

Delfmann, Werner et al.

**Working Paper**

## Concepts, challenges and market potential for online food retailing in Germany

Working Paper, No. 108

**Provided in Cooperation with:**

University of Cologne, Department of Business Policy and Logistics

*Suggested Citation:* Delfmann, Werner et al. (2011) : Concepts, challenges and market potential for online food retailing in Germany, Working Paper, No. 108, University of Cologne, Department of Business Policy and Logistics, Cologne

This Version is available at:

<https://hdl.handle.net/10419/59787>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# Working Paper Series

DEPARTMENT OF BUSINESS POLICY AND LOGISTICS

*Edited by Prof. Dr. Dr. h.c. Werner Delfmann*

Working Paper 108

## Concepts, challenges and market potential for online food retailing in Germany

Study by A.T. Kearney and the Department of Business Policy and  
Logistics of the University of Cologne

### Authors

#### University of Cologne

Werner Delfmann  
Sascha Albers  
Ralph Müßig  
Felix Becker  
Finn K. Harung  
Hannah Schöneiseffen  
Vitaly Skirnevskiy

#### A.T.Kearney

Mirko Warschun  
Jens Rühle  
Philipp Bode  
Christian Kukwa  
Niklas Vogelpohl



Delfmann, Werner; Albers, Sascha; Müßig, Ralph; Becker, Felix; Harung, Finn K.;  
Schöneseiffen, Hannah; Skirnevskiy, Vitaly; Warschun, Mirko; Rühle, Jens; Bode, Philipp;  
Kukwa, Christian; Vogelpohl, Niklas: *Concepts, challenges and market potential for online food  
retailing in Germany*.

Working Paper 108 of the Department of Business Policy and Logistics, University of Cologne,  
Cologne, 2011.

All rights reserved.

© The authors, Cologne, 2012.

## **Contents**

<b>1</b>	<b>Introduction .....</b>	<b>5</b>
<b>2</b>	<b>The German grocery market.....</b>	<b>6</b>
<b>3</b>	<b>Main business models in online food retailing .....</b>	<b>7</b>
3.1	Shadow warehouse based click & collect service .....	8
3.2	Shadow warehouse based home delivery .....	10
3.3	Store based home delivery .....	11
3.4	Store based click & collect service .....	13
<b>4</b>	<b>Empirical Study on German Consumer Attitudes towards Online Retailing .....</b>	<b>15</b>
4.1	Methodology and goal of the study .....	15
4.2	Sample Description.....	16
4.3	General shopping habits and preferences .....	17
<b>5</b>	<b>Major findings and implications .....</b>	<b>18</b>
5.1	Customer characteristics .....	18
5.1.1	Shoppers are happy with the status quo.....	18
5.1.2	Willingness to buy online food services .....	19
5.2	Operational findings .....	21
5.2.1	Choose the right Service model.....	21
5.2.2	Adopt the right picking approach .....	23
5.3	Success factors.....	24
5.3.1	Raise Awareness .....	24
5.3.2	Unique selling proposition.....	25
5.3.3	Make no mistakes .....	26
<b>6</b>	<b>Perspectives on the future of German online food retailing market .....</b>	<b>27</b>
	<b>References .....</b>	<b>31</b>



# **1 Introduction**

Online food retailing is high on the current agendas of European retailers – again. Many companies tried to enter and conquer this market in the beginning of 2000's when e-commerce was seen as revolutionizing not only the retail business, but the way in which business is conducted in general. Many of these pioneers of online food retailing failed and when the e-commerce bubble burst, online food retailing was almost forgotten in many European countries, inter alia, in Germany. However in some countries retailers not only managed to survive, but to provide value to customers and develop a new market.

Online grocery sales per capita in the UK, Switzerland and Belgium are €82, €23 and €18 respectively, while they reach only €2 in Germany. This is surprising since no major structural characteristics can be identified to mitigate internet-based retailing in Germany compared, say, to the United Kingdom. The United Kingdom can be clearly considered as the most developed online food retailing market worldwide, with €5.5 billion market sales of online groceries in 2010. In contrast, online grocery sales in Germany are estimated at only €200 million, which is nearly 27 times less than that of its European neighbor (A.T. Kearney Research, 2011). Also in relative terms the UK online grocery market represent around 4.5% of the total grocery market, compared to only 0.2% in Germany.

The German market lags behind other European markets in online food retailing, and our analysis hints at a significant growth potential here. In this study that is based on expert interviews with representatives of large retailers and a survey of more than 600 respondents we identify the reasons for customers' hesitant approach to online retailing and identify strategic options for retailers to successfully operate in this promising segment of the retail industry, that will develop rapidly.

## **2 The German grocery market**

The German grocery market is characterized by an oversaturation of retail outlets, a strong price focus of consumers driven by dominance of discount stores and low margins in a highly-competitive environment.

Hard discounters, such as Aldi, Lidl, Penny and Netto, are a German phenomenon. They significantly gained in importance over the past decades and now represent almost 44 percent of the whole market. Practiced to perfection by Aldi, the inventor of the hard discount format and the world's most efficient hard discounter, the dominance of hard discount stores illustrates the continued price focus of German customers.

The German grocery market size is estimated at 125 billion Euro in 2011. It is the second-largest market in Western Europe following France (145 billion Euro) and exceeding slightly the UK (121 billion Euro). It is significantly larger than Spain and Italy on the fourth and fifth rank (52 and 49 billion Euro respectively).

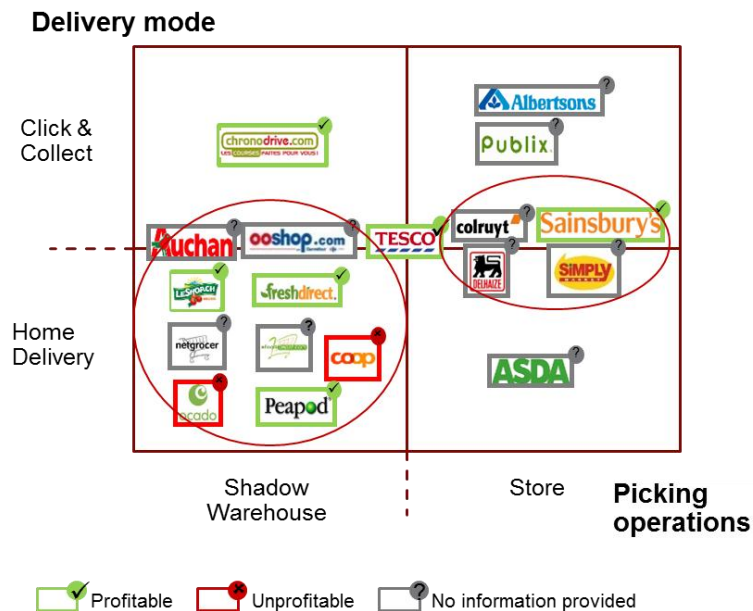
Furthermore, the German grocery market is highly concentrated, with the sales of the top four grocery retailers, namely Edeka, Rewe, Aldi and Schwarz Group (Lidl), representing approximately 68 percent of the total grocery spend.

As a result of the intense competition, most German retailers have been forced to lower prices rather than investing in value-added services. The importance of discounters deters players with a differentiation focus from charging too high a premium because discounter prices are the lower benchmark that the consumer relates to. Thus also online food retailing must prove that it is really value adding for the consumer at a price that still will be referenced to the competitive price focus of traditional retailers.

