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Analysis of the Potential of Virtual Stores for German Online Grocery Retailing

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Abstract

Research Problem – The effects of digitalization had a huge impact on people's everyday life. With increased use of internet, E-Commerce became hugely popular and pressurized classic brick and mortar retailers. However, the grocery market is one of the few markets without a remarkable share of online sales. Recently various players entered the small but promising market. Still, it is not foreseeable which player and which kind of sales approach will prevail and retailers are searching for innovative, business approaches that help customers to find their way into online grocery shops. Tesco carried out one propitious sales approach – they established Virtual Stores in Metro Stations where commuters could shop for their groceries on their way to work including a convenient delivery after finishing time.

Purpose of the Study – This dissertation strives to identify the potential of Tesco's Virtual Stores approach for commercial uses in German online and mobile grocery retailing and determines if there is an adequate target group, which is likely to use Virtual Stores to do their everyday grocery shopping. In addition, another aim is to understand the motivation of consumers to use Virtual Stores and to develop a model in order to predict their behaviour.

Design/Methodology/Approach – A quantitative baseline study (n=259) is stating the basis of the present study, in order to test the research hypothesis grounded on a literature review of secondary research. Descriptive, bivariate and multivariate analysis have been accomplished to infer meaningful results.

Findings/Implications – There is a high number of potential Virtual Stores users among the respondents. Their Behavioural Intention to use Virtual Stores can be measured by their perception of the performance of Virtual Stores, the degree to which they think shopping with Virtual Stores is fun, the degree to which they perceive online grocery shopping is common, their personal openness towards new information technology and their involvement concerning grocery shopping.

Key Words – E-Commerce; M-Commerce; QR-Codes; Virtual Stores; Online Grocery Shopping; Mobile Grocery Shopping, German Grocery Market.

Portuguese Abstract

Research Problem – Os efeitos da digitalização tiveram um enorme impacto na vida quotidiana das pessoas. Com o aumento da utilização da Internet, E-Commerce tornou-se imensamente popular e colocou os retailers sob pressão. No entanto, o mercado de mercearia é um dos poucos mercados sem uma parte considerável de vendas on-line. Recentemente vários competidores entraram neste mercado pequeno, mas promissor. Ainda assim, não é previsível que concorrente e que tipo de abordagem de vendas vai prevalecer e os retailers estão a procurar abordagens de negócios inovadoras, que ajudem os clientes a encontrar o seu caminho em mercearias on-line. Tesco realizou uma abordagem de vendas propícia - eles estabeleceram lojas virtuais em estações de metro, onde os passageiros poderiam fazer as compras dos seus mantimentos no seu caminho para o trabalho, incluindo a conveniente entrega após o seu fim.

Objetivo do estudo – Esta dissertação procura identificar o potencial da abordagem das Lojas Virtuais da Tesco, para usos comerciais no retail online e móvel Alemão; e determinar se existe um grupo-alvo adequado, que seja provável de usar lojas virtuais para fazer suas compras de supermercado do quotidiano. Além disso, outro objetivo é entender a motivação do consumidor para usar lojas virtuais e desenvolver um modelo para prever seu comportamento.

Constatações / Implicações - Existe um elevado número de potenciais utilizadores de lojas virtuais entre os entrevistados. A sua intenção comportamental de usar lojas virtuais pode ser medida pela sua percepção do desempenho de lojas virtuais, o grau em que acham que fazer compras com lojas virtuais é divertido, o grau em que percebem que fazer compras de supermercado on-line é comum, a sua abertura pessoal para nova Tecnologia da Informação (IT) e o seu envolvimento no que diz respeito às compras de supermercado.

Projeto / Metodologia / Abordagem - Estudo quantitativo de base de (n = 259) está a estabelecer o ponto de partida do presente estudo a fim de testar a hipótese de pesquisa fundamentada numa revisão de literatura de pesquisa secundária. Análise descripitva, bivariada e multivariada foram efetuadas de modo a inferir resultados significativos.

Key Words – E-Commerce; M-Commerce; QR-Codes; Virtual Stores; Online Grocery Shopping; Mobile Grocery Shopping, German Grocery Market.

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List of Abbreviations

CEO:	**C**hief **E**xecutive **O**fficer
DACH:	**D**eutschland, **A**ustria, **C**onfoederatio **H**elvetica (Germany, Austria, Switzerland)
DNA:	**D**eoxyribo**n**ucleic **a**cid
E-Commerce:	Electronic Commerce
e.g.:	**e**xempli **g**ratia
etc.	**et c**etera
et al.	**et al**ia (and others)
FMCG:	**F**ast **M**oving **C**onsumer **G**oods
IT:	**I**nformation **T**echnology
KS Test:	**K**olmogorow **S**mirnow Test
LTE:	**L**ong **T**erm **E**volution
M-Commerce:	Mobile Commerce
OECD:	**O**rganisation for **E**conomic **C**o-Operation and **D**evelopment
PIIT:	**P**ersonal **I**nnovativeness of **I**nformation **T**echnology
QR Code:	**Q**uick **R**esponse Code
TK:	**T**echniker **K**rankenkasse
UTAUT:	**U**nified **T**heory of **A**cceptance and **U**se of **T**echnology
VIF:	**V**ariance **I**nflation **F**actor

Executive Summary

Computers, internet and mobile technologies are driving forces on the stage of business and private life. Especially in retailing, E- and the lettering M-Commerce have caused quick and enormous changes. More and more people began to shop in the increasing number of online stores, where both, customer and retailer benefit from convenience and economic effects. This development set traditional retailers under pressure, unable to compete with the favoured online retailers. However, grocery retailing remained more or less untouched by this development, as only a small market share is currently sold online. Still, many consumers show reservations about online grocery shopping. Still, its benefits, like the time and effort saving effects could not displace scepticism about being supplied with products of poor quality. Nevertheless, the doubts about online grocery shopping seem to be diminishing, the number of online grocery retailers and sales numbers are slowly growing. Recently, big players, like Amazon and Deutsche Post positioned themselves in the market anticipating substantial growth rates in the short term. German consumers still have no routine in online groceries shopping and changing these old, established and everyday shopping habits is difficult. Additionally, the current approach of offering unalluring web shops or apps is neither appealing nor effective and does not have the power to unleash the potential of the German market. The online grocery retailers are still lacking creative and appealing approaches to move their clients into the online grocery shops. One promising approach has been implemented by the Korean company Home plus. Virtual Stores, presented in metro stations are pushing the idea of mobile grocery shopping into the minds of the commuters. The walls of the station are plastered with pictures of products with QR-Codes, laid out just like in a traditional shop. In this way, the ads on the wall have become digital shelves and via smart phones and shopping apps, consumers can shop while waiting for their metro to come, the products being delivered before they return from work, to their home. In the context of this Master Thesis, it has been revealed that this approach has significant chances of success in Germany also. With the aid of several theories, it was possible to develop a model and a corresponding survey, which revealed that $2/3$ of all respondents agree at least somewhat to use Virtual Stores occasionally, about 1/3 regularly and about 1/4 would even prefer Virtual Stores to supermarkets. The results show that consumers' intention to use Virtual Stores is dependent on how she/he perceives its efficiency, the fun factor, the degree of perceiving (grocery) online shopping as normality/habit and the personal level of innovativeness towards new technologies. Accordingly, the thesis recommends companies that want to develop an online grocery business to invest in Virtual Stores, in order to get a foothold in the German online grocery market and build strong and long lasting customer relationships.

Sumário Executivo

Os computadores, a internet e as tecnologias móveis são hoje uma ferramenta indispensável à nossa vida profissional e privada. Foi em especial no retalho, que E- e o M-commerce levaram a grande alterações.Cada vez mais pessoas fazem compras online, e cada vez mais é o número de empresários que optam por utilizar este modelo de negócio, por ser vantajoso, para ambas as partes, ao nível dos ganhos de tempo e poupanças de custos. Este desenvolvimento tecnológico acabou por ter impacto nos negócios tradicionais que se verificaram afectados e menos competitivos. No entanto, não foram todos os sectores a ficar afectados. As compras de supermercado online, por exemplo, mantiveram-se alheias a este desenvolvimento. Ainda são muitos os consumidores que evitam esta nova solução, e que crêem que este tipo de serviço não é capaz de proporcionar serviços e produtos de qualidade. Grandes empresas como a Amazon ou o Deutshe Post posicionaram-se no Mercado, antecipando crescimentos elevados a curto prazo nesta área de negócio. O problema foi que estas empresas tiveram de lidar com o facto de que os consumidores alemães não têm por hábito fazer este tipo de compras, e alterar padrões e hábitos nunca foi uma tarefa fácil. Se para além disto considerarmos que os últimos desenvolvimentos ao nível de lojas online e outras aplicações não tem tido grande adesão por parte dos consumidores, o cenário não parece mais optimista. Aos retalhistas continua a faltar-lhes criatividade e abordagens mais interessantes que levem os seus clientes a optar por estas inovações. Mas tudo é possível, e recentemente houve um caso de sucesso a ser implementado por uma empresa Koreana, a Home Plus. Esta empresa construiu Lojas Virtuais em estações de metro. As paredes das estações foram plastificadas com imagens de produtos em prateleira, tal como numa loja tradicional, com QR-Codes específicos a identificar cada produto. Cada prateleira acabou por servir de anúncio em tempo real dos produtos de supermercado disponíveis. Os consumidores estavam aptos para encomendar o que quisessem através duma aplicação disponível no seu smart phone, e enquanto esperavam pelo seu transporte, os produtos seriam entregues em sua casa. Esta Tese de Mestrado pretende demonstrar que esta abordagem poderia eventualmente funcionar no Mercado Alemão. Tendo por base várias teorias, foi possível desenvolver um modelo conceptual com um questionário correspondente, que revelou que 2/3 dos participantes concordaram que utilizariam lojas virtuais ocasionalmente, cerca de 1/3 de forma regular e até ¼ preferiria lojas virtuais a espaços tradicionais. Os resultados demonstraram que a intenção de comprar em lojas virtuais estaria dependente do grau de eficiência percebida, do fator de diversão, da associação a um hábito que seria visto como normal como compra, e da ligação a novas tecnologias. Concluindo, esta tese recomenda que as empresas que queiram desenvolver o seu negócio de supermercado online devem investir em lojas virtuais, de maneira a construírem relações e experiencias duradouras com os seus consumidores no mercado alemão.

1. Introduction

1.1 Prologue

The study programme *Master in Marketing*, at the ISCTE Business School in Lisbon, is completed by its final academic course *Master Project in Marketing*. The present dissertation *"Analysis of the Potential of QR-Codes for German Online Grocery Retailing"* is based on a detailed market research, a broad literature review and a quantitative baseline study. Generally, this study deals with the rapid technical development of the internet, mobile technology, the coherent applications and the recent potential for sales and marketing in the grocery sector. The growth and development of the worldwide web incrementally changed peoples shopping behaviour. Today's shopping behaviour starts to shift from desktop PC's and laptops to mobile devices. Nowadays there are more and more tendencies shifting that development from desktop PC's and laptops to mobile devices. Consequently, from the growing usage of smart phones this dissertation essentially analyses the potential of QR technology as a modern mobile sales channel for the German grocery market. The present document analyses all related facts, trends and developments and features a market research and a data analysis. The thesis is designed in order to explore options for grocery retailing companies to partake in the current popularity of M-Commerce and to recommend relevant courses of action. Its aim is to challenge their innovation processes, and help face the paradigm shift into a digital, online and mobile business world.

1.2 Research Problem

In the last couple of years, E- and M-Commerce and the related changes in consumer and shopping behaviour have made a huge impact on the retail environment. More and more new online shops sprung up like mushrooms and the market position of brick and mortar retailers changed dramatically. Increasing price transparency, several competitive advantages and the resulting fierce competition from the rising number of pure online retailers set traditional business models under pressure. However, German grocery retailers remained more or less untouched by this development. Due to several reasons online grocery shopping seems unattractive for the majority of Germans. Experts anticipate relevant growth rates for online grocery retailing in the medium term, though. However, retailers are still searching for innovative, appealing and innovative business approaches that help customers to find their way into online grocery shops. Sufficient approaches that manage to dismantle the current doubts

and restraints, which still prevent the majority of consumers from online food shopping are still missing.

In the last months, the grocery market is slowly getting in motion. Big players from different sectors such as logistics, regular online retailing or even complete newcomers are making inroads into the small, but steadily growing and more and more promising online grocery market. They are on course to gain important market share, compete for predominance and put established grocery retailers under pressure. As the market is still in its infancy the question, which players will prevail, is still not predictable just as which technical sales approach is most suitable for German consumers. In the Korean market, innovative Virtual Stores were an effective and efficient instrument for an established bricks and mortar grocery retailer to boost sales, gain market share and introduce customers to online grocery shopping. By providing simple and user-optimized QR-Code shopping in subway stations including short-term delivery services, mobile grocery shopping was successfully integrated into the everyday life of the target group. So far, the German grocery market lacks of comparable innovative sales approaches that might have the potential to establish online grocery shopping in the biggest European market. Consequently, there is a lack of studies focusing on this field of innovative, mobile sales approaches for the German grocery market.

1.3 Purpose of the Study

This dissertation strives to identify the potential of Tesco's Virtual Stores approach for commercial uses in German online and mobile grocery retailing. It combines knowledge from different sectors, which are crucial for the implementation of this innovative sales approach. It gathers market-based information such as digital development of retailing sectors and the resulting changes in shopping behaviour, appliance of mobile tagging technologies in buying processes as well as insights from an ad-hoc quantitative market research. In this way, this thesis contributes to the development of grocery retailing in Germany. In conclusion, this study determines if there is an adequate target group, which is likely to use Virtual Stores to do their everyday grocery shopping.

This dissertation is designed to serve current retailers and companies as basic information regarding their considerations of entering the online grocery market or extending their efforts. It is supposed to challenge their innovation processes, to give a helping hand facing the paradigm shift into a digital, online and mobile business world. In this way, the results might stimulate their competitiveness or prevent them making unnecessary investments. Against this

background, this study provides relevant facts on whether the Virtual Stores are a suitable approach for the German market to gather market share on the promising online grocery market.

1.4 Objectives and Questions

This study is aiming to make a relevant contribution to the digital development of online and mobile grocery retailing in Germany. The findings of this study shall provide a starting ground for the development of Virtual Stores in German cities. Accordingly, the main objective of this study is:

Determine whether there is a relevant number of consumers in Germany, which show intention to utilize Virtual Stores for everyday grocery shopping.

