Together they outline the situation and playing field of the market leader and its followers:
It is still unclear to what extent the more dense urban structure in the Netherlands in comparison to the UK and France will hinder ongoing growth rates of e-commerce as often is claimed. The available data does not simply provide conclusive proof (Evers et al. 2011). Yet, the Netherlands seem to be ahead of other countries with respect to home delivery of complete meals (cf. SyndicatePlus 2014; EFMI Business School 2014a). The latter finding seems to confirm the present insight into the close relation between frequent employment of online facilities and high urban density (Rabobank 2012). Moreover, this relation between urban structure and online use also indicates that online sales are not the mere substitute of offline sales.

E-commerce for supermarkets turned out to be unprofitable. These findings from the interviews are recently corroborated by an analysis made by professionals in logistics (Strategy&PWC 2014; Garstenveld 2014b). Home delivery is too expensive; the only option is picking-up but the latter will only be yielding an income at a certain scale. This logistical analysis also shows that store picking is too expensive. Picking must be done in a dedicated pick-centre. Obviously, the current phase of online sales is one of high costs, which render vested supermarkets vulnerable for new suppliers (such as the online ordered meal delivery) and cheaper alternatives (such as Lidl).

There are two developments every chain probably has to face: (a) a transformation from home delivery to pick-up, and (b) a shift from store picking to a dedicated pick centre. However, although patterns seem to change recently, consumer preferences still point at home delivery (Deloitte 2014). In addition, the specifications of these pick-up points are not a settled matter. There is a variety of options at the moment; Albert Heijn for instance exploits all variants. But the most promising variant is
likely the attached pick-up point – either the ‘in-store’ pick-up spot, or the ‘attached’ pick-up spot, or the ‘attached’ drive-in – because this one is most efficient for both the consumer and the retailer.

**Albert Heijn and its competitors**

Albert Heijn has the potential to excel in every aspect of food sales, for the usual supermarket products and for complete meal ready to eat, both online and offline. To reduce operating costs, it already started a change from home delivery to pick-up. For this change, the facilities for picking-up the non-food Bol.com orders already available in many stores might be an enormous advantage. However, to continue its thriving e-commerce business, the internal conflict with its franchisees should be settled. The franchisees are seminal, introducing more pick-up points than the franchisor. At the moment, for Albert Heijn online sales are one of the few possibilities to achieve a higher turnover. Conversely, the franchisees are looking for compensation for an assumed loss of sales caused by the franchisor’s online channel, Albert.nl. However, online and offline sales does not seem to have such a close relation as often stated. Offering complete meals as Albert Heijn have recently started doing (Distrifood 2014a) seems to be a logical step.

Other supermarkets can learn from what Albert Heijn have found out about online sales. Jumbo, second in market share, has recently opened a dedicated distribution centre and several pick-up points. The introduction of its online channel was slowed down because of a recent merger. Other supermarket chains such as Hoogvliet and Deen may experiment with the complementarity of online and offline sales. Hoogvliet, for example, has started a supermarket especially for pick-up customers. Whereas the store focuses on fresh products, the customer can order other products online. Similar to Hoogvliet, Deen makes a distinction between products that can be home delivered and products that should be picked up. In addition, Deen has only a limited number of products in its webshop. Hoogvliet now has 55 pick-up points, whereas Deen has 70 of these pick-up points. That is more than Albert Heijn and all these solutions seem more cost-consciously designed.

In conclusion, although Albert Heijn is the Dutch market leader in online grocery shopping, occupying approximately 77% of the market in 2013 (EFMI Business School 2014a; see also Table 1), it is far from certain whether Albert Heijn can maintain this position. Sixty years ago, during the introduction of the self-service system, small retailers were the innovators and Albert Heijn followed later successfully without the initial mistakes (Kooijman 1999, 94–95). The number of pick-up points opened by Hoogvliet and Deen is not as important as the size of online sales, of course, but positions of innovator and followers can easily be swapped. The wait and imitate approach that worked well for Albert Heijn in the fifties, now seems to have the same effect for its competitors. One year earlier, in 2012, Albert Heijn still had 82% of the online market, indicating that also with respect to online sales the market leader is losing ground (EFMI Business School 2014a).

Our results largely support earlier claims made by Worzala et al. (2002), Dixon et al. (2005), and Weltevreden and Boschma (2008) that the impact of e-commerce is still limited in the real estate demands of retailers in the UK, the USA and the Netherlands. In addition to these predominantly quantitative studies, our qualitative research approach has provided insight into how and why possible changes may be expected in the supermarket industry. As e-commerce is still growing, the situation may change in the future. At the moment of writing, already new developments in the Dutch supermarket sector were announced. Supermarket chains, which did not participate in this study, have recently opened pick-up points and dedicated pick centres for online
retailing. The findings in our research are therefore snapshots in time, while online shopping is a phenomenon in motion that is likely to evolve over the course of the next few years.