### 3 Main business models in online food retailing

Major online food retailers that offer a full range of groceries to their customers have been identified in France, Switzerland, UK and USA. The most developed market in Europe is the UK market, with annual online grocery sales of the major players Tesco, Asda, Sainsbury's and Ocado summing up to £2.9 billion (The Telegraph, 2009). Translating into per capita sales of €82, the UK is followed by the Swiss market with a 2008 turnover of €15 per inhabitant, mostly generated by the two players LeShop and Coop@home (A.T. Kearney Research, 2011).

Four main business models can be identified in online food retailing, as illustrated in the following figure 1:



**Figure 1: Market players by delivery mode and picking operations**

The 2x2 matrix shows traditional retailers and pure online players that both provide complete grocery portfolios that allow private consumers to order online. The vertical axis differentiates between the two ways in which the customers can receive their goods. They can either retrieve the ordered products themselves, as in a click & collect service, or have the groceries delivered to their homes. The horizontal axis describes the operational side of the approach. Retailers might distribute the goods out of a shadow warehouse that is not accessible for customers, or they will gather the orders in their traditional stores alongside the offline store traffic. Market players like Sainsbury's (UK) and Colruyt (Belgium) show that retailers do not always focus on one approach only, but may choose to offer multiple services. In the extreme case of Tesco, a store based click & collect service and home delivery is offered to consumers, while the



company has also begun to invest into shadow warehouses to increase the efficiency of their home delivery.

Two issues are already apparent from this overview. Firstly, players that offer home delivery are often pure online retailers that opt for central distribution centers – Le Shop (Switzerland), Freshdirect, Netgrocer, Peapod, EfoodDepot (all USA) and Ocado (UK). However, traditional retailers, like Tesco (UK) that offer home delivery are increasingly moving towards centralized shadow warehouses to benefit from higher picking and delivery efficiency. In fact, Asda (UK) is the only analyzed retailer that still offers home delivery out of their traditional stores. Secondly, when moving into the online business, traditional food retailers often chose to offer both – a click & collect service as well as a home delivery that is both executed out of their stores. However, retailers like Publix and Albertsons (both USA) have abandoned their home delivery service in favor of the curbside pick-up service from their stores in 2003 and 2009 respectively.

An overview of the four main business models with illustrative examples will be outlined below. This analysis also guides the process of identifying a promising online food retailing concept for the German market.

### **3.1 Shadow warehouse based click & collect service**

The shadow warehouse approach used by companies like Chronodrive, Leclerc and Système U has become very popular in France. While these players have already invested into warehouses throughout France, major traditional retailers like Intermarché and Carrefour are currently in a test phase. In Germany, the retailer Real has also initiated a test phase with only two markets. The basic idea of this drive-in concept is that consumers collect their groceries from a central warehouse while often not having to get out of their car during the process and thus making it a particularly time-saving shopping experience. In the case of Chronodrive, which is currently expanding to 32 outlets all over France, the whole pick-up process is completed within less than five minutes (Chronodrive, 2011).

Chronodrive, a sister company of the French hypermarket chain Auchan, has started its click & collect service in 2004. The retailer has achieved an annual turnover of €20 million in 2009 while it could already record 130,000 regular customers with an average of 40 sales items per purchase in 2010 (ResearchFarm, 2010; Soverinsky, 2010).

Chronodrive offers 8000 SKUs on their website and generally makes the shopping experience very convenient for consumers. Customers can access their saved shopping lists or a recipe

function that enables them to automatically add all required items for a meal to the shopping basket and thus contributes to a time-saving and user-friendly shopping experience. Furthermore, the ordering process is improved through the offer of an app through which consumers can access the full range of groceries on their smartphones. As the website and the app are synchronized, users can retrieve their saved shopping lists and previous purchases via the app as well. A connection to the internet is not needed until the moment of check-out so ordering is made possible whenever customers find a few spare minutes. The app function is promoted by Chronodrive by committing to decrease the usual minimum processing time between order and first possible pick up from 90 minutes to 30 minutes for mobile orders (Appbrain, 2010).

Orders can be retrieved from the outlets between 8:30 AM and 8:30 PM. Chronodrive offers this service for free and commits to a high standard of customer service as consumers do not even need to get out of their car during the pick-up process. Once they pull up at a terminal at the time of their chosen pick-up slot, they will dial in a code specific to their order and pay for their groceries in case they have not already done so online. At the same time, a sales assistant will transport the ordered products to the car and load them into the trunk. According to the website, the whole procedure is completed in less than five minutes (Chronodrive, 2011). Figure 2 provides an overview of Chronodrive's online retailing features and figure 3 illustrates the pros and cons of shadow warehouse based click & collect services.

**Chronodrive: Trend in France towards convenient shopping in >5 minutes without getting out of the car**



**Company profile**

- Sister company of French hypermarket chain Auchan
- Profit margin comparable to Auchan supermarkets ~ 3,3%
- 2009 turnover: €90mn

**Product and Supply Coverage**

- No limitations to grocery portfolio (7500SKUs)
- 32 warehouses across France to be expanded

**Consumer Experience**

- Order online or via app
- Payment online or at terminal
- Free pick up as soon as after 90 min./30 min. via app order
- Business hours: 8:30 AM – 8:30 PM

**Figure 2: Exemplary business model of French Chronodrive**

### High operational efficiency with customers bearing the main costs



Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>• <b>Efficiency</b></li> <li>• Store set-up for quick processing</li> <li>• Specifically trained staff</li> <li>• No interference with store customers</li> </ul>	<ul style="list-style-type: none"> <li>• <b>No prior personal contact</b></li> <li>• For marketing the service</li> <li>• For customer assistance</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Information</b></li> <li>• Clear website</li> <li>• (Product) Partnerships</li> <li>• <b>Technology</b></li> <li>• Automated assembly line for food picking</li> <li>• Automated check-out terminals</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Consumer uncertainty</b></li> <li>• Towards unknown products/brands</li> <li>• Towards perceived added value compared to home delivery</li> <li>• <b>Competition</b></li> <li>• Little distinction between high amount of pure online players</li> </ul>

**Likely to be most profitable business especially for new market entrants**

**Figure 3: Strategic profile of shadow warehouse based click & collect service**

## 3.2 Shadow warehouse based home delivery

Home delivery managed from a central distribution center is a very common approach for pure online retailers that have not already invested into traditional retail stores. The service is especially common in the USA with players like Peapod, Freshdirect, EfoodDepot and Netgrocer that have picked up their business as soon as in 1989 (Peapod).

The approach of a shadow warehouse based home delivery is also pursued in Europe, as for example by the leading Swiss online retailer LeShop. LeShop has started its operations in 1997 and was the first European online food retailer to break even after Tesco (UK) in 2006. LeShop reports an annual sales growth of 15% and a turnover of CHF 151 million in 2010 (LeShop Media Information, 2011). In 2003, LeShop has announced a strategic partnership with the Swiss company Migros with its approximately 6000 private label branded products, which can currently be found on the website of the online food retailer (LeShop History, 2011).