In order to arrive at a conclusion, this dissertation examines the various relevant market developments. This way it provides the reader with knowledge about the necessary preconditions of the German market. This includes clarifying questions about the general status quo of digitalization, the changes due to rising E- and M-Commerce from the consumer and industry as well as the retail point of view with a special focus on the recent trends in the (online) grocery market. In addition, it sheds light on the popularity of mobile tagging and QR-Codes on the German market and finally explains the central concept of the original Virtual Stores.

It is necessary to identify the main factors forming the opinion of a consumer concerning Virtual Stores. What is the users' motivation? What are their doubts? Finally, what forms the intention of a user to utilize Virtual Stores? In this context, a secondary goal of this Master Thesis is to develop a model that includes all necessary factors that affect the intention whether a customer would use or not use Virtual Stores. This model needs to unify factors like consumers' interaction with technological innovations, consumers' attitudes regarding the acceptance of online shopping and especially consumers' expectations of online grocery shopping. Subsequently it is possible to develop and conduct a survey corresponding to the generated model. This will provide an answer to the questions of how to implement Virtual Stores for German grocery retailers or other players, what a suitable target group could look like and which factors are significant for the German consumers.

1.5 Thesis Structure

The present dissertation is divided into the main chapters as shown below:

- The **Introduction** presents the proposed topic of the thesis and provides a brief summary of for the upcoming contents. It highlights the essential research problem, explains the

purpose of the study and clarifies the main objective, how this objective is achieved and which questions need to be answered.

- To underline the relevance and timeliness of the present dissertation the **Market Analysis** includes detailed information concerning the evolution of digitalization and its consequences for sales and marketing with a special focus on all significant processes of Homeplus' Virtual Stores. It provides deep insights into the recent situation of the German market, where a climate of new technological, economic and social developments create an environment that puts established retailers under pressure.
- The **Literature Review** focuses on the progress of technology adoption models in the recent years. It points out three major theories – UTAUT2, Consumer Characteristics and their Effect on Accepting Online Shopping and the Customer Attitude toward Online Grocery Business Model. They build the basis for the new developed Conceptual Model, which in turn works as theoretical foundation to construct an adequate questionnaire and carry out a revealing survey.
- The **Methodology** presents the conceptual prerequisite for conducting the market research, incorporating the data collection process and the questionnaire design.
- The chapter **Sample Characteristics** gives detailed information about the composition of the sample.
- Chapter number 6 presents the **Results** of the survey. It features descriptive, bivariate and multivariate analyses in order to give evidence about the proposed topic and all relevant relationships
- Finally, the last chapter features the **Main Conclusion** and implementations that provide a summary of the main findings, define operation guidelines, and give directions for further research and managerial implications.

2. Market Analysis

2.1 The Rise of digital Technologies, E-Commerce and M-Commerce

2.1.1 Rise of the Internet and Mobile Technologies

If we take a look at western societies and the changes and developments in the last decades it is impossible to ignore that a lot of them are related to factors that people would associate with terms like "Digitization" and "Digital Revolution". A revolution that dramatically changed a large number of aspects of many people`s lives and a development that has not yet come to an end. Computers, internet and mobile technologies are driving forces on the stage of today's business and private life. These days we benefit from the internet in multiple ways, it found way in almost all facets of our everyday life. Researching, communicating, socializing, informing, shopping, banking, job searching, entertaining, learning and travel reservations are more and more becoming online activities. In 2013, search-engine market leader Google counted almost 3.3 billion search requests a day in average, approximately 144 billion emails were sent daily and the most successful social network Facebook gained more than 1.2 billion users. 500 million of them log in every day – and each day all together they spend more than 20.000 years of time on this platform (Anonymous 1, 2013). At the 26th November 2012, world's market leader in online retailing Amazon sold 26.5 million items worldwide across all product categories in one day. That equates to 306 items per second (Cheredar, 2012).

Next to computers, mobile devices and mobile technology are nowadays a huge driver in the progress of the digital revolution. Since modern age nano–multicore processor technology moved into the new generation of smart phones and powered up its ability to browse the internet, these devices improved their user friendliness and at the same time their worldwide popularity (Docksai, 2009). In 2009, more than 270 million smart phones have been sold globally (Anonymous 2, 2009). Today smart phones are powerful computing platforms with increased power, storage, connectedness and multiple speculative applications (Molta, 2004). In 2015, more than 45 million people in Germany possessed a smart phone (Statista GmbH 1, 2015).

This development lead to a certain effect – through the numerous areas of application and the convenient appliance, the smart phone became more relevant for many people's life. According to Institute for Trade Research at Cologne University, next to making phone calls and texting, 74 percent of the German smart phone users prefer to use their smart phone especially for E-Mailing. About 44 percent used their smart phones for commercial uses, e.g. in order to check

out product reviews and compare prices. Thirty-one percent even bought a product (see Appendix A). In this way, smart phones, as well as the latterly emerging tablet devices are finding more and more uses in our private and business life.

2.1.2 The Rise of E-Commerce

As mentioned in the previous chapter, the internet showed its potential for economic purposes very soon. A new form of doing business was born and E-Commerce began its rise. The actual history of E-Commerce as it is known today, heavily characterized by the increasing usage of the internet, began in 1995, when technical maturity and the relevant dispersion of interconnected computer and telecommunication technologies both reached a critical threshold (Rhiem, 2004). In this particular year, the internet became commercialised as it was opened for the economy and the online retailer Amazon, at that time still as an online book trade and the online auction eBay launched. Three years later Serge Brin and Larry Page launched the online search engine Google (McGarvey, 2000).

Very quickly, the internet as a channel of sales emerged as a huge success for various companies and more and more people over the globe tended to buy online. They benefited from the convenient advantages of online shopping such as independence from opening hours, time and money savings (Anonymous 3, 2006), and having the option to choose from a wide range of goods plus a high level of discretion (Wourple, 2007). In addition to the benefits for customers E-Commerce offers a lot of advantages for companies, for example overcoming geographical limitations, gaining new customers with search engine visibility and lower costs through economization in advertising and marketing, personnel and real estate (Khurana, 2013). In this way, the number of companies going online and the variety of the offered products increased, as well as the global sales revenue. According to Statista, the global E-Commerce sales should have increased by approximately 68 percent from $572.5 billion dollars in 2010 to $963 billion dollars in 2013 (see Appendix B). Latest estimations showed that global E-Commerce revenues actually increased by approximately more than 113 percent to $1.2 trillion dollars. By 2016, those numbers are expected to exceed $1.8 trillion annually (Anonymous 4, 2014).

Today it is common for almost every manufacturing company or retailer to offer their products and services directly or indirectly online. E-Commerce models combine the understanding of different marketplaces, disruptive business models and the occupation of the least market niches. Therefore, the American experts of Goldman Sachs expect that E-Commerce is soon

going to outpace classic offline retail by sales volume in their domestic market (see Appendix C).

According to the Federal Association of German Mail Order Retailers in 2012, the number of German customers buying products online grew to 35 million (Anonymous 5, 2012). Experts, such as E-Commerce consultant Jochen Krisch, confirm that the development of E-Commerce in Germany is even faster than expected and the growing number of sales is only the beginning of a rapid growth story. The bright future of E-Commerce and the expected growth rates are not just a result of its mentioned benefits. E-Commerce is getting more and more mobile, nowadays M-Commerce or Mobile E-Commerce is on the rise (Treiß, 2013).

2.1.3 E-Commerce is going mobile

In the recent years, M-Commerce has transitioned from an association with niche purchases to the new default for everything from specialty products to groceries. People want the power to purchase what they want, where they want, when they want and wherever they are (Anonymous 6, 2013). As explained in chapter 2.1.1, smart phones revolutionized the mobile sector. Analog to the technical advancements, the options for M-Commerce increased in multiple ways. Since the launch of the first iPhone in 2007, M-Commerce has moved away from SMS text-based account money transfers and moved into applications and mobile internet browsing, and has seen explosive popularity worldwide (Tichawa, 2012). Since smart phones made all online information accessible, consumers were able to conduct almost any kind or type of purchase, research product information, compare prices or locate nearby stores via smart phone. Since then, mobile commerce has evolved rapidly. Devices with steadily improving memories, faster processors and bigger screens, more reliable systems and applications are constantly improving the technical conditions for mobile purchases (de Voos, 2011). Next to regular physical products, the advent of 4G, also known as LTE, connection speed enabled smart phone users to buy content such as e-books, movies, and music and download them to their phones in mere seconds (Tichawa, 2012).

According to the US application service provider Apptive in 2012, more than 11 percent of all US E-Commerce sales were already made from mobile devices, while it was only 3 percent in 2010 (Treiß, 2013). Experts expect similar numbers in Europe. According to GfK in Germany (2012), where already more than 84 percent of all residents in the age group between 14 and 69 years have a smart phone and 40 percent of them have mobile internet access, progressively more and more tend to use it for shopping purposes. In 2011, mobile shopping grew

dynamically by 114 percent to more than 2.9 million mobile shoppers. The recent research, "Mobile Commerce Insights 2013", conducted by phaydon research and consulting (2014) with a sample of more than 1 thousand German smart phone users revealed that 82 percent of them used their device to search for specific product information, e.g. prices, local retailers, connected services and availabilities. Seventy-eight percent of this sample used their mobile for buying smart phone applications or different material goods (see Appendix D).

Consequently, mobile has become an opportunity for retailers to leverage the benefits of mobility and multichannel linking. According to Gary Lombardo, manager of E-Commerce solution provider Demandware, merging M-Commerce and brick-and-mortar under the same roof will be the next big step in business and revolutionize the entire shopping experience. Miki Berardelli, chief marketing officer of the US textile company Tony Burch, even sees mobile as the true bridge between online and offline (Strugatz, 2012). Generally, experts agree that smart phones are the new drivers on the market with the potential to be the core of a multichannel strategy. Retail and industry are obligated to adapt to the rapidly changing and increasingly demanding customer requirements and this way correlate with their demand for information or shopping needs (Eckstein, 2012). M-Commerce might now be the great chance of bricks and mortar to assert against the overwhelmingly growing internet-pure players by integrating the smart phone with all its benefits into the shopping experience. As smart phone penetration continues to rise, one billion consumers will have smart phones by 2016. Therefore, marketers are looking at any technique that can tap into this massive pool of potential (Schader, 2013).

2.1.4 The Effect of E-Commerce on German Retail

Also in Germany, E- and M-Commerce had dramatic effects on the retail industry. For a long time, too many classic brick and mortar retailers were sure: "We have four aces – top locations, top products, top expertise and top staff" (Dahmen, 2014) and underestimated the upcoming threats of E-Commerce for their sector. Now online shopping has set almost all classic retailers under enormous pressure. Completely new online companies could develop into industry giants. Retailers that did not react quickly or accordingly to the shift to web seriously endangered their existence or disappeared from the market. In this context, companies like Amazon or Zalando acquired the name "Category Killers". In fashion and textile retailing, Zalando is showing rising sales numbers from year to year. Even products that seemed as non-marketable for E-Commerce for a long time have found a market in the World Wide Web. The online optician Mister Spex is aiming to become Europe's biggest optician (Graber, 2012), also

in jewellery (Valmano), furniture (home24) or pet foods (Zooplus) – basically in all areas of retailing, new pure online players are trying to get a slice of the cake. The most famous German victims of this development were the traditional mail order Quelle or the department store chain Hertie. Both went bankrupt in 2009. In the same year, established textile retailers like Sinn & Leffers or Wehmeyer went bankrupt as well (Kerbusk, 2009).

Moreover, while the online-comprehensiveness and the affinity for new media will rise throughout the global societies, the number of digital natives will grow as well in the next years – and these digital natives will have more and more personal buying power. In addition, advancements in technology, logistics and service will make E-Commerce more appealing for most of the recently critical customers, so that the number of online shoppers will definitely keep on rising in the next years (Wieselhuber & Partner, 2014). Accordingly, especially retailing needs new, and innovative solutions and business models to cope with the future challenges. According to the publication "The changing face of retail – The store of the future: the new role of the store in a multichannel environment" of the consultancy Deloitte (2011), the role of the store itself is under threat. The company predicts that there will remain a role for physical space albeit in a different format and smaller. Today consumers have vastly different and more sophisticated expectations of products, services, values and the shopping environment. Especially, the customer experience is changing as consumers adapt and become more and more constantly connected to the internet. Thereby, the boundaries between virtual and physical space are becoming blurred and the store of the future as a physical retail space needs to adapt into a multichannel environment, where on- and offline retailing complement one another concerning brand- and shopping experience. Thus, retailers need to redefine the store proposition and identify how they can best address the changing customer needs within the four walls of the store. In this way, stores evolve to become one part of a much more complex relationship between brand, retailer and consumer. The store of the future must find a balance between providing inspiration, emotional engagement or even a special kind of practicality or other benefit while offering the breadth and depth of the range in a consistent and relevant way across all channels – on- and offline.

2.1.5 The Effect of E-Commerce on German Food Retailing

In Germany, the online food market is still in its infancy. Accordingly, online food sales are still relatively low. Previous approaches of companies trying to enter the online food market failed or had only little success. Still it seems the extension of supermarkets and discounters in

Germany is too high and the offered product range is too broad for online food retail to offer additional benefits for the customers to change their habits and daily routines of classic supermarket or discounter shopping. The low margins in food retailing seem not to bring any further appeal for companies to invest in this approach. So far, online food retailers like Lebensmittel.de and Gourmondo.de achieve no significant revenue sizes. The current most successful online food retailers in Germany are Amazon and eBay (see Appendix E). The various online offshoots of the local supermarket chains and various pure E-Food Services still lag behind. The reason for this distribution of market share is that the internet, when it comes to food, is primarily perceived and used as a shopping channel for specialties, deli food and ingredients (Weigert, 2014).

However, there are indications that the German online grocery market will increase in the near future. With total revenues of more than 175 billion in 2013, food retailing is one of the top selling retailing sectors in Germany. Just the extreme size of the market represents a constant and strong incentive for potential food category killers (Wieselhuber & Partner, 2014). Additionally, even if the online food market is still relatively small, it is gaining volume year by year – 15 percent by 2013 according to Wieselhuber & Partner (2014). According to the consultancy A.T. Kearney and their study "Online Food Retailing: An Upswinging Market" about the DACH online food retailing market the volume grew even by 27 percent from 2011 to 2013 (AT Kearney, 2013). In an article of the German business magazine wiwo, Thomas Netzer, partner and expert for logistics at McKinsey, believes that online grocery shopping will make up to 5 percent of the complete German food market in 2020 – what would be equivalent to a market size of ten billion euro. The estimations of his colleague Jochen Hindelmeyer, retail expert of Accenture, are a little bit more cautious – he expects the market to grow from three to four percent until 2020. "Currently consumers rather buy truffles online – but finally online grocery shopping will prevail with its full product range" believes the expert for logistics and partner of the consultancy McKinsey Thomas Netzer (Hansen & Hielscher, 2013).