The limitations in our research make future studies necessary and the data in this study may serve as a stepping stone for further research of the development of the effects of e-commerce on supermarket real estate decisions. As mentioned above, our qualitative research method comprised a limited sample of supermarket chains; hence our findings cannot be applied to the entire supermarket industry. In order to increase validity in future studies, a larger group of respondents could be obtained using a quantitative method, such as questionnaires instead of face-to-face interviews. Also, all respondents expressed severe doubts about the profitability of online food retail, as none of their home delivery and pick-up services were profitable. Future studies should therefore attempt to collect actual financial data that make it possible to investigate the commercial viability of these services, as this could help supermarket chains to determine what types of online sales strategies would be most appropriate for them. Finally, comparative research could focus on the developments and trends of online food retail in different countries. It would be interesting to capture and clarify patterns over time in an international context on the topics we discussed. This would further improve our understanding on the development model of e-commerce in different phases and markets and enable supermarket chains to anticipate better to the evolution of the phenomenon with their real estate strategies.

Disclosure statement
No potential conflict of interest was reported by the authors.

Notes
1. Interview with manager 1 on 25 February 2013. We promised the interviewees anonymity; therefore we are using numbers in our references. All interviews were carried out between 25 February 2013 and 29 March 2013.
17. Manager 5. Interview on 28 February 2013.
19. During the research project both professionals responsible for real estate and professionals responsible for ecommerce were interviewed; for each category a separate interview schedule, A and B, was designed. This is a translation; all the interviews were held in Dutch.

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**Appendix 1 Interview schedule**

**A Questions for real estate managers**

**Logistics**

1. Which modes of distribution do you employ at the moment? And what are your plans for the future?
   a. Home delivery from stores
   b. Home delivery from a central distribution centre
   c. Pick-up at stores
   d. Pick-up at solo pick-up points

**Distribution centre**

2. Do you think that e-commerce will cause an increase or a decrease in the number of distribution centres in your organisation? How substantial do you expect these changes will be, and when will these probably happen?
3. Do you expect that e-commerce will change the distribution centres themselves? If yes, which changes do you expect?

**Number of stores**

4. Do you think that e-commerce will cause an increase or a decrease in the number of stores in your organisation? How substantial do you expect these changes will be, and when will these probably happen?
5. Will the role of brick-and-mortar stores change in the near future? Do you think e-commerce has an influence?

**Store size**

6. Do you think that e-commerce will cause an increase or a decrease in the size of the stores in your organisation? How substantial do you expect these changes will be, and when will these probably happen?
7. Do you expect that online sales will grow in the near future? If yes, do you think that the existing store size will hinder the expected growth?

**Store locations**

8. Do you think that e-commerce will change the locations of the stores in your organisation? If yes, what will be the new locations?
9. Will criteria for store locations change due to e-commerce? If yes, how exactly?
10. Do you expect that you will focus on separate pick-up point? If yes, which locations do you prefer?
Store lay-out

11. Do you expect that e-commerce will cause changes in sales and store lay-out? If yes, which ones?
   a. An increase of stockroom space
   b. An increase of parking space
   c. A decrease of store space
   d. A decrease of bulk goods
   e. An increase of fresh fruit and vegetables
   f. An increase of store experience

Finally

12. Will e-commerce have other effects than mentioned above on the real estate of your supermarket? If yes, which effects do you expect?
13. Which supermarket chains will profit and which ones will suffer from e-commerce?

B Questions for e-commerce managers

Vision

1. What are your expectations about e-commerce for the near future?

Consumers

2. Which are the target groups related to online sales your supermarket is aiming for?
   a. Consumers with lack of time
   b. Consumers without cars
   c. Consumers with a high income
   d. Families with young children
   e. Invalids and elderly people
   f. The younger generation
   g. Other, such as...

Logistics

3. Which modes of distribution do you employ at the moment? And what are your plans for the future?
   a. Home delivery from stores
   b. Home delivery from a central distribution centre
   c. Pick-up points at stores
   d. Pick-up at solo pick-up points
4. Can you make a preliminary estimation of how many pick-up points you will exploit in 5 years?
   Can you indicate the market area related to your home delivery in 5 years?
5. Do you consider pick-up systems, suitable for both food and non-food?

Online and offline sales

6. Have the supermarket sales of your organisation been increased or decreased in the past 5 years?
7. What are your expectations concerning the supermarket sales of your organisation in the next 5 years; will they have been increased or decreased?
8. Has the advent of e-commerce caused a decrease in offline sales in your organisation?
9. Do you expect an increasing number of consumers using e-commerce for their supermarket purchases in the next 5 years?
10. Can you tell the percentage of online sales and offline sales in your organisation for this year?
11. Can you make a preliminary estimation of the online and offline shares in the next 5 years? Do you think there is a limit to the share of online sales?
12. Will the money earned by the offline channel be used to make or keep the online store profitable?
13. Will the money earned by the online channel be used to make or keep the offline stores profitable?

Finally

14. Will e-commerce have an impact on the real estate of your supermarket? If yes, which will the most important effect?
15. Which supermarket chains will profit and which ones will suffer from e-commerce?