Coverage of 95% of the Swiss population is ensured through the delivery partnership with the Swiss postal service. Consumers can receive their groceries between 5 PM and 8 PM while an unbroken cooling chain is assured by transporting frozen/perishable goods in an airtight cooling box. With this approach, LeShop has the option to deliver to neighbors or to have the parcel be disposed at the doorstep in case of the customer's agreement. In conclusion, the customer focus can be regarded as very strong which, however, comes at a comparably high price. Depending on

the delivery time slots, consumers have to pay between CHF 7.90 – 15.90 and are charged extra fees if the cooling box is filled less than 75% (LeShop, 2011). Figure 4 provides an overview of LeShop's features, figure 5 illustrates the pros and cons of shadow warehouse based home delivery services.

### LeShop: Innovative technologies enable high quality delivery across Switzerland



#### Company profile

- Swiss leading online food retailer
- Sales growth rate of 15%
- 2010 turnover: CHF 151mn

#### Product and Supply Coverage

- Complete grocery portfolio
- Partnership with Migros (products & loyalty card)
- Supply for 95% of Swiss households covered by two distribution centers (Zurich & Lausanne)

#### Consumer Experience

- Order online or via app
- Next day through Swiss Postal Service for CHF 7,90 – 15,90
- Delivery hours: 17:00 – 20:00 PM
- Deposit on doorstep or with neighbor possible
- Extra fees if airtight cooler boxes not filled

Figure 4: Exemplary business model of Swiss LeShop

### Picking efficiency while high convenience for customers is ensured



Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>• <b>Efficiency</b> <ul style="list-style-type: none"> <li>• Store set-up for quick processing</li> <li>• Specifically trained staff</li> <li>• No interference with store customers</li> </ul> </li> <li>• <b>Customer Value</b> <ul style="list-style-type: none"> <li>• Most time-saving option for customers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>No prior personal contact</b> <ul style="list-style-type: none"> <li>• For marketing the service</li> <li>• For customer assistance</li> </ul> </li> <li>• <b>Delivery</b> <ul style="list-style-type: none"> <li>• Costs</li> <li>• Availability and duration of delivery slots</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Technology</b> <ul style="list-style-type: none"> <li>• Automated assembly line for food picking</li> <li>• SmartMile technology</li> </ul> </li> <li>• <b>Marketing</b> <ul style="list-style-type: none"> <li>• Customer carbon footprint</li> </ul> </li> <li>• <b>Delivery Policies</b> <ul style="list-style-type: none"> <li>• Incentives for efficient slot selection by customers</li> <li>• Doorstep/neighbor/parcel station policy</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Delivery</b> <ul style="list-style-type: none"> <li>• Demand peaks in evening hours</li> <li>• Deterrent effect of delivery fees</li> <li>• Maintaining unbroken cold chain</li> </ul> </li> <li>• <b>Competition</b> <ul style="list-style-type: none"> <li>• Little distinction between high amount of pure online players</li> </ul> </li> </ul>

Efficient business model to serve time-starved customers

Figure 5: Strategic profile of shadow warehouse based home delivery service

### 3.3 Store based home delivery

Traditional retailers entering the online business often chose the store based home delivery business model, which allows them to serve customers out of their established retail outlets. For example Asda (UK) only pursues this approach. Other traditional retailers, like Sainsbury's, Simplymarket (both UK), Colruyt and Delhaize (both Belgium) chose to offer the store based home delivery in addition to their click & collect service.

Asda has meanwhile also begun to invest into two shadow warehouses to increase their picking efficiency in 2009 and 2010 (Craven, 2010). Asda positions itself as a hard discounter in their online business as well. They are not only the second largest retailer in the UK, but also claim to be "Britain's lowest priced supermarket". Accordingly, the offered online service is not as convenient - a fact that is displayed in a lack of customer-friendly services like the doorstep/neighbor policy of LeShop (i.e. if the consumer is not at home during the agreed delivery slot the shipment is placed in front of the door or handed over to a neighbor).

#### Asda: Taking the discounter business model online and striving for higher efficiency by testing ghost stores



##### Company profile

- Subsidiary of Wal-Mart
- Britain's lowest priced supermarket
- 2009 turnover: £900mn

##### Product and Supply Coverage

- Complete grocery portfolio
- Store based home delivery with reach of 95% of UK households (reach expanded by two ghost stores)

##### Consumer Experience

- Cheap 8 hour slots available
- Next day deliveries via own fleet between 7AM and 10PM
- Delivery slots bookable 3 weeks in advance
- No „doorstep or neighbor“ policy

Figure 6: Exemplary business model of UK retailer Asda

Accessing the retailer's website, consumers will be faced with an aggressive communication of promotions, special deals and weekly offers. Prices are guaranteed to be at least 10% lower than usual retail prices and additional money can be saved by agreeing to eight hour delivery slots that only cost the consumer a service fee of £2.50.

The discounter model seems to be working quite successfully online as well and annual online grocery sales of Asda have reached £900 million in comparison to the turnover of the market

leader Tesco of approximately £1.1 billion (Craven, 2010). Figure 6 provides an overview of Asda's features and figure 7 illustrates the pros and cons of the store based home delivery service.

### No efficient picking system and additional transportation costs for store based home delivery

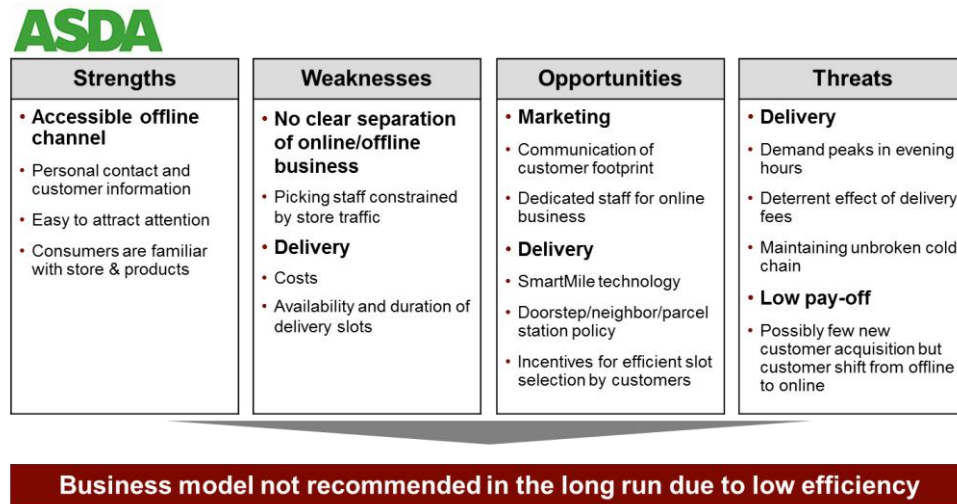


Figure 7: Strategic profile of the store based home delivery service

### 3.4 Store based click & collect service

This business model offers consumers to pick up their pre-packed groceries from traditional retailer outlets (figure 8). Just like Publix, the retailer Albertson's (both USA) has abandoned its store based home delivery service and solely focuses on the pick-up service. As a store based model, consumers can order all SKUs offered in the respective Albertson's retail outlet and may retrieve their groceries on the same day as long as the order is placed before 10AM.