Probably not by accident Amazon is just about to start an online food delivery service called "Amazon Fresh" to enter the German food retailing market. According to the German newspaper Die Zeit, the service will launch in September 2015 after it had been postponed a couple of times (Schader, 2015). The product range of Amazon Fresh Germany will include fruits, vegetables, meat and dairy products – just as regular supermarkets (Anonymous 7, 2014). In addition, the Deutsche Post AG, the biggest Logistics- and Post-Company worldwide sees the potential of online grocery shopping. "Our aim is to leverage online food shopping in

Germany," says Andrej Busch, Head of Parcel business. In order to make a fast impact on online grocery shopping in Germany, the Deutsche Post AG acquired the majority of the online grocery retailer Allyouneed and upgraded its logistics centers with an investment of about 750 million Euros (Hansen & Hielscher, 2013).

The CEO of the Rewe group, one of Germany's biggest food retailers including supermarkets and discounters, Alain Caparros generally agrees with Wieselhuber & Partner estimation and believes German food retail has been lacking in innovation for a long time. He states that the model of brick and mortar business heavily characterizes retailers like Rewe and because of that they are probably missing the necessary "DNA" for E-Commerce (Anonymous 8, 2013). Since 2013, the food retailer is developing and enlarging an online delivery service. Since spring last year, Rewe gives its customers the option to order food and beverages online including a comfortable delivery. The company covers already all German areas of high population density, where they experience an increasing degree of willingness to order food online (Anonymous 8, 2013)

Until now and contrary to most other markets, internet retailers did not successfully participate on the German food market mainly due to multiple high entry barriers. Correspondingly, the majority of the established food retailers did not see the absolute necessity to invest in digital, innovative business models and present innovative, up-to-date ideas to cope with the rise of E- and M-Commerce. Representatives of the German discount giant Lidl comment that this kind of business is too cost-intensive, because of the high logistic efforts and accordingly is not relevant for their future business strategy. In addition, Olaf Koch, CEO of Metro business group has no plans for his hypermarket chain "real" to engage in online grocery shopping (Hansen, Hielscher, 2013). Both do not believe that online grocery shopping might threaten their traditional retailing business.

2.2 Online Food Retailing in Germany

2.2.1 Facts about the German Online Food Market

As mentioned before, the online grocery market in Germany is still relatively small. In other European countries online food shopping is already more popular – e.g. in Great Britain the market has a size of 5.5 billion Euros. The annual per capita spending on online food shopping in Britain were about 82 Euros in 2010, while the average German only spends about 4,60 Euro for online shopping annually (AT Kearney, 2012). However, an indicator for the increasing interest of German shoppers in online food shopping is the Googles search phrase analysis.

From 2009 to 2012, the Google search category "online grocery shopping" which contains a multitude of buzz phrases that deal with that subject showed a significant increase by approximately 17 percent annually in Germany (AT Kearny, 2013).

Depending on the market survey, the percentage of the German online shoppers that already bought food online in 2012 varies from 43,1 percent including beverages (Fittkau & Maaß Consulting, 2013) to 27 percent (AT Kearney, 2013). However, the regularity of the procurements is rather low. According to AT Kearney (2013), only two percent of all Germans do online grocery shopping once a month, only three percent do it four to eight times annually. Twelve percent just tried online food shopping two or three times, ten percent tried it only once. This supports the conclusion that many consumers only made a couple of trial purchases and decided to return to the classic supermarkets.

The average online grocery shopper is rather male. According to Fittkau and Maaß (2013), 61 percent of all online shopper are men. According to AT Kearney (2013), one third of all of their male respondents already shopped for groceries online. Sixty-five percent of all online food shoppers are in the age bracket between 25 and 44 years, while online grocery shopping is rather irrelevant for seniors above 65. The market researches also agree on the statement, that online grocery shoppers have a rather high income and spent 100 – 120 Euros for food monthly on average. According to Jochen Hiemeyer, retail expert for the consultancy Accenture, especially families with two children, in which both parents work a lot and have a minimum of leisure time, tend to shop more and more for food online (Hansen, Hielscher, 2013).

As already mentioned in 2.1.5, the online grocery channel is perceived as a channel for specialties, deli food and ingredients (Weigert, 2014). The most popular types of grocery that are usually shopped for online are tea and coffee. After that, wines, respectively sparkling wines, are the most accepted groceries for online shopping. These products are followed by candy and chocolate, herbs, spicery, specialties and delicate food. In contrast, the German online shoppers show little interest in food for daily use (Fittkau & Maass, 2013).

Especially the issue "freshness" plays a substantial role when it comes to shopping for food in Germany. Here, in terms of shopping for food, freshness is the most important aspect after value for money. Due to the rising health awareness of many consumers, the importance of fresh products is steadily growing. Seventy percent of all Germans explain the reason for not buying food online are doubts concerning quality and freshness. Sixty-one percent complain about the missing chance of real life visibility and tangibility of the products, 43 percent query that they

cannot use the products directly. Another big issue for online food retailers is the high degree of satisfaction of the consumers with the current situation on the food market. More than 68 percent of all Germans see no need in changing their shopping habits. The recent density of supermarkets and discounters guarantees on the one hand a relatively high competition and consequently relatively low prices. On the other hand, it guarantees good accessibility of the shops. In addition, many shoppers decide on short notice, for example on their way home from work or in the supermarket what to buy (AT Kearney, 2013).

Anyway, the big advantage of online grocery shopping for the most consumers results from the delivery service. Fifty-one percent of respondents who had already shopped for grocery online indicated that the comfort of the delivery service was the most important reason for online grocery shopping. Forty-one percent indicated the uniqueness of products. Every fourth responded cited time saving effects as the reason for online grocery shopping. (AT Kearney, 2013). Additionally, most customers are also willing to pay extra for delivery service. Sixty percent of them would accept delivery expenses from one to five Euros, 17 percent even up to ten Euro (AT Kearney, 2012).

2.2.2 Future Perspective and Room for Improvement

As mentioned in 2.2.1, there are still many doubts and reservations, which must be allayed in order to rise the popularity of online grocery shopping. However, changing people's habits is always hard. It can only be done, if the change from the original pattern is caused by personal insight that the new way is for the better and brings a true benefit. Accordingly, if retailers want to convince people of online grocery shopping, they must clearly highlight and advertise the additional and compelling value of it. One of the main values of online grocery shopping is the convenience, simplicity and its actual suitability for everyday use. All of these values mainly derive from the different aspects of the delivery. It disposes the customer of the towing and dragging of heavy shopping bags and crates and it eliminates all the idle times in front of meat- and checkout counters. Never again, need customers be upset by other loitering or jostling clients. There is no need to search for parking space in front of the supermarkets. Finally, Saturday afternoons and finishing time will be free time to spend as consumers please, as delivery services work also in the late evening and early night. Besides time saving effects consumers also benefit from a reduced gas consumption of approximately 260 litres a year. Considering, that an average German shopper needs approximately 2,5 hours every week for grocery shopping, or in other words spends more than five days a year in supermarkets, the

convenience of online grocery shopping is more than obvious (Hansen, Hielscher, 2013). In this way, online grocery retailers would focus on more specific customer needs and aim at certain target groups – people that do not have, or do not want to have, the time and patience for regular grocery shopping.

Further room for the improvement of online grocery shopping concerns the issue of the freshness of the products. Most customers do not just want to see the food they intend to buy. Especially, fruits and vegetables are products that customers like to touch, smell and if possible, taste to check their quality but - of course - these wishes are impossible to implement for an online shop (Schader, 2013). Almost half of all consumers state these issues as the main reason not to shop for food online. According to AT Kearney, the consumers are still not ready to place the responsibility for the selection of single products into the hands of the retailers and want to decide for themselves which product is appropriate (AT Kearney, 2013). That is why more than eighty percent of all consumers insisted on an option to check the quality of the delivered products and to refuse acceptance of the delivery if the quality was not adequate (AT Kearney, 2013). The consumers' scepticism concerning product quality is also expressed by the wish to order food from a well-known and respected supermarket, where consumers rather tend to trust into a reliable brand (AT Kearney, 2013). Of course, this opens the door for established classic bricks and mortar retailers like Rewe or Edeka, whose reputation is more based on high quality and freshness than on low prices. On the other hand, pure online grocery retailers need to invest more in their image and the quality of their services. Other grocery retailers, like frozen food delivery services were not part of the analysed survey.

Moreover, to win the confidence of the consumers online grocery retailers should highlight the quality of the offered products. The digital sales channel offers multiple options on how to present products. Comprehensive information material can easily be added in different kinds of media. Useful linkages, detailed product specifications or even product videos would help to increase trustfulness and would especially enhance the status of premium and organic products. In this context, consumers would benefit from insights into the supply- and cold chain, for example, when the products were packed, when they went out for delivery etc. The more perceived transparency the consumers' experience, the higher the likeliness that they trust the quality of the shop (AT Kearney, 2013).

In addition, a noticeable number of consumers like to make its purchases spontaneously. Many do not plan food shopping for a longer amount of time and do the shopping after finishing time.

Also for this kind of consumers, it is necessary to find solutions to make online grocery more attractive and convenient. Especially mobile technologies enable retailers to offer their services so that they improve the implementation of online grocery shopping into consumers' everyday life in multiple situations. On the one hand, consumers should be able to access the web shop by web applications and mobile browser from any place at any time to provide a maximum of accessibility and spontaneity. On the other hand, retailers can utilize various promotional tools to motivate, inspire and activate the consumer in different everyday life situations. Especially situations, which normally would be regarded as a loss of time by the consumers, are very suitable, such as idle time on public transportation, in airports or sitting in buses, subways or trains. An interesting approach is currently conducted by the Korean subsidiary Homeplus of the British retailer giant Tesco. Homeplus transforms metro stations into Virtual Stores, creates a completely new shopping experience by means of specifically designed advertising space and QR-Codes, which integrates online grocery shopping into everyday life very smartly.

Anyway, concerning the future of online food shopping a further aspect is time and the acclimatization with the option to order and delivery of these kinds of products. Experts expect a noticeable push from that sales channel as soon as more people recognize the benefits of online grocery shopping (Hansen, Hielscher, 2013). Online grocery shopping is still unknown to a considerable number of older people. When young people who are familiar with online grocery shopping reach an age, when door delivery becomes an even stronger argument, they will probably rely more on online grocery shopping. From this point of view, the relevance of online food shopping will grow, at least in the medium term.

2.3 QR-Codes– New Options for Marketing and Sales

A QR-Code consists of black modules or square dots, which are arranged on two-dimensional grids on a white background. Different imaging devices, like scanners or cameras, can read the codes. Specific software is needed in order to decode the stored information from the specific data, which are extracted from patterns present in both horizontal and vertical components of the image. QR-Codes are a sub-group of barcodes belonging to the matrix codes. They are characterized by their quick, easy and reliable readability what is also reflected in its abbreviation as QR stands for Quick Response.

The Japanese Company Denso Wave developed these two-dimensional codes in 1994. Denso Wave is a subsidiary of the car manufacturer Toyota, specialist on the field of mobile data collection and identification systems. They originally intended to use this technology in the

automotive industry for logistical purposes. As an optically machine-readable label, which can be attached to any item that records information related to the QR-Code they offered many options for manufacturer and customer. They qualify through their high capacities encoding of data by relatively small print out sizes. Through their nature and consistency, they are resistant against dirt or damage, readable by 360 degrees from any direction and can partly be designed or structured (Denso Wave Incorporated, 2013).

In the last years, QR-Codes became more popular in Germany as they were used for marketing purposes. In this context, the usage of QR-Codes is called commercial tagging, referring to all profit-oriented methods and approaches. In this case, QR-Codes are linked to products, information-, communication- and/or transaction-services of companies, have always a commercial background and can touch any form of mobile business (Hegen, 2010). In the most cases, QR-Codes are printed on advertisements and billboards. In this way, they expand the advertising message of the real world with additional information of the digital world. As soon as the user scans the code and she/he is redirected to the corporate website of the advertiser. This method is particularly interesting for consumers, if scanning the code enables them to receive information, which they can only reach this way. With the aid of the QR-Code, the customer avoids the cumbersome typing of a possibly long URL and receives a benefit as soon as consumer gets the idea that it was worthwhile to scan the code (Bendel, 2010). The number of different approaches of combining QR-Codes with any kind of sales or marketing plan is already countless. Various companies offer their customers diverse options to utilize these codes. Some selected examples of commercial QR-Code usage can be found in Appendix F.

Right now, there are several surveys or market researches concerning the usage of QR-Codes in Germany with partially different results. Anyway, all of them give partly comparable insights about recent developments concerning the popularity of QR-Codes and if they already became part of everyday life of German consumers. According to a survey of the US market research company comScore concerning consumer behaviour and QR-Code usage across the five leading European markets the total number of smart phone users scanning QR-Codes grew by 96 percent from 2011 to 2012. Compared to the other European Markets, Germany ranked first for usage of QR-Codes with 18.6 percent of smart phone users making use of the service, several percentage points higher than its European counterparts do. All in all comScore estimates about more than 5 million people in Germany used their smart phone to scan QR-Codes (Mahoud, 2012). According to a survey of Statista from 2012, the number of smart phone users scanning QR-Codes in Germany has drastically grown and is considerably higher.

Twenty-eight percent of the all interviewed smart phone users claimed they scanned QR-Codes once or twice in the last twelve months, even 40 percent claimed three to five times. Seventeen percent scanned QR-Codes every month, eleven percent stated to use the codes every week or more often (see Appendix G).

2.4 Tesco's Home plus Virtual Stores and basic preconditions in Germany

2.4.1 Tesco's Virtual Stores – Blueprint for QR-Code Grocery Shopping

When Tesco entered the Korean market, the British retailing company soon realized that the business in this country would be met by culture specific challenges. The British retailer has been evolving and adjusting to its specific requirements and obligations. It managed to become the second biggest FMCG retailer in South Korea. However, the densely populated cities of South Korea and the local lack of affordable real estate made it almost impossible to acquire enough adequate stores to compete with its biggest rival E-Mart.

Accordingly, Tesco made an in depth study of the South Korean market and analysed the specific characteristics and needs of the local consumers. One of the most obvious facts identified the Korean people as a highly developed society in terms of digitalisation and technological progress. They have the fastest mobile internet connection in worldwide comparison (Wagner, 2014). Amongst others, according to a 2011 ranking by the Organization for Economic Co-operation and Development, South Koreans work more hours in the week than any other OECD member does. Therefore, it is no wonder that they struggle to make time to shop for groceries (Blackburn, 2011).

Tesco decided to focus on the busy and stressed consumer and developed an approach that actually brought the store to the people (Blackburn, 2011). In this context Tesco, build up so-called Virtual Stores hoping to blend them into people's everyday lives. On the 25th August 2011, Tesco opened the first Virtual Store in Seonreung subway station in downtown Seoul, where more than 20.000 commuters start their daily travel to work (Anonymous 9, 2011).

To be more precisely, Tesco plastered the glass walls of the subway station with pictures of their products, laid out just as they would be in a traditional shop. In this way, the ads on the wall turned to digital shelves featuring QR-Codes, unique to the product in question. With the traveller's mobile phone and the Homeplus Shopping App, the code is scanned and in turn builds up a shopping basket in the few minutes (Anonymous 10, 2011). In addition, the place is equipped with free wireless internet access and numerous tutorials explaining how to use the

Virtual Store. This environment provides the consumers with the convenient option to scan and buy products on their way to work. The order then is destined to be delivered that evening if the order is placed before 11.30 am. If the train arrives before the basket of the consumer is complete, she or he can carry on shopping without the pictures and codes by using the regular Homeplus shopping app. (Anonymous 10, 2011)

In this way, Home Plus's subway poster shops pushed the idea of mobile shopping into the minds of people who could use it right where they are, right now. Rather than to expect the customers to search through menus labelled with tiny texts saying such unattractive things as "fish" or "home ware". Indeed, many Korean smart phone owners have gotten used to picking out products from tiny icons on their phone screens. Thus far, that worked fine for books, toys, and gadgets - but now Homeplus invented a novel solution in the form of Virtual Stores – which work essentially as retail kiosks with life-size images of real product display. (Cardinal, 2011). Although the images were virtual they looked exactly the same like the real shopping shelves in Tesco's actual home plus shops including exactly the same products and merchandise. The consumer should virtually get the impression to be in a supermarket. The environment is designed to induce and invite the commuters to make their daily grocery shopping and provides a much more concrete and tangible shopping experience compared to just acquiring products with a regular shopping app or mobile website, while it offering the same kind of convenience and advantages. D.W. Seol, executive vice president of corporate affairs at Tesco Homeplus, said, "We are always looking to make the shopping experience easier and more convenient for our customers and the introduction of the Virtual Store is a great achievement. This is a real triumph for the Korean retailing industry as it continues to be at the forefront of technological innovation." (Anonymous 9, 2011).

Undeniably, the Korean people seem really to accept and appreciate this shopping concept. The consumers can now shop at Tesco's Homeplus where ever they go and without actually visiting the real store. Moreover, Tesco changed the waiting time of the Korean people in the subway to shopping time. Thereby Homeplus is in step with the zeitgeist especially of the young and digital target group. Homeplus representative, Jo Hyun Jae, says specially this group of consumers is exactly who the Virtual Store was designed for. He says Koreans in their 20's and 30's already rely on smart phones to complete many routine tasks. In addition, due to long hours at school or work, they are always on the move. Jo says Homeplus customers are busy and many do not have the time to go to the supermarket to do their shopping. He says the Virtual

Store allows them to save time. There are plans to create more of them in other subway and bus stations, especially in areas close to universities. (Anonymous 11, 2011).

The Virtual Stores were a great success for Homeplus. The number of online customers rose by 76 percent and Homeplus online sales increased by 130 percent in three months after opening of the Virtual Store (Wagner, 2014). Whether you see their Virtual Stores as a display advertising campaign or a new way of building supermarkets in spaces that already exist that is a remarkable achievement (Anonymous 10, 2011). The concept seems to be perfectly tailored for the needs of many young Korean people and nestles perfectly into demand gap between the shortage of time and the necessity of grocery shopping. Accordingly, the consumer benefit from the time saving effects – the Virtual Store offers an appealing and activating environment for daily grocery shopping including a quick shopping system, convenient delivery and especially conceding the opportunity to shop during times you could not usually shop. In this way, it provides a real additional value as it frees up a lot of time for the customers and disburdens them from the dreaded task of grocery shopping in the crowded supermarkets. For Tesco, this is a very efficient approach, as it saves multiple fixed and variable costs, which occur naturally in any brick and mortar shop. Moreover, it accustoms the consumers more and more for online and mobile grocery shopping and has the potential to retain customers to the company for a long term. The Virtual Stores allowed Tesco the opportunity to feature their stores in untraditional, unusual locations such as subway stations, in an exciting and new system, which captures the audience's attention, stands out and creates a sense of excitement amongst consumers.

Homeplus representative, Jo Hyun Jae argues it may only be a matter of time before Tesco starts creating Virtual Stores for its franchises in other countries too. He says Homeplus believes this concept can work outside of Korea because many young people around the world are adopting smart phone technology. However, some analysts say the appeal of Virtual Stores may be limited to Korean consumers. (Hathaway; 2013). Because South Korea can be considered as global test laboratory for digital shopping habits and for multiple times Koreans hurry ahead of other countries in technological ways (Wagner, 2014). Kwon Ki-Duk, an IT analyst at the Samsung Economic Research Institute in Seoul, says it is a unique characteristic of Korean people to rotate their tech products quickly. They have a fascination with the new and abandon what is considered old or out-of-date. Koreans are interested in converging and cramming many different functions into a single gadget and mixing technologies to find novel ways to complete ordinary tasks, says Kwon, as they do with the Homeplus Virtual Stores (Hathaway; 2013).

Finally, the Virtual Store serves as brilliant category disruption and service design innovation due to outstanding observation, ethnography and insight work. Best of all is how it raises awareness and allows customers to make simple transactions. Online grocery shopping is shown to be fun and more experiential than just browsing individual items on a small screen and a blueprint for QR-Codes shopping done right. (Anonymous 12, 2011). The Virtual Store are a bold, brave, creative experiment and it swiftly became the global poster child for how people shopped via their mobiles (Hathaway; 2013).

2.4.2 Further Basic Preconditions for Virtual Stores in Germany

As explained, the approach of the Virtual Stores were very successful in South Korea. To compare the situation of the target group on the both markets it makes sense to look at the remaining critical success factors to make sure the size of the comparable group of German consumers is relevant. The last three subchapters analysed the degree of digitalization in private life and retailing respectively grocery retailing industries, the changes of shopping habits – especially grocery shopping – as well as the popularity and acceptance of QR-Code usage. Finally, it is necessary to control, whether a relevant group of German consumers has equal needs, experience comparable situations and shares a rudimentarily similar lifestyle.

As mentioned in the previous subchapter Koreans suffer from a stressful and hectic everyday life, especially due to an enormous weekly workload. According to the "OECD Factbook 2011-2012 - Economic, Environmental and Social Statistics" due to their strict working culture, their scarcity of public holidays and their lower entitlement of holidays Koreans work 2.193 hours a year. This is equal to 45.7 working hours a week. An average German only works 1.419 hours a year, what is equivalent to 29.6 hours a week. Especially due to the high number of mini jobs, part time jobs and the non-pay-scale working hours, numerous studies doubt the significance of that number. Focussing on fully employed Germans the European Commission's DG for Employment, Social Affairs and Inclusion stated Germans work estimates the average working hours for fully employed employees as 40.6 hours a week – in the EU only Luxembourgers and Romanians have longer work weeks (Stabenow, 2012). According to a survey of Statista concerning the average weekly hours of work of fully employed citizens of the EU in 2013, Germans work 41.7 hours a week – which is above EU-average.

However, according to a survey of the German health insurance company TK 60 percent of all Germans think their life is stressful. This number rises to even 70 percent if this person is working and to 80 percent if the person is fully employed. 40 percent of all fully employed

employees state that they suffer from permanent stress. The stress level is especially high in the so called "sandwich generation" in the age bracket in between 25 and 40 years. Household, children and possibly parents/grandparents with a high need of care stand in conflict with the high standards this generations sets in themselves and their careers. Especially women in this category, very often rather in charge of child rearing, struggle to achieve a comfortable work life balance. Indeed, particularly job-related stress-factors are on the rise. Sixty-five percent of all working Germans say they have to do too much work (in too less time) and 62 percent state they are suffering from time pressure and agitation (see Appendix H), what is even more relevant if this person lives in cities rather than in rural areas (Paukner, 2013). Still, compared to the Koreans the number of hours worked in Germany are lower. However, the level of perceived stress, everyday time pressure and agitations seems to be rather high and growing. Seventy percent of all Germans state that their stress level grew in the last four years (Paukner, 2013). Concerning the number of German commuters in urban, German areas the trend is also positive. According to each annual report, in nine out of ten of the biggest German cities the number of commuters per year is rising. The means of public transportations are very popular especially in urban areas where automobile traffic led to a high degree of congestion. Public transportation, especially commuter railway systems/urban railways, metros and trams become more and more a favoured alternative, as they are in many cases cheaper, faster and low emission. In the last year, the number of commuters in the ten biggest German cities rose to almost 3.75 billion travellers. According to the Verkehrs- und Tarifverbund Stuttgart, the percentage of employees commuting is about 60 – so the total number of commuters is about 2.25 billion each year. If the current trend stays constant, in only six years just the public transport company of the city of Berlin will transport more than one billion commuters a year (see Appendix I). Accordingly, there is a relevant number of commuters in the larger German cities. This high number might provide a sufficiently big target group to consider the approach of the Virtual Stores.

3. Literature Review

3.1 Development of IT Research and Technological Adoption Models

Since the introduction of computer systems and the invention and dispersion of the Internet, the comprehension of how an early innovative technology spreads wide to a global mass application became more and more important (Kotrik, 2009). Consequently, many economists focussed on this field of research as it gained special relevance for industry and retail. However, in the early years of IT adoption, research scientists focussed on IT adoption in organizational contexts. A profound understanding of how new technologies are going to be adopted by employees could provide progress and advantages in internal processes. Since the rise of digital technologies, this knowledge provides crucial competitive edge over competitors in the battle for customers.

Digital technology began its triumphal procession in the 1970's. Characterized by growing technology needs and increasing failures of system acceptance in companies and organizations, predicting system use in companies gained significant relevance years before consumers got to the centre of attention (Chuttur, 2009). However, most of the contemporary studies carried out failed to produce reliable measures that could explain system acceptance or rejection (Davis, 1989). In 1985, Fred Davis developed the Technology Acceptance Model (TAM) in his doctoral thesis at the MIT Sloan School of Management (Davis, 1985). He proposed that System Use is a response that can be explained or predicted by user motivation, which, in turn, is directly influenced by an external stimulus consisting of the actual System's Features and Capabilities (see Appendix J) (Chuttur, 2009).

Since 1985, several other models were developed, most of them were based or direct advancements of Davis Technology Acceptance Model. An overview of the IT research development can be found in Appendix K. However, in the beginning of the millennium IT researchers were confronted with a choice among a multitude of models and found that they must "pick and choose" constructs from across the models, or choose a "favoured model" and largely ignore the contributions from alternative models. Thus, there was a need for a review and synthesis in order to progress toward a unified view of user acceptance (Venkatesh *et al.*; 2003). This new and unified model should exceed the researches concerning the established Technology Acceptance Model and in addition rely on other successful models of IT acceptance research.

In 2003, the scientists Venkatesh, Morris as well as Gordon and Fred Davis published an article in which they aimed to formulate a unified model. Their motivation was to review and compare established and successful models, formulate and validate one combined model integrating all relevant factors (Kotrik, 2009). In their paper, Venkatesh *et al*. (2003) used eight models to define their theorized determinants of intention and/or usage (Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions) and identified four key moderating variables (Experience, Voluntariness of Use, Gender and Age). Under the influence of the moderating variables, three of the four core determinants determine the Behavioural Intention, which in turn finally determines the actual Use Behaviour. Later on, the unified model was defined as the "Unified Theory of Acceptance and Use of Technology" (UTAUT) (see Appendix L).

Within this model, Performance Expectancy was defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. From a theoretical point of view, there is reason to expect that the relationship between Performance Expectancy and Behavioural Intention will be moderated by gender and age, as research on gender differences indicates that men tend to be highly task oriented (Minton and Schneider, 1980). Similar to gender, age is theorized to play a moderating role. Research on job-related attitudes suggests that younger workers may place more importance on extrinsic rewards (e.g. Hall and Mansfield, 1975; Porter, 1963), so that the effect of Performance Expectancy will be stronger for younger ones.

As second core determinant of Behavioural Intention Effort Expectancy is defined as the degree of ease associated with the use of the system. Venkatesh and Morris (2000) suggest, drawing upon research from Bem and Allen (1974), that Effort Expectancy is more salient for women than for men, as gender differences predicted in this case could be driven by cognitions related to gender roles (e.g. Lynott and McCandless, 2000; Motowidlo, 1982, Wong *et al*., 1985). Increased age was associated with difficulties in processing complex stimuli and allocating attention to information on the job (Plude and Hoyer, 1985), both of which may be necessary when using software systems. Drawing from the arguments made in the context of Performance Expectancy the authors expect gender, age and experience to work in concert and propose that Effort Expectancy will be most salient for women, particularly those who are older and with relatively little experience with the system (Venkatesh *et al*.; 2003).

The third core determinant "Social Influence" is defined as the degree to which an individual perceives that important others believe he or she should use the new system. Prior research

suggests that individuals are more likely to comply with others expectations when those referent others have the ability to reward the desired behaviour or punish nonbehaviour (e.g. French and Raven, 1959; Warshaw, 1980). This analysis of compliance is coherent with outcomes in the technology acceptance literature pointing out that reliance on others' opinions is significant only in mandatory settings, when an individual's opinions are relatively ill-informed (Agarwal and Prasad, 1997; Hartwick and Barki, 1994). Furthermore, theory suggests that women tend to be more sensitive to others' opinions and therefore find social influence to be more salient (Miller, 1976; Venkatesh *et al*., 2000) with the effect declining with experience (Venkatesh and Morris, 2000). Rhodes' (1983) concluded that affiliation needs increase with age, suggesting that older workers are more likely to place increased salience on social influences with the effect of declining with experience (Morris and Venkatesh, 2000). Therefore, the authors expected an interaction with all four moderating variables, Gender, Age, Experience and Voluntariness of Use (Venkatesh *et al*., 2003).