The service is not as convenient as modeled by the retailer Chronodrive in France, as online consumers will not find designated parking areas in every participating outlet and additionally need to collect their bags from a service desk within the supermarket. Also, the service costs \$5.95 per transaction (\$7.99 at Publix) and is thus as expensive as the home delivery service of competitors like EfoodDepot that often even offer free deliveries after a certain threshold for the online order has been reached. Figure 9 provides an overview of the strategic profile of the store based click & collect service.



## Albertson: Focus on pick-up service after demise of home delivery



### Company profile

- Operated by US grocer SuperValu since 2006\*
- End of home delivery service in 2009
- Frequently closing stores in all states during the 2000s

### Product and Supply Coverage

- Complete grocery portfolio (25 000 SKUs)
- 450 stores in nine states (Northwest & West Coast of USA)

### Consumer Experience

- Order & payment online
- 2 hour pick up slots
- Same day pick up possible (orders before 10AM)
- Service fee: 5,95\$
- Pick up from customer service desk

Figure 8: Exemplary business model of US retailer Albertsons'

## The business model may be easily implemented by traditional food retailers



Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>• Accessible offline channel</li> <li>• Personal contact and customer information</li> <li>• Easy to attract attention</li> </ul>	<ul style="list-style-type: none"> <li>• No clear separation of online/offline business</li> <li>• Picking staff constrained by store traffic</li> <li>• Shopping experiences of online/offline consumers interfere</li> </ul>	<ul style="list-style-type: none"> <li>• Consumer's familiarity</li> <li>• With products &amp; store</li> <li>• Clear separation</li> <li>• Dedicated staff/infrastructure for online business</li> </ul>	<ul style="list-style-type: none"> <li>• Low pay-off</li> <li>• Consumers possibly reluctant to pay premium for service</li> <li>• Possibly few new customer acquisition but customer shift from offline to online</li> <li>• Competition</li> <li>• Low barriers-to-entry for established grocers</li> </ul>

No sustainable competitive advantage due to imitation by incumbents

Figure 9: Strategic profile of the store based click & collect service

## **4 Empirical Study on German Consumer Attitudes towards Online Retailing**

Germany is one of the largest and one of the most competitive retail markets worldwide. While there is a healthy competition among traditional brick-and-mortar retailers (supermarkets and hard discount alike) a major competitive impact of online-food retailing does not exist to this point.

### **4.1 Methodology and goal of the study**

The overall goal of the empirical part of this study was to gain insight in consumer behavior and attitudes towards online food retailing. More concrete they were narrowed down to three main objectives and one potential target. The first one was to assess which customer-groups are most likely to buy groceries online. Questions were raised on past online food retailing experience and reasons for their (lack of) experience in order to assess main advantages and obstacles to online food retailing. Several parameters were included in the survey to assess possible differences in consumer behavior such as age, gender, availability of a car, education-level, income-level, household size and weekly budget.

The second objective was to assess the potential for different business models. Questions raised to consumers were their attitudes towards three different delivery solutions and their willingness to pay for them.

The third goal was considering possible correlations between online food retailing and general online retailing. Questions regarding normal experience and products bought online were therefore added in order to compare the two.

In addition, parameters regarding income, willingness to pay and household shopping budget could possibly help to assess the potential market size for online food retailing.

The survey was designed not to take more than five minutes to complete to increase response likelihood (Bhaskaran, 2010). It was conducted online and offline simultaneously for three weeks in May-June 2011. A convenience sampling approach was used in both settings, offline and online. Additionally, expert interviews with senior retail executives were conducted to validate and discuss findings.



## 4.2 Sample Description

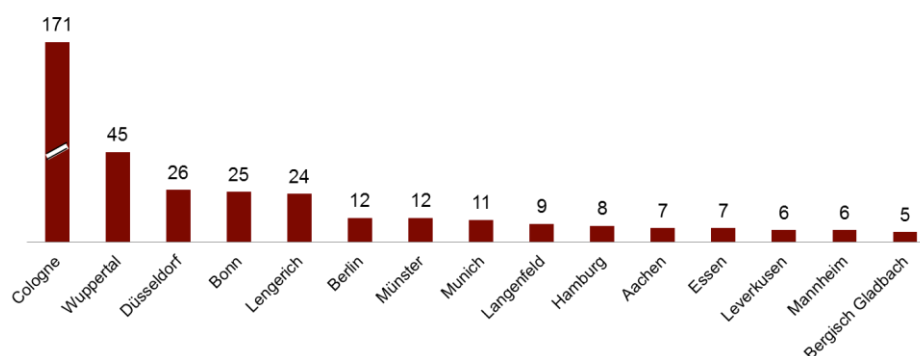
In total, 350 answers were collected online, 327 responses were collected offline. There was an almost perfect distribution between men and women with 48.4% female and 51.6% male respondents. The age groups were less evenly distributed with 64% under the age of 34. However, the other groups had between 30 and 87 respondents which made it possible to analyze their preferences with a fairly accurate degree. As already mentioned, there was a high degree of individuals with a university background (i.e. university graduates, students, or others who aim at a university degree) reaching almost 75%. Another 20% had either vocational college or lower degrees, while those with no degree at all only represented 5% and were therefore difficult to assess.

Considering geographical reach, answers from 125 cities in Germany were collected, with a majority from Cologne and North Rhine-Westphalia. A wide majority of respondents were from cities with a larger population making it difficult to assess differences between rural and urban areas. Lower income-groups also dominated the responses with little under 50% making €1500 or less per month. However, all groups were well represented with between 7.5% and 18.3% of the total answers. In addition, more than 15% chose not to answer this question, reflecting the many who do not feel comfortable revealing this type of information.

### Survey covered at least 125 cities and communities in Germany with ~55% of answers coming from 15 cities

#### Fifteen largest cities covered by survey

% of survey respondents



Geographical coverage of Germany considered successful as at least 125 cities and small communities were reached by the survey

**Figure 10: Geographical origins of respondents**

### **4.3 General shopping habits and preferences**

#### **Online retail experience**

The overall online shopping experience (independent from online-food shopping) was dominated by three groups. 36% indicated to shop every month, 32% 1-6 times a year and 18% a couple of times a month. The two other groups, those who shop every week and those who never or hardly ever shop online, only represented 4-5% each. In other words, for the most part, the attracted target groups are experienced online shoppers. The same conclusion can be made considering the products bought online. As many as 90% have bought books while between 60 and 75% have bought electronics, movie tickets, travel tickets and cloth. Sport articles, bank products, music and DVDs are somewhere in between with 25-49%. Only 2.2% have bought fresh groceries online while 8.2% have experience with durable foods. In the graph below, the difference between male and female shopping habits is also possible to subtract.

#### **Online food shopping experience**

Considering the reasons why consumers had bought online, more than 50% ranked home delivery as an important reason. Although it was not listed as an option, the second most popular category was unique online products which almost 40% listed under the “other” category. Curiosity with 36% and saving time with 30% were two other major reasons listed. Only 17% listed cheaper price and 10% marked that they had been attracted by a promotion.

However, most of the consumers had no experience with online food retailing and more than 73% of them said that they were satisfied with traditional grocery shopping opportunities. Two other major reasons were that they were unable to see and feel the products (70%) and that the product quality was uncertain (62%). 22% were concerned about the lack of personal contact while 11% questioned the customer service after they buy the products. Only 5% were concerned with online security while 6% said that they did not know how to shop online. Finally 9% did not recognize any online food retail solution in their city.

#### **Weekly grocery shopping**

42% buy groceries for themselves while 32% do so for two individuals. 16% shop for more than two while 10% of the respondents do not carry out the grocery shopping on their own. Slightly fewer than 60% of these respondents shop for €79 or less per week while 34% uses between €80 and €159, while only 7% uses more than €160. Given a large group of students and younger individuals represented in the study these numbers are reasonable. It was also interesting to note

that 80% use more than €40 a week considering what would be profitable for online retailers to target. The question added regarding a disposable car for grocery shopping gave about 43% with and 41% without while 20% had a car from time to time.

## **5 Major findings and implications**

The main results of the empirical survey can be grouped into 7 major factors that correspond to three main groups. While the findings are especially focused on the German market, the results seem to be applicable for most other Western markets.

The first section is labeled ‘Customer Characteristics’. This part examines which kind of customers are most likely to buy online, points out their relation to regular online retailing, consumers’ willingness to pay for online solutions and gives reasons why consumers are reluctant to buy groceries online.

The second cluster discusses then ‘Operational Findings’. The efficiency and demand for different operational approaches including service model and picking systems are analyzed.

The last section is on derived ‘Success Factors’ which explain what an online retailer would have to address and overcome in order to enter the online grocery market successfully. It includes factors of awareness among consumers, a unique selling proposition and finally why mistakes in the online retailing often are unforgivable to the consumers.

### **5.1 Customer characteristics**

#### **5.1.1 Shoppers are happy with the status quo**

One major obstacle is quite simply that fact that customers are happy with how they get their groceries now. Seventy-three percent of respondents say they do not buy groceries online because they are satisfied with the usual shopping opportunities and cannot see the added value of online food shopping compared with traditional supermarkets.

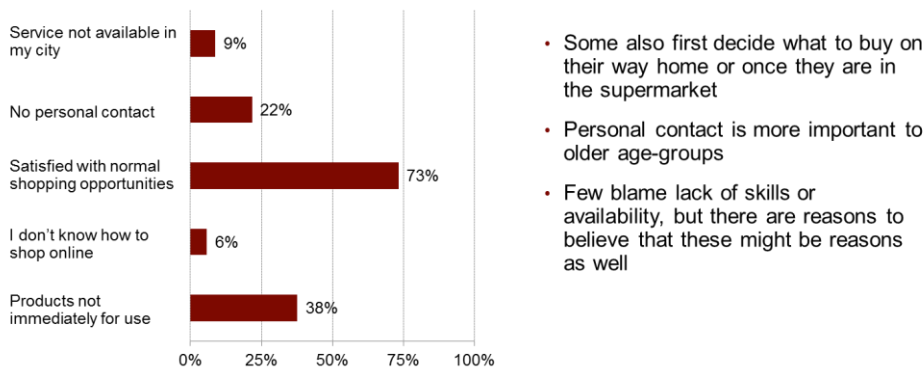
In addition, some people do not decide what to buy until they are on their way home from work or even in the supermarket, so online food purchasing is not an option for them. For many older consumers, personal contact is important. Only a few respondents blamed a lack of skills or availability for not shopping online, but these could also be underlying factors. Additionally the

competition in the German retail market can rather be characterized as price-based than service-oriented. That means the competitive landscape in Germany would not allow any high surcharges. All these arguments underline the importance of teaching and convincing customers regarding online food grocery.

### **Most consumers are satisfied with usual shopping opportunities**

#### **Other reasons why people don't buy groceries online**

% of survey respondents



**Figure 11: Additional reasons why people do not buy groceries online**

### **5.1.2 Willingness to buy online food services**

Our survey finds that frequent online shoppers are more likely to try buying groceries online. Almost one-third of those who have bought groceries online are weekly online shoppers. Overall, however, even among the most ardent online shoppers, online grocery has not gained steam. Fewer than 10 percent of shoppers we surveyed say they have bought non-perishable groceries online, and only 2 percent have bought fresh food online. While 60 percent of respondents say they shop online at least once a month, only 1 percent buy groceries online every month. Not surprisingly, younger age groups show a higher willingness than older groups to buy groceries online. Busy young professionals who value the opportunity to save time are the main target group in online groceries. Young mothers seeking to avoid traditional supermarkets are also of interest. In general, experts agree that the customer base will widen with the Internet-savvy generation (figure 12).

While some consumers happily accept home delivery charges, most are not willing to pay for just the assembly of the order. Sixty percent of respondents say they would pay between €1 and €5 (\$1.30 and \$6.50) for home delivery, and 17 percent stated they would pay up to €10 (\$13).

On the other hand, few are willing to pay extra when they pick up, either at warehouse or supermarkets (figure 13).

## Young professionals are more likely to use online grocery shopping services

### Target group

- Young people show a higher willingness to buy groceries online regarding all service models
- People over 65 show almost no trust in online services
- Experts declare very busy young professionals who focus on time savings as their main target group
- Also young mothers who try to avoid stressful shopping experiences in traditional supermarkets are of interest
- A broader customer base will grow with the internet-savvy generation

Willingness to buy shelf groceries online  
% of different age groups

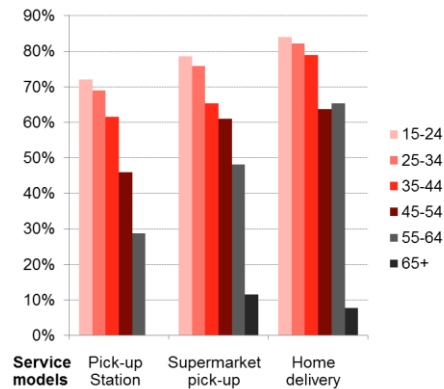


Figure 12: Willingness of different age groups to buy shelf groceries online

## More than 75% are willing to pay for home delivery services

### Willingness to pay for online services

- 60% of the people are willing to pay for home delivery between 1-5€ and 17% even an amount of 6-10€
- Consumers only show a marginal willingness to pay for pick-up services
- People do not distinguish between the two different pick-up options
- Experts state that the German retail market is not used to pick-up services
- Inexpensive pick-up services are offered to gain first experiences with selling groceries online

Willingness to pay for different services  
% of survey respondents

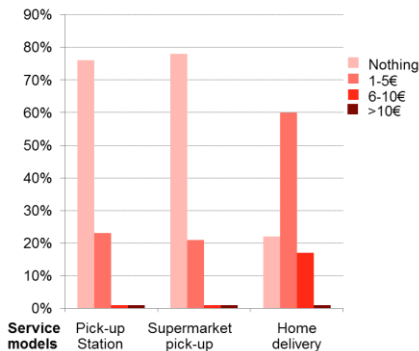


Figure 13: Willingness to pay for different services

## **5.2 Operations**

### **5.2.1 Choose the right Service model**

#### **Customer perspective: preferences for different business models**

##### **Pick up station**

Generally between 60% and 67% were willing to buy shelf groceries, beverages, hygiene articles and household products from a pick-up station. Between 24% and 29% were unwilling while between 13% and 9% were uncertain. The fresh category stands out with only 9% willing to buy and as much as 73% unwilling. The uncertainty is also highest for this category with more than 18%. In total, 76% are not willing to pay for this option, while 23% are willing to pay between €1-5. Less than 1.5% of the respondents is willing to pay €6 or more.