The fourth core determinant "Facilitating Conditions" is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system. According to the comparisons and reviews of the scientists, it could be demonstrated that issues related to the support infrastructure are largely captured within the Effort Expectancy construct, which taps the ease with which that tool can be applied (Venkatesh *et al*., 2000) and is significant in predicting Behavioural Intention. Organizational psychologists have noted that older workers attach more importance to receiving help and assistance on the job (e.g. Hall and Mansfield, 1975), which underlines the increasing cognitive and physical limitation associated with age. Thus, when moderated by experience and age, Facilitating Conditions will have significant influence on Usage Behaviour (Venkatesh *et al*., 2003). Finally, the article suggested that, consistent with the theory of all of the intention models discussed, Venkatesh *et al*. (2003) expect that Behavioural Intention will have a significant positive influence on technological usage.

To verify the empirical support of UAUT to information technology acceptance research the model was tested with the same data as the eight mentioned models. Given that UTAUT explained as much as 70 percent of the variance in intention, the authors believed that they possibly approached the practical limits of their ability to explain individual acceptance and usage decisions in organizations (Venkatesh et al., 2003).

3.2 UTAUT2 – Model for IT Adoption Research in Consumer Context

Since its original publication, UTAUT has served as a baseline model and has been applied to a variety of technological studies in both organizational and non-organizational settings. There have been many applications and replications of the model (or parts of the model) that have contributed to fortify its generalizability (e.g., Neufeld *et al*. 2007).

However, the original UTAUT had not the intention to predict the behaviour of individuals in a consumer context. Consequently, in 2012 Venkatesh *et al*. focussed to develop a model that could predict the acceptance and use of IT by consumers. Given the number of technological devices, applications and services globally sold, this was already a multibillion-dollar industry (Stofega and Llamas, 2009). A new model focussing on consumers would help organizations in the consumer technology industry to better design and market technologies to consumers in various demographic groups at various stages of the use curve (Venkatesh *et al*., 2012). For this reason, UTAUT was extended to include the consumer technologies context. In their article "Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology" Venkatesh *et al*. (2012) presented the UTAUT2 model by identifying and integrating new elements and links into the original UTAUT.

Based on UTAUT and its four key constructs, Venkatesh *et al*. (2012); adopted the basic framework and definitions, but put it in consumer technology context. Consequently, Performance Expectancy was defined as the degree to which using a technology will provide benefits to consumers in performing certain activities. Effort Expectancy is the degree of ease associated with consumers' use of technology. Social Influence is the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology and Facilitating Conditions refer to consumers' perceptions of the resources and support available to perform a behaviour (e.g., Brown and Venkatesh 2005; Venkatesh *et al*. 2003). The moderating variables, Age, Gender and Experience were adopted to UTAUT2. They kept their original moderating character between the established core determinants and Behavioural Intention, while the influence of Age on Facilitating Conditions was added. The fourth original moderator "Voluntariness of Use" was dropped because in the new context consumers have no organizational mandate and thus, most consumer behaviours are completely voluntary (Venkatesh *et al*., 2012). In addition to the four established core determinants, Venkatesh *et al*. (2012) added three further determinants namely Hedonic Motivation, Price Value and Habit (see Appendix M).

As mentioned in the previous chapter, in UTAUT, Facilitating Conditions were expected to influence technology use directly. This is because many aspects of Facilitating Conditions, such as training and support provided, will be freely available within an organization (Venkatesh *et al*., 2012). In contrast, the facilitation in the environment that is available to each consumer can vary significantly across different factors. Consumers with a better access to a set of Facilitating Conditions are more likely to have a higher intention to use a technology, clarifies Venkatesh *et al*. (2012) by exemplifying mobile internet. Consumers may have different levels of access on resources as online tutorials, different phones or different rates of data transfer. Consequently, in the consumer context Facilitating Conditions link to Behaviour Intention and Use. Moreover, Age, Gender and Experience are expected to moderate the effect of Facilitating Conditions and Behavioural Intention, as older consumers tend to face more difficulties in processing new or complex information, thus affecting their learning of new technologies (Morris *et al*. 2005; Plude and Hoyer 1985). Men are rather willing to overcome different constraints and difficulties to pursue their goals, with women tending to focus more on the magnitude of effort involved and the process to achieve their objectives (Henning and Jardim 1977; Rotter and Portugal 1969; Venkatesh and Morris 2000). Greater experience can lead to greater familiarity with the technology and better knowledge structures to facilitate user learning, thus reducing user dependence on external support (Alba and Hutchinson 1987).

Hedonic motivation is defined as the fun or pleasure derived from using a technology. It has been shown that it plays an important role in determining technology acceptance and use (Brown and Venkatesh, 2005). Conceptualized as perceived enjoyment it has been found to influence technology acceptance and use directly (e.g., van der Heijden 2004; Thong *et al.*, 2006) – also as important determinant of technology acceptance and use in the consumer context (e.g., Brown and Venkatesh 2005; Childers et al., 2001). Consequently, it was added as a predictor of consumers' Behavioural Intention to use a technology.

One important difference between a consumer use setting and the organizational use setting is that consumers usually bear the monetary cost of such use whereas employees do not. The cost and pricing structure may have a significant impact on consumers' technology use. (Venkatesh et al., 2012). According to Zeithaml (1988), the monetary cost/price is usually conceptualized together with the quality of products or services to determine the perceived value of products or services. UTAUT2 follows this idea and defines Price Value as consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost for using them (Dodds *et al*., 1991). The Price Value is positive when the benefits of using a technology are

perceived to be greater than the monetary cost and such Price Value has a positive impact on Intention (Venkatesh *et al*., 2012).

Experience, as conceptualized in prior research (e.g., Kim and Malhotra 2005; Venkatesh *et al*., 2003) is typically operationalized as the passage of time from the initial use of a technology by an individual. Habit has on the one hand been defined as the extent to which people tend to perform behaviours automatically because of learning (Limayem *et al*., 2007), while on the other hand Kim *et al*. (2005) equates habit directly with automaticity. So there are two ways to explain habits – first, as prior behaviour (Kim and Malhontra, 2005) and second, as the degree to which someone believes his/hers behaviour to be automatic (Limayem *et al*., 2007). According to this, there are two distinctions between habits and experience. First, experience is a necessary but not sufficient condition for the formation of a habit. Second, that the passage of chronological time can result in the formation of differing levels of habits developed. The relationship between experience and habit is formed and strengthened by repeated behaviour (Limayem *et al*., 2007; Newell and Rosenbloom 1981). Habit is a learned outcome and only after a relatively long period of extensive practice can it be stored in long-term memory and override other behaviour patterns (Lustig *et al*., 2004). Consequently, Limayem *et al*. (2007) included prior use as a predictor of habit and Ajzen and Fishbein (2005) noted that feedback from previous experiences influences future behavioural performance, Venkatesh *et al*. (2012) defines habit as perceptual construct that reflects the result of prior experiences.

In addition to the extra determinants, UTAUT was tailored to the consumer context by adding relationships as can be seen in the addition of a direct relationship from Facilitating Conditions to Behavioural Intention over and above the existing relationship between Facilitating Conditions and Technology Use (Venkatesh *et al*., 2012).

Behavioural Intention is expected to be moderated by Age and Gender. By Age because older consumers tend to face more difficulties in processing new or complex information, thus affecting their learning of new technologies (Morris *et al*., 2005; Plude and Hoyer, 1985). Concerning Gender, because more men are willing to spend effort to overcome different constraints and difficulties to pursue their goals, with women tending to focus more on the magnitude of effort involved and the process to achieve their objectives (Henning and Jardim 1977; Rotter and Portugal 1969; Venkatesh and Morris 2000). Experience can also influence the relationship between Facilitating Conditions and Behavioural Intention as greater experience can lead to greater familiarity with the technology and better knowledge structures

to facilitate user learning, thus reducing user dependence on external support (Alba and Hutchinson, 1987).

In addition, all three moderators influence the impact of Hedonic Motivation on Intention. The individual innovativeness, and novelty seeking as well as the according perception of novelty of a target technology of each consumer allow inference about the influence of Experience on Hedonic Motivation. Innovativeness is "the degree to which an individual is receptive to new ideas and makes innovation decisions independently" (Midgley and Dowling, 1978). Novelty seeking is the tendency of an individual to seek out novel information or stimuli (Hirschman, 1980). Such innovativeness and novelty seeking can add to the hedonic motivation to use any product (Holbrook and Hirschman 1982). Further, age and gender have been found to be associated with consumer technology innovativeness (Lee et al. 2010). In the early stages of using a new technology, younger men tend to exhibit a greater tendency to seek novelty and innovativeness (e.g., Chau and Hui 1998). Consequently, Venkatesh et al. (2003) hypothesize that Hedonic Motivation will affect the Behavioural Intention of younger men in early stages of experience with a technology stronger.

Moreover, the effect of Price Value on Behavioural Intention is expected to be moderated by Age and Gender. Theories about social roles (e.g. Bakan, 1966; Deaux and Lewis, 1984) suggest that men and women take different social roles and exhibit different behaviours. Particularly, men tend to be independent, competitive and make decisions based on selective information and heuristics, while women are interdependent and cooperative and consider more details (Bakan, 1966; Deaux and Kite, 1987). Consequently, in a consumer context, women are likely to pay more attention to the prices of products and services, and will be more cost conscious than men will. (Venkatesh *et al*., 2012). The gender difference induced by social role stereotypes is also amplified with aging, because older women are more engaged with their social role as gatekeepers of family expenditures (Deaux and Lewis, 1984). This explains why Venkatesh *et al*. hypothesizes that the effect of Price Value on Behavioural Intention is stronger among (particularly) older women.

As the focus is on the construct Habit, the scientists expect them to influence both intention and use behaviour. Considering the Theory of planned Behaviour, they assume that repeated performance of a behaviour can result in well-established attitudes and intentions that can be triggered by attitude objects or cues in the environment (Ajzen and Fishbein, 2000). Once activated, attitudes and intentions will automatically guide behaviour without the need for conscious mental activities, such as belief formation or retrieval (Fazio, 1990). Following this

line of reasoning, stronger habit will lead to a stored intention that in turn will influence behaviour. (Venkatesh *et al*., 2012).

Concerning the influence of Habit on Use Behaviour there are two causal pathways by which Habit ultimately influences use. Both hinge on information and cue processing. According to Verplanken and Wood (2006) a consumer who is more sensitive for changes in his/her environment will be less likely to maintain the old behavioural patterns, e.g. because of distractions, interruptions etc. In turn, a consumer that is less sensitive or just generally less aware of his / her environment will tend to ignore the variety of environmental cues and stick to their routinized behaviour. Across individuals, Venkatesh *et al*. (2012) expect both pathways to be operational to varying extents. Since, the relationship between Experience and Habit is formed and strengthened by repeated behaviour (Limayem *et al*., 2007; Newell and Rosenbloom, 1981) and Habit is a learned outcome, which can only be stored in long-term memory and override other behaviour patterns after a relatively long period of extensive practice (Lustig *et al*., 2004). Although it is possible to develop a habit through repetition in a short period, the longer the elapsed time, the more opportunities consumers have to create an association between cues and behaviour. Thus, habit will have stronger effect on intention and use for more experienced consumers (Venkatesh *et al*., 2012).

Moreover, both effects – Habit influencing Behaviour Intention and Habit influencing Use Behaviour – are moderated by Age, Gender and Experience. In addition, Age and Gender reflect people's differences in information processing (i.e., cue perception and processing process) that in turn can affect their reliance on Habit to guide behaviour (Venkatesh *et al*., 2012). It has been found that older people tend to rely largely on automatic information processing (Hasher and Zacks, 1979; Jennings and Jacoby, 1993), with their habits preventing or suppressing new learning (Lustig *et al*., 2004). As soon as an elderly consumer has developed habits by frequently using a particularly technology, they find difficulties in overriding these habits and to adapt to an altered environment. Likewise, gender moderates the effect of habit. Research has shown that women tend to pay more attention to details and elaborate on details in their messages than men do (e.g., Gilligan 1982; Krugman 1966). Especially in the context of consumer decision making, women have been found to exhibit greater sensitivity to details than men exhibit when making judgments or decisions (e.g., Farina 1982; Meyers-Levy and Tybout 1989). Thus, it follows that women will be more sensitive to new cues or cue changes in the environment and pay attention to such changes that will in turn weaken the effect of habit on intention or behaviour. Finally, the effect of habit on Behavioural Intention and Use Behaviour

will be stronger for older men with high levels of experience with the technology (Venkatesh *et al*., 2012).

Finally, the impact of Behavioural Intention on Use Behaviour is moderated by experience. With increasing experience, routine behaviour becomes automatic (Jasperson *et al*., 2005). As a result, the effect of Behavioural Intention on technology use will decrease as experience increases. Consequently, Venkatesh *et al*. (2012) expects that experience will moderate the effect of Behavioural Intention on use, such that the effect will be stronger for consumers with less experience.

3.3 Consumer Characteristics and their effect on accepting online shopping

As explained in chapter 2.1 the rise of the internet had a global impact on peoples shopping habits. The development of the internet has increased the number of online shopping activities (Hill and Beatty, 2011) and experts expect global online sales to outpace offline sales soon (see Appendix C). Consequently, understanding the opportunities this new online market has to offer is crucial for any business that wants to be competitive (Keisidou *et al*., 2011). Accordingly, online consumer attitude is an issue that concerns many researchers (Cheung *et al*., 2003; Liao and Shi, 2009; Darley, Blankson and Luethge, 2010). An essential question in this area is about the factors that determine consumers' decision to make a purchase from a certain electronic shop (Lowengart and Tractinskky, 2001).

Since the beginning of online shopping researches, the correlation between the type of product or service and the particular online shopping behaviour got a lot of attention. According to Peterson, Balasubramanian and Bronnenberg (1997) due to the special features of the internet its suitability to market products and services depends on the features of the products and services being marketed. In addition, Liang and Huang (1998) showed that different product types affect consumers' acceptance of online shopping differently. Cho *et al*. (2003) supported that the purchasing behaviour of customers in online markets depends on what product or service they have in mind. Moreover, Korgaonkar, Silverblatt and Girard (2006) and Hassanein and Head (2006) found that the type of the product which is being sold online is responsible for the variations of customers' buying online performance.