##### **Pick up in supermarket**

Between 67% and 70% are willing to pick up non-fresh categories from supermarkets while between 24% and 26% are not willing to do so. Between 7% and 8% are still uncertain. The in supermarket pick-up has the highest trust for fresh groceries with as much as 47% willing to buy this category. Still, 39% do not wish to buy while 15% are uncertain. The willingness to pay is slightly lower than for a pick-up station, but generally the two solutions are comparable. 78% are unwilling to pay, 21% are willing to pay between €1-5 while slightly more than 1.5% of respondents are willing to pay more than €6.

##### **Home delivery**

Home delivery is the clear preferred delivery solution for four out of five categories with between 76% and 82% willing to buy. The non-food articles are more popular than the shelf-groceries. Between 16% and 11% do not wish to buy these categories from a home delivery while between 7% and 9% are uncertain. Consumers are less willing to buy fresh groceries with only 35% answering yes. 48% are not willing, while 17% are uncertain. A home delivery solution also stands out in terms of willingness to pay. Only 22% are not willing to pay, while 60% are willing to pay between €1-5, 17% - €6-10 and almost 1.5% - more than €10.

### Uncertainty about the product quality plays a very important role for the consumer

#### Products bought online according to delivery mode

% of survey respondents

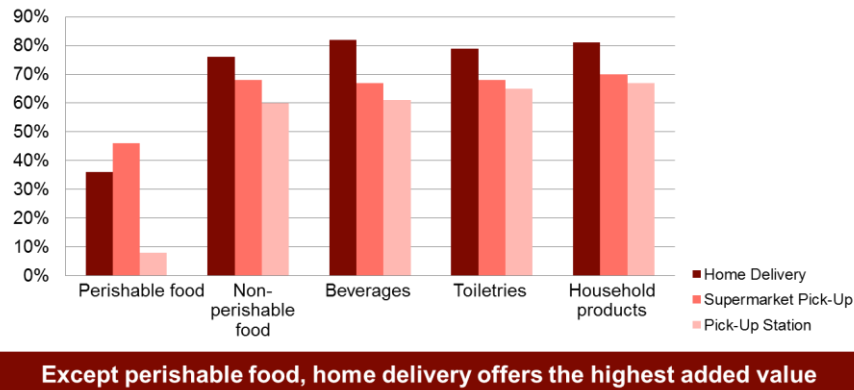


Figure 14: Willingness to buy different product categories from different channels

#### Company perspective: selecting the most promising approach

Looking for the best delivery approaches with regard to the German online food retailing market, home delivery and supermarket pick-up services are the two most promising service models. 51% of the respondents who already bought food online did so because of the home delivery service. This underlines that home delivery provides the highest added value to the customer and probably makes it the dominant service model in future. Home delivery requires preparing for the challenges; the supply chain for online food retail is completely different than that of non-food online retail. Each order consists of multiple products, some that may require cooling, and the accuracy and quality of delivery is more important. The decision comes down to offering both dry and packaged goods and fresh and perishable food, or a limited selection.

However, both the survey and the expert interviews show that time savings are important reasons for buying food online as well. Pickup service might also alleviate shoppers' hesitation in buying fresh food online, as they can check the quality before leaving the collection point. However, to date, most customers appear to have little interest in picking stations. Many seem to associate pickup stations with inferior service, or are afraid that they can neither inspect the products nor, in the event of a problem, address it directly (figure 15).

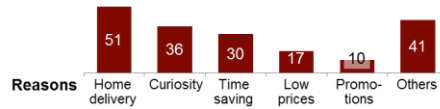
## Home delivery and supermarket pick-up are the two most promising service models

### Service model

- 51% of the respondents who already bought food online did so because of the home delivery service
- Experts mention time savings as the main reason for using a pick-up service
- Supermarket pick-up service helps to overcome missing trust in buying fresh food online
- Especially concerning fresh food, customers refuse to use the pick-up station service
- Pick-up stations are not of great interest for the customer

### Reasons for buying groceries online

% of respondents group who already bought food online



### Willingness to buy fresh food online

% of respondents group

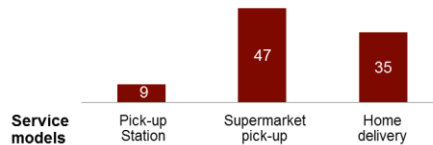


Figure 15: Reasons why people already bought groceries online (in % of respondents)

## 5.2.2 Adopt the right picking approach

While pure online players use semi-automated shadow warehouses to pick groceries for customers, some traditional retailers also run store picking systems. In comparison with the rather simple store picking operations of some traditional retailers, shadow warehouses provide a much higher degree of efficiency – almost triple that of stores (figure 16).

## Highly automated shadow warehouses require high investments but provide the best picking efficiency

### Picking approach

- Two different picking approaches exist within the current online food retail market
- Pure online players use semi-automated shadow warehouses while traditional retailers also run store picking systems
- Shadow warehouses are located close to urban areas since they require a high utilization to be efficient
- Traditional food retailers often start with store picking systems to keep investments low and build more efficient shadow warehouses when the market is growing

### Comparison of picking costs

Average costs for assembling an order

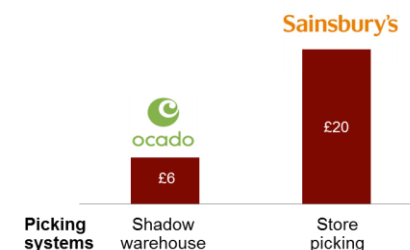


Figure 16: Average costs for assembling one order



The existing shadow warehouses are mainly located close to urban areas, since they require a high utilization to be efficient. Traditional food retailers often simply start with store picking systems to keep investments low; they build more efficient shadow warehouses when the market is growing. Once again, these findings show the trade-off between saving high upfront investments and efficiency that can create benefits down the road.

## 5.3 Strategic factors

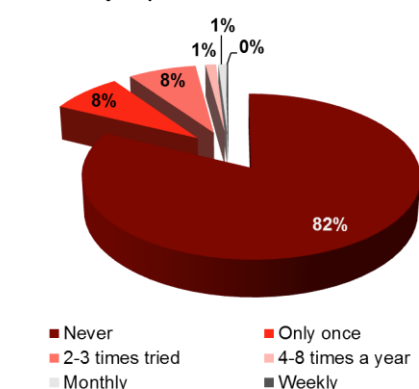
### 5.3.1 Raise Awareness

One striking finding from the survey is the overall low experience and awareness of online food retailing among German consumers (figure 17).

#### **82% of tested German consumers have no experience with online food retailing**

##### **Online Food Retailing awareness**

% of survey respondents



- Most of those who have experience have most likely only bought special products and not a full range of products"
- Online food retailers have limited visibility among consumers
- Experts point out that massive marketing is needed to make customers buy their weekly shopping cart online
- In the survey, respondents between age 35-44 showed to be most experienced with online food retailing

**Figure 17: Online Food Retailing Awareness**

82% of the respondents had no experience with online food retailing, and only 1% bought groceries online monthly or more often. There was also a large number of people who were not even aware that such a service existed as demonstrated on the following example of a response: "I did not even know that there was such a thing" The visibility of many online stores is not yet pronounced -- in order to find many of the stores almost their complete and exact name has to be entered in major search engines. The German retailers Rewe and Real, both very well-known players in the market and with running pilots in online food retailing were two good examples of sites that were very difficult to find. It also seems that many of those who have experience with

online food retailing, have so with a selected few products that they have bought online because they were cheaper, difficult to find elsewhere or more convenient to be shipped than having them transport by yourself. One of the experts commented on that these are easier to target customers, but that there is a massive marketing and communication need in order to have the same customers consider buying all or most of their weekly groceries online.

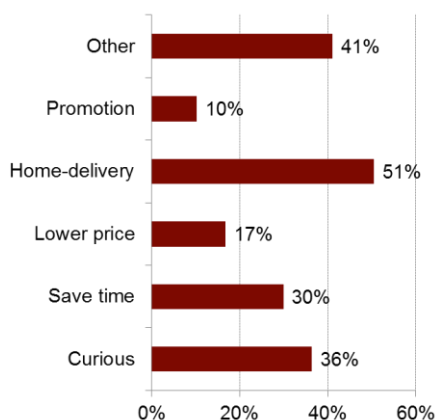
### 5.3.2 Unique selling proposition

Any successful business normally differentiates itself from competitors or substitutes through a unique selling proposition. For online food retailing this gets even more important since customer still have to be educated about the benefits of online food retailing (figure 18).

#### **Unique products are almost as important as a unique service proposition for online food retailing**

##### **Unique selling proposition**

% of survey respondents



- More than 50% of those who bought online ranked home-delivery as an important reason
- 80% are willing to buy 4 out of 5 food categories home-delivered
- Online players say that time-savers is their core target group
- Almost all included in the “other” category said that they bought online due to unique online products
- Experts high-light that it is not only because of a unique service that people buy online, it is often also unique products

**Figure 18: USP for online food retailing**

With online retailing, most would assume that this USP would be the time saved when the groceries are either home-delivered or ready for pick-up at a station or in a store. Results from the survey also show that both home delivery and time saving are important reasons highlighted by respectively 51% and 30% of the respondents who had already bought groceries online. Current online players also stress that they target customers with time constraints. The part that is more surprising is that many also reason their online grocery experience with unique online products. Although it was not an alternative among reasons why customers had bought online, almost 40% market this under the “other” category. It is also an important way of adding additional value to consumers and a way of attracting new customers.

### 5.3.3 Make no mistakes

Finally, consumers do not forgive mistakes made by online food retailers. Since –as mentioned earlier– more than 70 percent of respondents say they are satisfied with traditional food retailing, online shopping must offer additional value while also upholding (or surpassing) traditional shopping standards. Since products cannot be seen directly or touched and shoppers cannot be certain about the quality of the delivered products they do not want the inconvenience of seeking a refund for defective goods. Experts point out that consumers do not forgive mistakes made at least the first 1-4 times they buy online because of their lack of trust and skepticism to new retail channels. But this is not a unique problem in Germany, as also research on other markets shows that customer retention is one of the greatest challenges for online retailers. If online food retailing wishes to retain their customers and attract new once, keeping mistakes at a minimum is imperative (figure 19). In the survey, those who had experience with online food retailing were also asked to assess different parts of their online experience. Between 40%-64% saw room for improvement which underlines the existing need for optimization of current approaches.

#### **Consumers do not forgive mistakes made by online food retailers**

##### **Unforgivable mistakes**

- Most of those who have tried online food retailing, only did so a few times
- There is much room for improvement for online customers
- The current online food retail market in Germany is a mess
- Experts point out that consumers do not forgive mistakes in delivering, at least the first 3-4 times
- Research also show great customer retention challenges



**Figure 19: Unforgivable Mistakes**

## **6 Perspectives on the future of German online food retailing market**

At the current point of time, the German online food retail market is in an early development phase. This is demonstrated by its current share of the total grocery retail market (currently ~0.2%) and by the number of existing market players as well as the limited success and quality of their services.

The question remains how successful could even a best practice operation become and – more importantly from a market perspective – would such an offering prove to be a financial success for the involved players?

Currently, no player in the German market is able to provide such a service without further investments in infrastructure (mainly new/upgraded warehouse operations), software, marketing and other investments, while also facing potentially higher operating costs mainly due to additional picking operations and final customer delivery. These investments naturally come with a high risk due to existing market uncertainties.

While the initial investment is high for pure online players (new operations, marketing investment), also traditional players are in need of investment to access the market. The study demonstrated that consumer interest for well-designed online-food solutions exists with clear preference for the home delivery option and that people would be willing to pay an extra fee for this extra service.

Who would be willing to invest? If we differentiate between pure online (new players) and existing retailers (supermarket and discount), we believe that pure online players will find it particular hard to access the market on a broad scale. Due to the heavy price competition in the German retail market as well as the additional start-up cost, we do not expect pure online players to play any significant role in the market over the next five years. More likely they will operate as niche players in large metropolitan areas working together with Logistics / shopping partners (e.g. Amazon to broaden their customer base) to provide home delivery service. Their service offerings will most likely consist of a relatively small assortment of premium Fresh products for people who are less price-sensitive. Examples of such services already exist, without any relevance for the market. These players must try to build-up critical mass however to create higher economies of scale both in transportation as well as in their sourcing and operations.

Traditional retailers have to ask themselves if they see any benefits from being a pioneer for online-food retailing in the German market or not. We expect to see players that are under

competitive pressure as more responsive to be willing to invest in such a differentiation strategy with online-food retailing than market leaders due to the involved risk. Thus a traditional supermarket player might respond to competitive pressure from the hard-discount through that increased service offering that could also mean an increase in customer perception for innovation of that particular retailer as such. However, if a competitor or a new entrant enters on a larger scale, it is likely that others will also follow. Hence, current traditional retailers have to decide between staying “traditional” and risking losing market shares in the long-term or access a potentially future promising market. We expect to see much more serious commitments from traditional retailers than today’s half-hearted, small scale regional pilots within the next two years.

For the next 3-5 years online food retailing will however still remain a niche segment that nevertheless serves as an innovation channel. We expect only a minor share of shoppers to use the service on a regular base. The most positive projection from the interviewed experts in 5 years for the German market is a 2-3% market share. Given the current market set-up and the time needed to build-up significant scale as well as our expectation about strategic moves in the market, we expect a more modest increase to a maximum of 1.5% of the total grocery market representing ~€1.5 bn in 2016 without accounting for inflation, from only €200 m (0.2% of total market) in 2011 representing a CAGR of 38%. The profitability in this segment is expected to reach a maximum of the current margins in food retailing (around 3%) also due to high investments and operating costs.

Although the online-food market would then represent only a fairly low share compared to the UK market with currently 3.8%, and remain a low margin business, we expect it to become a new channel that has to be taken seriously and thus should play an important role on CXO agendas’ in a strive to further differentiate.