Keisidou *et al*. (2011) presented a study examining how different product types affect consumer attitude concerning online shops in 2011. In order to develop a suitable theory the author reverts on determinants that form consumer behaviour, the factors that determine the user acceptance of online shopping and previously conducted researches. Keisidou *et al*. (2011) assert that there

are four main factors of user acceptance of online shopping: consumer characteristics, personal perceived values, website design and product. While referring to numerous sources the authors points out personality traits, self-efficacy, demographic profiles and acceptance of new IT applications as variables of consumer characteristics. Personal perceived values include perceived danger, perceived convenience, perceived web site quality and perceived benefits. The two variables presenting website design are security and privacy. Product, the fourth factor, is classified based on Peterson, Balasubramanian and Bronnenberg (1997) who established a product categorisation that focussed online commerce. Based on the special characteristics of the internet, they proposed a classification for online products, which consists of three dimensions: cost and frequency of purchasing, value proposition and degree of differentiation (Keisidou et al, 2011). Consequently, based on these insights as well as according to several previous studies focussing online consumer behaviour, Keisidou et al. (2011) developed a research model including the five most critical variables. It features Personal Innovativeness of Information Technology (PIIT), Internet Self-Efficacy, Perceived Web Security, Privacy Concerns and Product Involvement (see Appendix N).

The authors define Personal Innovativeness as the degree that one adopts new ideas faster than the other members of a system (Rogers, 1995). In terms of IT, the definition of PIIT is the willingness of a user to experiment on new information technologies (Agarwal and Prasad 1998). Hwang (2009) stated that online shopping is an innovative behaviour that is more likely to be adopted by innovators. Consumer behaviour towards online shopping is significantly affected by PIIT and so users with high levels of PIIT are more likely to accept online purchasing (Keisidou et al, 2011). Accordingly, the authors hypothesize that high levels of PIIT have a positive effect on consumer attitude towards online shopping.

Internet Self-Efficacy derives from the social cognitive theory proposed by Bandura (1997). Eastin (2002) and O'Cass and Fenech (2003), Perea y Monsuwé, Dellaert and de Ruyter, (2004), Wei and Zhang (2008) and Hernández, Jiménez and Martín, (2011) applied that term in the context of internet; they named it Internet Self-Efficacy and defined it as the belief in one's abilities to use the internet effectively. In terms of shopping, it describes the individual's ability to apply their skills to complete a purchase on the internet (Hernández, Jiménez and Martín, 2009). It has a positive effect on user acceptance of online shopping (Eastin, 2002; O'Cass and Fenech, 2003). Consumers with low self-efficacy levels are insecure and feel uncomfortable making purchases over the internet (Perea y Monsuwé, Dellaert and de Ruyter,

2004). Thus, the authors infer that a high level of Internet Self-Efficacy positively influences consumer attitude towards online shopping (Keisidou et al, 2011).

Perceived Security is defined as a threat that creates an event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosures, modification of data and/or fraud, waste and abuse (Roca, García and de la Vega, 2009). Another definition states that Perceived Security is the consumer's belief that his financial data is not visible, will not be stored or used by non-authorised users (Flavián and Guinalíu, 2006). O'Cass and Fenech (2003) consider that the adoption of online shopping is seriously affected by the user perception of security. Accordingly, Keisidou (2011) hypothesizes that high levels of perceived online security positively affect the consumer attitude towards online shopping.

Privacy is described as the state of being free from intrusion or disturbance in one's private life. For the cyberspace it is defined as the user's ability to control the terms by which his personal information is collected and used (Flavián and Guinalíu, 2006; Lee, Eze and Ndubisi, 2011). Perceived privacy in online shopping is the possibility that online companies collect data about individuals and use them inappropriately (Roca, García and de la Vega, 2009). Privacy is a crucial issue for consumers (Dolnicar and Jordaan, 2006) that affects consumers' trust towards the online retailer (Pan and Zinkhan, 2006). As Privacy Concerns rise, consumers are not willing to provide personal information and thus, the authors hypothesize that high Privacy Concern levels have a negative effect on consumer attitude towards online shopping (Keisidou et al., 2011).

Product Involvement represents a concern with a product that the consumer brings into a purchase decision (Pedersen and Nysveen, 2005). Consumers with high Product Involvement experience constant high involvement with a particular product category. Keisidou et al. (2011) expects that high Product Involvement levels positively influence consumer behaviour towards shopping online and thus, the authors stated that high Product Involvement levels positively affect consumer attitude towards online shopping.

Finally, many researchers (Bhatnager, Misra and Rao 2000; Peterson, Balasubramanian, and Bronnenberg 1997; Liao and Cheung, 2001; Lian and Lin, 2008) have insisted on the importance of different product types when being marketed online. However, according to Keisidou et al. (2011) most of the previous studies have focused their attention on one product or one category of similar products. This time the authors employ different unrelated product types to examine their influence on consumer characteristics and consumer attitude towards

online shopping. Consequently, they state product categories affect the relationships between consumer characteristics and attitudes toward online shopping (Keisidou et al, 2011).

3.4 Consumers Expectations towards Online Grocery Shopping

The question whether German consumers might or might not accept or feel the intention to use Virtual Stores cannot completely be answered by focussing solely on the basic adoption approach of UTAUT2 or the commercial approach of attitude towards online shops. As explained in chapter 2.2 shopping groceries online or via QR-Codes means more than simply acquiring a random good by using a certain technology or using a specific online shop. Concerning grocery shopping, there are further critical factors, which decide whether a sales approach is successful or not. Unlike books, electronics or cloths, especially groceries are sensible products, as consumers tend to feel, smell or taste them before they make a buying decision. Issues concerning missing trust and consumers worries about the quality and freshness of the delivered groceries are principle points why online grocery retailing could not make the breakthrough. In other words, there are additional product-, assortment- and brand-related factors, which are crucial for grocery shopping and surmount the dimensions of UTAUT2. For this reason the model needs further constructs to give a holistic answer whether Virtual Stores are a potentially successful sales approaches for German retailers.

The publication of "Assessing Customers' Attitudes/Expectations Toward Online Grocery Business" by Cho (2009) investigates on customer attitudes towards online grocery shopping, the consumer satisfaction with online grocery stores and its inherent limitations of quality assessment, as the web cannot deliver the necessary sensory experiences. Generally, according to Figueiredos (2000) proposed product categories, the attributes whether a product is evaluated as a commodity, quasi-commodity, look-and-feel good or look-and-feel good with variable quality determine in how far the quality is easy or difficult to judge online (see Appendix O). Consequently, the harder it is for a consumer to judge the quality the lower his or hers acceptance to buy that product category online. Cho reasons applying e-strategies that minimize risk and uncertainty are a significantly important factor for the success of e-business, especially if the products hold a higher risk in consumer perception.

However, besides the factor how easy the quality of a product is determined on the web, other factors affect the consideration of changing buying behaviour toward grocery shopping. They include the family member who is in charge for grocery shopping or the number of family members (Cho, 2009). In order to switch customer behaviour regarding online grocery business,

Cho suggests that those businesses should provide higher levels of value-added services, as recommendation services or alarm service based on previous shopping history etc. Other business examples try to convince by cheaper prices, provided hand-delivery system in a timely manner and monitored quality, other by focussing on convenience, simplicity and superior fit with consumer lifestyle or even by targeting busy households, particularly families who were looking for ways to free themselves from stressful household replenishment duties (Taylor, 2003). As the majority of consumers is already familiar and experienced with online shopping, hybrid services that are applied to multi-retail formats and communication system such as combined services of E- and M-Commerce are also utilized to meet customers' higher level of needs and wants (Cho, 2009).

To reach the goal of "Assessing Customers' Attitudes/Expectations Toward Online Grocery Business" Cho adapts the Technology Acceptance Model (TAM) introduced in chapter 3.1 for her research in order to describe users'/customers' attitudes and behaviour in the E-Commerce environment (see Appendix P). As this model has proven its value in a previous study to explain features of users and the features of technological innovations for E-Businesses, she expects that the model explains online customers willingness to adopt business and how their internal beliefs and attitudes affect their satisfaction as well (Carlsson, Hyvonen, Repo and Walden, 2005). In particular, the study classifies factors that can be used to measure Perceived Usefulness and Perceived Ease of Use. According to Cho (2009), these factors are Convenience, Product, Brand Name, Price, Information and Entertainment Factor. The study measures the impact of such factors on Perceived Usefulness and Perceived Ease of Use as they are considered to be the predictors affecting customers' acceptance of online grocery shopping behaviour. In this model, an increasing Overall Satisfaction with online grocery business is caused by the positive attitude of the consumer. Consequently, Cho (2009) hypothesizes as Perceived Usefulness and Perceived Ease of Use on online grocery business is higher, consumer satisfaction toward online grocery business increases.

Various researchers found that a major factor in increasing consumer satisfaction from E-Commerce is the Convenience Factor (Cho *et al*, 2001). The target groups with potential preferences concerning online grocery shopping include time-pressured consumers such as busy professionals or working parents and also customers whose poor health prevents them from going to a classic brick and mortar market. The more consumers generally perceive E-Commerce is providing convenience through efficient systems and advanced valuable services, customers will more likely perceive online grocery markets as a convenient retail space. To

enhance satisfaction and minimize complaints as well as perceived risks value added services as higher levels of customisation including reminder service, purchase history, etc. should be adopted as well as M-Commerce services. Consequently, Cho (2009) hypothesizes as customers perception of convenience of online grocery markets is higher, Perceived Usefulness and Ease of Use increases.

Concerning the Product Factor, Cho (2009) focusses specifically on product availability as important factor in order to meet customer needs. In addition to a broad range of products, the consideration and maintenance of product quality should be the key for the online grocery business. Based on the consideration of product-related issues, Cho (2009) hypothesizes that user perception of the product/service quality toward online grocery markets positively affects perceived usefulness and ease of use (Cho, 2009).

The Brand Factor has also a high importance as it helps buyers to recognize certain products they like or dislike, facilitates the purchase of items that satisfy their needs, creates a certain level of confidence and reduces the time required purchasing the product (Pride and Ferrel, 2009). Cho (2009) posits how customers perceive brand names significantly affect customer attitudes toward online grocery markets. In particular, online grocery markets sell perishable items that are the most risky and uncertain in the buyers' perspective, as the quality is not easily determined on the web. Therefore, building brand reliability is a major concern. The development of brand reliability should be even harder for "pure players" (i.e., pure online businesses) than for extended offline retail store, as customers already have built perceptions about the store in their mind. Therefore, Cho (2009) hypothesizes that user perception of the brand name of online grocery market positively affects perceived usefulness and ease of use.

In almost every buying process, the price is an important factor. Concerning online retailers customers' perception on the price offered are lower due to the direct marketing operated with an efficient channel system. Hence, like other forms of online shopping, the future of the grocery market is likely to come down to convenience and price (Cho, 2009). According to Cho (2009), online grocery shops need to offer competitive prices as just a few customers are willing to pay more for products and/or services with online grocery businesses and price remains a key driver of online shopping behaviour in the grocery category. Therefore, Cho (2009) hypothesizes that customer perception of price factors of online grocery markets is positively associated with perceived usefulness and perceived ease of use.

How the online business provides detailed information has greatly affected to the purchase decision (Cho, 2009). In order to approach customers successfully, Cho (2009) suggests that

online grocery businesses should apply services that are more advanced by providing detailed information to minimize uncertainty. Minimizing uncertainty counts for all aspects of the transaction – the better the consumer feels informed the more comfortable he will feel in the shopping space – from product-related information, information concerning payments and delivery. It will positively affect users' behavioral intention to use an online grocery shop (Cho, 2008). Therefore, this study hypothesized that how customers perceive information quality offered by online grocery markets affects the perception of ease of use and usefulness.

Finally, the Entertainment factor determines in how far customers perceive online grocery shopping as fun activity. This might affect overall attitudes toward the online grocery markets (Cho, 2009). Such customer attitudes are also explained by the social escapism motivation theory, which explains consumers' motives for using the web as a reliever of day-to-day boredom and stress (Zhou 2002: Korgaonkar & Wolin 1999). Accordingly, Cho (2009) hypothesizes that customers' perception of online grocery market (as entertaining market place) positively affects perceived usefulness and ease of use.

3.5 Conceptual Model and Research Hypotheses

As explained in 3.1, UTAUT2 was successful in embedding the constructs of UTAUT into a consumer context and predicting their acceptance and use of information technology. According to UTAUT2 and the findings presented above, there are core determinants, which influence Behavioural Intention and Use Behaviour. In this way, the authors provided e.g. online shopping researchers with a reliable frame concerning the examination of whether consumers would accept and adopt a new kind of mobile/online shop from an elementary, technical and feasible point of view. Venkateshs *et al.* (2012) pointed out several areas of preconditions that are more or less crucial for the consumer intention to use this store. Nevertheless, certain nontechnical factors and principle points of online shopping and specifically online grocery shopping could not be reflected by Venkateshs *et al.* (2012) model.

As explained in chapter 3.2, for managers of online shops it is essential to find out which are the factors determining consumers' decision to shop from a certain electronic shop. According to Keisidou *et al.* (2011) and their study about consumer characteristics and their effect on accepting online shopping, the attitude towards online shopping is affected by five constructs respectively determinants and consumers attitude concerning the specific product type. Besides the fundamental IT adoption process provided by Venkatesh *et al.* (2012), Keisidou *et al.'s*

(2011) model yields the commercial and sales psychological perspective. Accordingly, these factors supplement Venkateshs *et al.'s* (2012) core determinants of IT adoption.

However, both models, Venkatesh *et al.* (2012) and Keisidou *et al.* (2011), cannot get completely down to the root of the challenge integrating all necessary factors to determine consumers' Behavioural Intention to use Virtual Stores. On the one hand, UTAUT2 misses the more commercial and sales psychological perspective. On the other hand, the concept of product classification based on Peterson, Balasubramanian and Bronnenberg (1997) which is applied in Keisidou *et al.'s* model (2011) seems not suitable for the purpose of this study. Concerning online grocery shopping it appears too simple and not reflecting the sensibility and complexity of the whole topic online grocery shopping. Keisidou *et al.*'s (2011) focus was on consumers' attitude when making online purchases in the context of different product types. Considering groceries, this kind of Keisidou *et al.'s* (2011) classification is not explicitly suitable for numerous reason. The main reason is shopping groceries mostly means shopping multiple products in one purchase. Here, the price range within the singular food categories can vary substantially between discounter products or white labels, brand products and even premium brands. Normally all of these products are offered in the same shop. Even supermarkets that are offering their products in average more expensive than discounters, usually offer broad ranges of white label products or private brands, enabling thrifty and well-informed consumers to shop low priced products. Consequently, concerning grocery shopping a consumer can choose whether she/he wants to shop low or high priced more or less independently from the actual shop. Another reason, why this kind of product classification is not explicitly suitable for the purpose of this dissertation is due to its third dimension – differentiation potential. The differentiation in German grocery competition is mainly due brand strength and perceived brand benefit (Schwetje, Hinsch, and Kurczynski, 2012) as well as price (Striegl, 2008). For the different German supermarkets or discounters, the chances to differentiate due to products are limited as most of them offer the same brands. Accordingly, this construct is not use in the applied of this study.