Sections	Parameters	Pure Online Retailer	Traditional Retailer
<b>Business model/ architecture</b>	Distinct options	<ul style="list-style-type: none"> <li>- Home delivery solution</li> </ul> <p><i>Motivation:</i> Home delivery as an important reason for a large number of customers to buy online</p>	<ul style="list-style-type: none"> <li>- In store pick-up solution</li> </ul> <p><i>Motivation:</i> lower investment and easier process of building up trust among customers.</p>
	Target group	<ul style="list-style-type: none"> <li>- Age-groups between 25-44</li> </ul>	<ul style="list-style-type: none"> <li>- Older people, even if it would be more relaxing for them to buy online</li> </ul>
	Assortment and prices	<ul style="list-style-type: none"> <li>- Unique products</li> <li>- Prices should not be higher than in supermarkets to offer the customers an additional value for buying online</li> </ul>	<ul style="list-style-type: none"> <li>- Normal store variety</li> <li>- Different assortment according to local preferences</li> </ul>
	Geographical reach	<ul style="list-style-type: none"> <li>- Own fleet in major city areas, where the clients are willing to buy online and even pay for this service</li> <li>- Postal Service only if proper knowledge and training. This way the retailer can reach a larger crowd of people.</li> </ul>	<ul style="list-style-type: none"> <li>- In store pick-up is more flexible to local demand</li> <li>- Start home delivery in major city areas</li> </ul>
	Delivery/ Pick up fee	<ul style="list-style-type: none"> <li>- Flat-rate delivery cost for a certain period of time to simplify logistic processes because the customers group their orders</li> </ul>	<ul style="list-style-type: none"> <li>- Pick-up solution for free, to aim for a unique selling proposition in contrast to other stores</li> </ul>
<b>Recommendations for operations</b>	Picking system	<ul style="list-style-type: none"> <li>- Centralized shadow warehouses to ease the organization of selling</li> <li>- Install technology-enhanced picking</li> <li>- Only best quality</li> </ul>	<ul style="list-style-type: none"> <li>- Existing stores to avoid additional investment</li> <li>- Use tablet computers to minimize the shopping time</li> <li>- Consider distraction of store visitors</li> </ul>
	Delivery service	<ul style="list-style-type: none"> <li>- Delivery trucks with different temperature zones</li> <li>- Route-planning software to lower costs</li> <li>- Incentivize customers to reduce demand peaks in delivery time slots</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure minimum waiting time</li> <li>- Provide designated parking areas</li> <li>- Offer possibilities to carry the order</li> </ul>
	Customer service	<ul style="list-style-type: none"> <li>- Complaint handling</li> <li>- Give customized and immediate replies to compensate missing contact</li> <li>- Order tracking</li> <li>- Various payment options</li> </ul> <p><i>Motivation:</i> Offering an additional value for the clients</p>	

<b>Rec. for marketing and communication</b>	Awareness creation	<ul style="list-style-type: none"> <li>- Mutual crosslinking</li> <li>- Trigger mouth-to-mouth communication</li> <li>- Online advertisement</li> </ul> <p><i>Motivation:</i> Improving the awareness of buying online</p>	<ul style="list-style-type: none"> <li>- Heavy-in-store marketing</li> <li>- Online advertisement</li> </ul> <p><i>Motivation:</i> Improving the awareness of especially this shop</p>
	Uncertainty and incentives	<ul style="list-style-type: none"> <li>- Transparency of price, value and origin</li> <li>- Incentivizing deals</li> </ul>	
	Customer retention	<ul style="list-style-type: none"> <li>- Satisfaction questionnaires to evaluate the customer's needs</li> <li>- Establish loyalty scheme</li> </ul>	
<b>Recommendations for the website</b>	Clear interface	<ul style="list-style-type: none"> <li>- Easy-to-follow processes for registration of new customers</li> <li>- Clear terms and conditions</li> </ul>	<ul style="list-style-type: none"> <li>- Clear terms and conditions</li> </ul>
	Information availability	<ul style="list-style-type: none"> <li>- Product information</li> <li>- Pictures</li> <li>- Ratings</li> <li>- Appealing and intuitive design</li> </ul>	<ul style="list-style-type: none"> <li>- See left row, but less important for the success of the company than for online retailers</li> </ul>
	Enhanced functionality	<ul style="list-style-type: none"> <li>- Ensure flexibility in the process of ordering</li> <li>- Recipe search/ability to create a shopping list</li> <li>- Promotional activities</li> </ul>	
	Trust creation and customer feedback	<ul style="list-style-type: none"> <li>- Proactive Management of testing and opinion leader websites</li> <li>- Collect customer feedback</li> <li>- Social Media</li> </ul>	

**Figure 20: Exemplary Management Implications for Retailers**

## References

- Appbrain (2010). *Chronodrive*. Retrieved July 4, 2011, from <http://de.appbrain.com/app/chronodrive/com.ikomobi.chronodrive>
- A.T. Kearney Research (2011). *A.T. Kearney Business Project Kick-Off Presentation SS2011*.
- Bhaskaran, V. (2010). How to effectively conduct an online survey. *Survey Analytics LLC*. Retrieved May 2, 2011, from <http://www.QuestionPro.com>
- Chronodrive. (2011). *Chronodrive website*. Retrieved July 20, 2011, from <http://www.chronodrive.com>
- Craven, N. (August 1, 2010). *Tesco and Asda to launch 'ghost stores' in Ocado attack*. Retrieved June 22, 2011, from <http://www.dailymail.co.uk/money/article-1299245/Tesco-Asda-launch-ghost-stores-Ocado-attack.html>.
- LeShop (2011). *Grosseinkauf via mobiles Web: Rekordumsatz und volle Warenkörbe*. Retrieved July 27, 2011, from <http://info.leshop.ch/php/BusinessLeShop.php?LeShopMenuId=159&lge=de>
- LeShop History (2011). Retrieved July 4, 2011, from <http://info.leshop.ch/php/BusinessLeShop.php?LeShopMenuId=14&lge=uk>
- ResearchFarm (2010). *Online Grocery Retailing in the EU and the US 2011*. Research Farm Retail Analysts Report (October, 2010).
- Soverinsky, J. (2010). French Twist. *NACS magazine*, 59 – 61.
- The Telegraph (2009). Retrieved March 5, 2012, from <http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/5183416/Online-shopping-soars-in-popularity-as-Brits-avoid-supermarket-hassle.html>



**Working Papers by the Department of Business Policy and Logistics, edited by Prof. Dr. Dr. h.c. Werner Delfmann**

*Further issues of this series:*

- No. 103: Natalia Nikolova, Markus Reihlen, Konstantin Stoyanov:  
Kooperationen von Managementberatungsunternehmen. Cologne 2001, 50 pages.
- No. 104: Caroline Heuermann:  
Internationalisierung und Logistikstrategie, Cologne 2001, 101 pages.
- No. 105: Benjamin Lüpschen:  
Kostendegressionspotenziale in Logistiksystemen, Cologne 2004, 109 pages.
- No. 106: Sascha Albers, Caroline Heuermann, Benjamin Koch:  
International Market Entry Strategies of EU and Asia-Pacific Low Fare Airlines.  
Cologne 2009, 33 pages.
- No. 107: Robert Malina, Sascha Albers, Nathalie Kroll:  
Airport incentive programs – A European perspective. Cologne 2011, 23 pages.

*The working papers are available online ([www.spl.uni-koeln.de](http://www.spl.uni-koeln.de)).*



Department of Business Policy and Logistics  
Prof. Dr. Dr. h.c. Werner Delfmann  
University of Cologne  
Albertus-Magnus-Platz  
D-50923 Cologne, Germany  
[spl@wiso.uni-koeln.de](mailto:spl@wiso.uni-koeln.de)  
[www.spl.uni-koeln.de](http://www.spl.uni-koeln.de)  
Phone: +49-221-470-3951  
Fax: +49-221-470-5007