Contrary to the two other models, Cho's model (2009) features important additional constructs by focussing directly on online grocery shopping. The virtually offered products, the applied brands or the necessary applied information are determinants, which are not or not completely provided by UTAUT2 or Keisidou *et al.*'s (2011) model. For that reason, in addition to UTAUT2 and Keisidou *et al.'s* (2011) model the Proposed Model of Customers Attitudes/Expectations toward Online Grocery Business- & E-Satisfaction supports the

conceptual model applied to investigate the research question of this master thesis. In line with this new theoretical construct, it is apposite to formulate ten manageable and practicable hypotheses – one for each connection of constructs – to create a reliable empirical investigation concerning the acceptance of Virtual Stores as well as their competitiveness against classic grocery shopping in bricks and mortar supermarkets and discounters. The three mentioned theories finally constitute the theoretical framework of this study. The models converge into each other and form the applied conceptual model of this master thesis (see Appendix Q). Therefore, the conceptual model is composed as explained in the following.

Focussing on UTAUT2 and its adoption for the purpose of this dissertation, we must consider that the situations in which UTAUT2 was originally applied shows clear differences. While Venkatesh *et al.* (2012) established UTAUT2 in context of mobile internet services, this dissertation applies the model to predict the probability of German, urban commuters accepting Virtual Stores. Obviously, in the case of Venkateshs research mobile internet technology was already well known and available. Therefore, it was possible to ask question investigating the actual Use Behaviour. In contrast, Virtual Stores are still unavailable and unknown to the majority of German consumers as they are a foreign sales approach from the Korean market. Consequently, the construct of Use Behaviour cannot be determined in this dissertation. However, Venkatesh *et al.* (2003) expect that Behavioural Intention will have significant positive influence on technological usage. It is also expected, that a positive feedback concerning Behavioural Intention allows the conclusion that also Use Behaviour will be positive (see Figure 01).

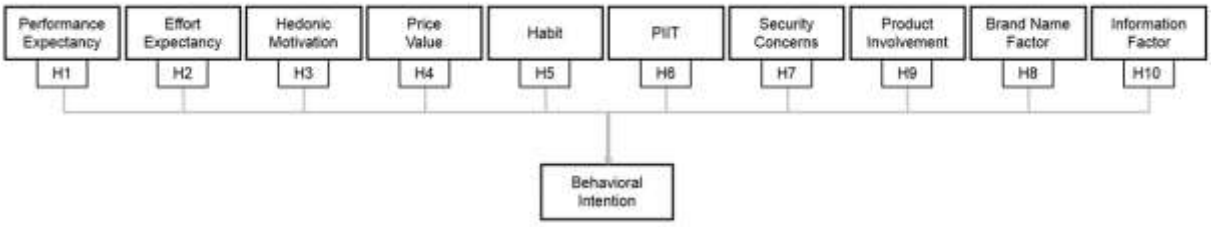


Figure 01: Adapted Conceptual Model including the Research Hypotheses

In addition, the constructs Social Influence and Facilitating Conditions were eliminated from the original UTAUT2 framework. Social Influence is defined as the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology. On the one hand and as explained in chapter 2.1, online shopping and mobile shopping already have a high social acceptance. In 2012, 35 million German people shopped various products online from home computers or by using a smart phone, what shows that this kind of shopping became normality. On the other hand, due to the fact Virtual Stores still do

not exist in that specific form, there is no option for other to influence ones intention to use them. Next to Social Influence also the construct Facilitating Conditions was eliminated. Facilitating Conditions is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system. According to Venkatesh *et al.* (2011), consumers with a better access to a set of Facilitating Conditions are more likely to have a higher intention to use a technology as consumers may have different levels of access on resources as online tutorials, different phones or different rates of data transfer. However, Virtual Stores are equipped with wireless internet free for all visitors of the subway station. In addition, there are free tutorials explaining the utilization and processes of the stores. The only condition concerning technical infrastructure that a consumer needs to fulfil is the possession of a smart phone. As mentioned in chapter 2.1.2, more than 45 Million Germans possessed a smart phone in 2015. Considering children and younger people as well as elderly people it allows the implication that the likeliness is sufficiently high that a commuter owns a smart phone and that a potential consumer will likely believe that all necessary infrastructure is provided.

Keisidou *et al.'s* model (2011) contributes PIIT, Product Involvement and Security Concerns (as combination of Perceived Security and Privacy Concerns). In this way, it equips the conceptual model with further determinants that shed light on how consumers develop attitudes toward online shopping. As Virtual Stores are a kind stationary mobile online shop, these constructs are critical for the success of this sales approach. As explained before the determinant Product Category is omitted, because it is not suitable for online grocery shopping and accordingly not suitable for this study.

Internet Self-Efficacy is defined as the belief in one's abilities to use the internet effectively. In terms of shopping, it describes the individuals' perceived ability to apply its skills to complete a purchase on the internet or in this case by using Virtual Stores. This construct resembles Effort Expectancy what is defined as the degree of ease associated with consumers' use of a technology or, in this case, the degree of ease associated with consumers' use of Virtual Stores. Accordingly, both constructs focus on the perceived complexity of understanding and using a technology. For that reason, both constructs are consolidated. Regarding the conceptual model, Internet Self-Efficacy is omitted as Effort Expectancy represents equal contents.

In addition, Keisidou's model (2011) features Perceived Security and Privacy Concerns. Perceived Security is defined as a threat that creates an event with the potential to cause economic hardship to data or network resources, etc. (Roca, García and de la Vega, 2009).

Privacy Concerns in online shopping are affected by the possibility of online companies to collect data about individuals and use them inappropriately (Roca, García and de la Vega, 2009) and privacy is a crucial issue for consumers (Dolnicar and Jordaan, 2006) that affects consumers' trust towards the online retailer (Pan and Zinkhan, 2006). Both constructs are based on fears. However, it is doubtful if a separation of these two fears is still meaningful, because they are more and more difficult to separate. Different kinds of malware, as for example Trojans, worms, web-based malware or botnets mean a constant threat for online users (Fliehe, 2015). The damage occurred by these malwares range from damages and malfunctions of soft- and hardware, spying of passwords, private conversation or media to change and/or abuse of individual personal and/or financial data (Fliehe, 2015). Not infrequently, these different kinds of damages go hand in hand. First, malware enters a personal device and normally debases processing power. Subsequently and according of its nature it is up to its mischief. First, the device is paralyzed, personal data, logins and passwords are spied and subsequently misused. Due to these reasons and within the meaning of this thesis it makes sense to combine both constructs to the new factor Security Concerns.

The constructs concerning Customers Attitudes/Expectations toward online grocery shopping are supplied by Cho's model (2009). It provides the additional factors affecting online grocery shopping that are elementary to find out if there is potential on the German online grocery market for the sales approach of Virtual Stores. Obviously, as regards content Cho's model (2009) shows unnecessary overlapping with UTAUT2 (2012) and Keisidou *et al.'s* model of Customers Attitudes/Expectations (2011). The conditions and requirements composing the Convenience Factor merge into Performance and Effort Expectancy, as those two constructs represent both sides of convenience. On the one hand and according to Cho (2009), how online retailers offer and how consumer perceive convenience significantly affects their attitudes toward the online grocery market. The more consumers generally perceive E-Commerce is providing convenience through efficient systems and advanced valuable services, customers will more likely perceive online grocery markets as a convenient retail space. On the other hand, Performance Expectancy is defined as the degree to which using a technology will provide benefits to consumers in performing certain activities and Effort Expectancy is the degree of ease associated with consumers' use of technology, these two constructs represent both sides of the perceived convenience, but more precisely. As convenience can also be described as the quality of being useful (performance side), easy, or suitable (effort side) for someone, the construct convenience is comparable with the outcome of the expected performance and the expected effort. Accordingly, Convenience Factor is omitted.

The matters concerning Price Factor are also reflected in the UTAUT2 construct Price Value. Both theories confirm the relevance of price in terms of online shopping and its influence on buying decision. Cho (2009) and Venkatesh *et al.* (2012) hypothesize that the influence of price is positive when the benefits of online shopping are perceived to be greater than the monetary cost respectively when the price is perceived as lower as in comparable offline shops. Accordingly, there is no justification for two price related constructs. Issues concerning price will be reflected by the construct Price Factor.

In addition, Hedonic Motivation and Entertainment Factor represent equal values. According to Venkatesh *et al*. (2012) Hedonic motivation is defined as the fun or pleasure derived from using a technology. It has been shown that it plays an important role in determining technology acceptance and use (Brown and Venkatesh, 2005). Cho (2009) hypothesizes that the Entertainment factor determines in how far customers perceive online grocery shopping as fun activity. How customers perceive online or offline shopping – as fun or stressful activity – might affect overall attitudes toward the online grocery markets (Cho, 2009). Accordingly, there is no justification for two entertainment related constructs. Issues concerning entertainment will be reflected by the construct Hedonic Motivation.

In addition, Product Factor shares similarity to Keisidou *et al.'s* (2011) Product involvement. According to Keisidou *et al.* (2011), Product Involvement represents a concern with a product that the consumer brings into a purchase decision (Pedersen and Nysveen, 2005) and consumers with high product involvement experience constant high involvement with a particular product category. According to Cho (2009), product factor represents product availability, a broad range of products, the consideration and the maintenance of product quality should as the factor of success for the online grocery business. In case of grocery shopping, it is obvious that the factors named by Cho are elementary for a high product involvement as they define the quality and value of grocery retailers. Accordingly and in the meaning of this thesis, it is suitable to combine both factors. As regards the conceptual model, Product Factor is omitted as Product Involvement represent the same values. Brand Name Factor and Information Factor are added to the Conceptual Model, as they complete the complex spectrum regarding the research question (see Figure 01).

As mentioned in chapter 2.1, E-Commerce as well as M-Commerce show massive growth and force industries and especially retail to constantly challenge and adapt their business models to the changing customer needs. While the influence of digital technologies on various retail sectors was immense, online grocery shopping could not gain relevant market share in

Germany. According to Performance Expectancy, what is defined as the degree to which using a technology will provide benefits to the consumer in performing the activity, Virtual Stores need to provide benefits, values and advantages that trump classic grocery shopping. In other words, the author expects that the various advantages arising by the use of Virtual Stores are sufficiently convincing to influence consumers Behaviour Intention with the effect that consumers' likelihood to do their (everyday) grocery shopping by using this technology and service rises.

H1: *Performance Expectancy has a positive effect on the intention of a consumer to use a certain information technology. Accordingly, the more the consumer expects the performance of a Virtual Store to be positive, the more likely the consumer shows intention to use Virtual Stores.*

Regarding Effort Expectancy, what is defined as the degree of ease associated with consumers' use of technology, Virtual Stores need to compete against brick and mortar grocery shopping in terms of technical, physical and temporal easiness. As mentioned before, Virtual Stores score with efficiency, like the time- and effort saving delivery service plus additional timesaving due to unnecessary stops in supermarkets avoiding idle times, dragging shopping bags etc. – in other words, Virtual Stores were developed to ease the everyday grocery shopping. Otherwise, Virtual Stores call for efforts in consideration of learning the technical processes of QR-Code scanning and the ordering procedures as well as for trust in the quality and freshness of the products and the reliability of the delivery service. In any case, potential Virtual Store user need to feel confident that they will manage to use this new shopping opportunity. Their belief whether they have the skills, capacity and courage to use the Virtual Stores effectively and apply these skills to complete a purchase is an elementary precondition for developing an intention to use Virtual Stores. However, the author expects that the efficiency-effects of simple and comfortable ordering and the ease of the time and effort saving delivery service are sufficiently convincing to dispel doubts concerning food- and delivery quality and missing experience concerning the ordering process. In addition, the author follows the findings of Venkatesh *et al.* (2012) assuming that Efficiency has a positive influence on Behaviour Intention.

H2: *Effort Expectancy has a positive effect on consumer intention to use a certain information technology. Accordingly, the more the consumer expects using Virtual Stores is easy and does not cause strong efforts the more likely the consumer shows intention to use Virtual Stores.*

Hedonic Motivation is defined as the fun or pleasure derived from using a technology. In comparison to classic grocery shopping, Virtual Stores are more likely to prevail, if they offer a more or at least comparable entertaining, joyful and pleasing shopping experience than consumers find in supermarkets. As mentioned in 3.2, especially hedonic motivation has an important role for consumers Behavioural Intention, as they demand more and more playful and easy operations as well as enjoyable processes. Consequently, the author assumes grocery shopping by using Virtual Store is a sufficiently entertaining and pleasing activity, provides an enjoyable shopping experience to its customers and has a positive impact on Behavioural Intention.

H3: *Hedonic Motivation has a positive effect on consumer intention to use a certain information technology. Accordingly, the more the consumer expects shopping with Virtual Stores is fun, the more likely the consumer shows intention to use Virtual Stores.*

As stated in Chapter 2.2.2, especially in Germany including its distinct discount structure in the grocery market the ratio between price and value is a very crucial aspect when it comes to a buying decision. Price Value is defined as cognitive trade-off between the perceived benefits of the application and the monetary cost for using them. In this case, the Virtual Store is in direct price value competition to German discounters and supermarkets. While Virtual Stores provide value in terms of time- and effort-saving effects, especially the delivery service causes additional costs, which could be allocated to the consumers in form of higher prices or an extra charge for deliverance. However, the author expects the perceived benefits of using Virtual Stores are greater than the potential monetary costs so that Price Value has a positive impact on Behavioural Intention.

H4: *Price Value has a positive effect on consumer intention to use a certain information technology. Accordingly, the more the consumer believes shopping with Virtual Stores is worth it, the more likely the consumer shows intention to use Virtual Stores.*

According to Venkatesh *et al.* (2012), habit is defined as perceptual construct that reflects the result of prior experiences. The determinant of habit must be examined from two perspectives. One the one hand, there are shopping habits. As mentioned in 2.2, one reason why online grocery could not really establish in the market is that consumer see no need to change their shopping habits, as their level of satisfaction with the classic style of grocery shopping was constantly high. On the other hand, there is a growing tendency that more and more consumers do online- respectively mobile shopping, using necessary software applications and develop a rising acceptance concerning online (grocery) shopping including delivery services.

Consequently, they develop new shopping habits including online and mobile shopping. This might also hold for grocery shopping. Accordingly, the author expects the established grocery shopping habits and their level of satisfaction are sufficiently fragile or low and do not preclude the intention to engage with Virtual Stores. In addition, it is assumed that the digital online shopping habits are sufficiently popular, support the engagement with Virtual Stores and allow developing new habits.

H5*: Habit has a positive effect on consumer intention to use a certain information technology. Accordingly, the sooner the consumer shows willingness to adapt new and unknown ways of shopping, the more likely the consumer shows intention to use Virtual Stores.*

If a German consumer shows intention to use Virtual Stores he/she shows a certain kind of willingness to experiment on new information technologies. Hwang (2009) stated that online shopping is an innovative behaviour that is more likely to be adopted by innovators. Kim and Forsythe (2010) supported that one is more likely to adopt an innovation they perceive as comfortable. Accordingly, consumer behaviour towards online shopping is significantly affected by PIIT and so users with high levels of PIIT are more likely to accept online purchasing. The following hypothesis derives from the aforementioned:

H6: *PIIT has a positive effect on consumer attitude towards online shopping. Accordingly, the higher the willingness to experiment with innovative technologies the more likely he/she shows intention to use Virtual Stores.*

As defined in chapter 3.2, any potential threat that could cause economic hardship to data or network resources in the form of destruction, disclosures, modification of data, denial of service, and/or fraud, waste and abuse would detain consumers from using Virtual Stores. For example, manipulated QR-Codes could link consumer using their smart phones to inappropriate websites, could download viruses or publish private information. Besides technical issues, also potential threats concerning financial information are crucial. Now, we are experiencing how issues concerning online security and privacy go hand in hand. Internet privacy is defined as user's ability to control the terms by which his personal information is collected and used (Flavián and Guinalíu, 2006; Lee, Eze and Ndubisi, 2011). Perceived privacy in online shopping is the possibility that online companies collect data about individuals and use them inappropriately (Roca, García and de la Vega, 2009). Nowadays and due to new malwares, the privacy of an internet user is threatened by private and public monitoring due to big commercial data collectors and data preservation. However, internet privacy and security are crucial issues

for consumers, when it comes to shop online. As security is the factor that often prevents users from shopping online, the following hypotheses states:

H7: *Security Concerns have a negative effect on consumer attitude towards online shopping. Accordingly, the less the consumer worries to sustain any kind of damage and is free of concerns, the more likely he/she shows intention to use Virtual Stores.*

As explained in chapter 3.2, Product Involvement represents a concern with a product that the consumer brings into a purchase decision (Pedersen and Nysveen, 2005) that reflects the products' relevance (Zaichkowsky, 1985), influences consumer motivation to make a purchase decision (Peter and Olson, 1996) and has an impact on his shopping experience and behaviour (Koufaris, 2002). One important factor in this context influencing the customer motivation is product availability (Cho, 2009). Consequently, the consumer will base her/his decision where to buy groceries on the factor where she/he finds the preferred products. Therefore, in order to meet customers' needs, online grocery markets should consider the product assortment, variety, and differentiation that are often applied to offline product strategies. In addition to the product range, maintenance of product quality should be the key for the online grocery business. So far, concerns about quality, freshness and integrity especially of delivered produce are one of the main reasons why online grocery shopping could not have been established in Germany yet. Hence, the more positively consumers perceive the quality of the delivered goods of the Virtual Stores, the more likely they feel the Intention to use them. Keisidou *et al.* (2011) and Cho (2009) expect that product related factors positively influence consumer behaviour towards shopping online. Accordingly, they state high product involvement levels affect consumer attitude towards online shopping positively.

H8: *Product Involvement has a positive effect on consumer attitude towards online shopping. Accordingly, the higher consumers level of Product Involvement the more likely he/she shows intention to use Virtual Stores.*

As mentioned in chapter 3.3 brands are important for consumers as they help buyers to recognize products, services and retail outlets. On the other side, they help companies to raise brand awareness, distinguish from their competitors and build recognizable competitive advantages. As in various other markets, in the German grocery retailing market there are companies that rather stand for quality than for cheap prices and vice versa. A brand name that stands for high quality products could eventually rise trust and reduce uncertainty. Online grocery shops sell perishable items that are most risky and uncertain, as the quality cannot be determined just by digital pictures. Therefore building brand reliability is a major concern.

Therefore, the more positively consumers perceive the brand name of the Virtual Store, the more likely they feel the Intention to use them.

***H9**: Brand Name has a positive effect on consumers' attitude towards online shopping, as it is important for the customers' perception. Accordingly, the better and more trustworthy consumer perceives and appreciates a specific brand that brands the Virtual Store, the more likely he/she shows intention to use Virtual Stores.*

To minimize uncertainty concerning the process of buying, from the quality of the chosen products, to safe transportation and delivery and easy and safe payment, a relevant set of detailed information needs to be provided. Information will help to eliminate doubts and concerns, rise transparency as well as trust toward the online grocery retailer. Hence, the more relevant details concerning the buying process are provided, the more likely consumers feel the Intention to use them.

***H10**: Information Factor has a positive effect on consumers' attitude towards online shopping. Accordingly, the more and the better the consumer feels informed, the more likely he/she shows intention to use Virtual Stores.*

Consistent with the underlying theory of Venkatesh *et al.* (2003), it is expected that Behavioural Intention will have a significant effect on Use Behaviour. In other words, if a consumer feels a positive intention to use a Virtual Store he or she will likely use them.

4. Methodology

4.1 Data Collection Process

The data for the survey were collected through an online questionnaire. About 400 people were contacted by email or over social networks and were asked to complete a questionnaire, which could be found under www.soscisurvey.de/Virtual_Stores. The questionnaire was accessed about 860 times. The survey was started 313 times. Finally, 259 respondents provided complete data sets. The survey was conducted from August 24th to September 6th 2015. The respondents predominantly live in the urban areas of the cities of Hamburg, Cologne, Düsseldorf and Mönchengladbach, as well as their suburban and catchment areas.

Everybody who clicked the mentioned link was directly guided to the welcome page of the survey. On this welcome page, the potential respondent was elucidated about the scientific background of the study, which had the title "Innovative distribution types for German food retailing" (Original in German: "Innovative Vertriebsmöglichkeiten für den deutschen Lebensmitteleinzelhandel"- see Appendix R). On the one hand, the welcome page featured a text that explained Virtual Stores in detail. On the other hand, it featured another link (www.youtube.com/watch? v=GsDwJyGXp_Y) guiding the potential respondent to a video clip. This clip is an original Tesco video about their Virtual Stores in Seoul, which was equipped with German subtitles. The clip was accessed about 175 times within the time of the survey. The text and the video clip were provided in order to assure a perfect understanding for the potential respondents about Virtual Stores.

4.2 Questionnaire Design

The questionnaire (see Appendix S) incorporates two major sections. First, there are questions and statements, which aim directly at the constructs represented in the conceptual model (see Figure 01) and at the formulated hypothesis in the previous chapter. Second, there are demographic and general personal questions. At the end of the survey, the questionnaire queries general statements concerning the Virtual Stores without direct relation to the constructs.

The questionnaire starts with demographic issues and asks about gender, age, family status, number of people in the household, level of education, employment situation and net-income. In addition, there are two more questions. The first one asks whether the respondent owns or plans to buy a smart phone, which would technically enable the interviewee to use Virtual Stores. The second question is how regularly the respondents make use of public transportation

or how frequently they visit metro- or train stations. All of these questions could be answered by using a dropdown menu.

After that, the questionnaire queries the respondents' acceptance to different statements concerning the constructs respectively the hypotheses. For each construct, the questionnaire presents five statements. In this way, it is possible to define the factor appropriately and accordingly, to analyse in how far this specific key factor influences the consumers' intention to use Virtual Stores. For this purpose, Likert Scales are used to request the consent or dissent of the consumer referring the statement. Likert Scales are one of the most appreciated statistical measurements in the area of marketing (Alexandrov, 2010) that most people are familiar with them. A Likert Scale measures the extent to which a respondent agrees or disagrees, whereas the most important validation is to incorporate at least five response categories (Allen and Seaman, 2007). To reach more accurate results it was decided to use seven response categories – strongly disagree, disagree, somewhat disagree, undecided, somewhat agree, agree, strongly agree. Accordingly, the answer strongly disagree while be represented by the value 1, the answer strongly agree is equal to 7.

The first construct to be analysed was Performance Expectancy, defined as the degree to which using a technology will provide benefits to the consumer in performing the activity. Consequently, the participants of the survey had to rate statements about how far a Virtual Store would ease their life. If it would allow them to shop more consciously, allow them more leisure time and spare the effort of going to a supermarket and dragging heavy shopping bags. Finally, the respondents agree or disagree whether they think the service of Virtual Stores means an advantage for the customer.

The second construct, Effort Expectancy, is defined as the degree of ease associated with consumers' use of technology. Accordingly, it was analysed how the consumers estimate the complexity of Virtual Stores by requesting the respondents' attitude towards if they think they could shop with Virtual Stores right away and if learning how to handle them appeared easy. They were asked if they expect any troubles while interacting with them and if they are confident to purchase products on their own/without any help. Finally, they were asked about what they think whether they have the whole purchase process entirely under their control.

The third aspect is Hedonic Motivation – quantifying the fun or pleasure derived from using Virtual Stores. The respondents were asked for their opinion whether they think shopping with QR-Codes in general would be fun, if Virtual Stores would add a playful element to everyday grocery shopping and if Virtual Stores would offer a new and entertaining shopping experience.

In addition, the respondents had to rate in how far they think that shopping with Virtual Stores would be fun and finally, if it would be more fun than shopping in regular supermarkets.

After that, the focus of the survey is on Price Value – the cognitive trade-off between the perceived benefits of the application and the monetary cost for using them. Consequently, the respondents were asked whether they believe Virtual Stores would offer good money for value and if they would use Virtual Stores even if there would be additional costs. In addition, the interviewees rated in how far they think a punctual and in-time delivery service justifies delivery expenses, if they would accept slightly higher prices for the products or delivery prices that depend on the amount of shopped products.

The next construct to be measured was Habit. This factor was quantified by asking how normal using Virtual Stores would be, if it could become a habit as well and what kind of experiences "touching the group of topics concerning Virtual Stores" already been made, as habit was defined as perceptual construct that reflects the result of prior experiences. Consequently, the respondents provided information about how normal they perceive online shopping, mobile shopping or online grocery shopping. After that, the respondents were asked in how far they can imagine that shopping with Virtual Stores might become normal or even a habit in case they would be available all over the city/country.

The sixth factor was PIIT – the degree that one adopts new ideas faster than the other members of a system and the level of willingness to experiment on new information technologies. Logically, the questionnaire was equipped with statements that had the function to determine, if the respondents are open and curious concerning new information and communication technologies and Virtual Stores. Hence, the statements focussed if the respondent is rather hesitating when it comes to using new technologies, if she/he likes to experiment with them or even buy them. At last, they were directly confronted with Virtual Stores. They had to rate whether they are interested how Virtual Stores work and if they would like to experiment with them.

After that, Security Concerns came to centre of the surveys attention. Correspondingly, the factor was defined by quantifying different kind of consumers' worries and concerns concerning the usage of Virtual Stores. These concerns regard the serviceability of the smart phone, the safety of the deposited personal or financial data, the appropriate treatment of these data, the fear of unauthorized saving and the misuse of this data by the company running the Virtual Stores or a third party.

Product Involvement represents the relevance and the concern with groceries that the consumer brings into a purchase decision and finally influences consumer motivation to make a purchase decision. Accordingly, the respondents had to rate statements that focus on groceries and the requirements for an adequate way of grocery shopping. In this context, the need of direct sensual experience (vision, touch, smell and taste), whether the groceries are mostly needed instantly for consumption and if there is a need for large selections of products was identified. In addition, the respondents had to rate two statements concerning product quality. First, whether they think Virtual Stores would offer the same product quality as regular supermarkets. Second, whether the interviewee believes someone else would chose the groceries as good and conscientious as oneself.

The ninth factor was the Brand Name. This part of the survey aims at discovering how important the brand is for consumers' intention to use Virtual Stores and how Virtual Stores might affect the brand of the company running the Virtual Stores. Accordingly, the respondents rate statements like how important brands are in the context of choosing a retail outlet in general, in the context of choosing a place to shop groceries or in the context of online shops. After that, the interviewees are asked about if the brand would be especially important for online grocery shopping. Finally, they rate the statement, that Virtual Stores are modern and innovative and have a positive effect on the image of the brand. In the context of brands, there is an additional question concerning which brand would be most trustworthy and suitable to run Virtual Stores. The respondents rate his/her agreement to popular German supermarkets as Rewe, Edeka or Kaisers, popular German discounters like Aldi, Lidl or Netto, popular frozen food delivery services like Bofrost or Eismann, popular international online retailers like Amazon or eBay or another brand or a completely new brand.

The following construct is Information Factor as detailed information have an effect on the purchase decision and providing detailed information minimizes uncertainty (Cho, 2009). Accordingly, the respondents had to rate statements that focus in how far they appreciate to be informed about specific aspects of shopping in Virtual Stores. These statements are about the product characteristics, conditions and quality, about the delivery process, the maintenance of the cooling chain and quality control, about payment arrangements and security, about instructions for quick and intuitive operating, and about notifications concerning late or incomplete delivery.

The last construct defined is Behavioural Intention, what is expected to have a significant effect on Use Behaviour. In other words, if a consumer feels a positive intention to use a Virtual Store

he or she will likely use them. Accordingly, the respondents were confronted with statements, which focus direct at their attitude concerning a possible future usage of Virtual Stores. In this context, the interviewees were asked whether they are curious about using Virtual Stores, if they could imagine using Virtual Stores as shopping facility and if they would use them occasionally or even regularly in case there would be a Virtual Store close to them. Finally, they had to rate, if they could imagine preferring shopping with Virtual Stores to shopping in regular supermarkets.

At the end of the survey, the questionnaire queries five specific aspects of Virtual Stores, which are not related to the conceptual model. It asks specifically for the issue of fresh food – whether consumers would use Virtual Stores in general, but not for fresh food. In addition, it asks whether the consumers think the product range should be extended to further convenience products besides groceries. Then, the respondents are asked if they would rather use Virtual Stores if it would work with another – maybe more appealing – technology, e.g. touchscreens. The next statement focus on the necessity of the delivery service and if the consumers might prefer to collect the shopped goods in e.g. a supermarket, instead of getting them delivered. The questionnaire closes with asking if the option of refusing late deliveries or single faulty products is mandatory.

5. Sample Characteristics

The sample is characterised by a group of potential Virtual Store user. The sample consists of people who make their shopping decisions autonomously and are free to decide what and where they want to buy something. Primarily, Virtual Stores offer groceries and other everyday products. Independent from sex, age, income or level of education, everybody needs these kinds of products in her/his everyday life. Accordingly, nobody is suspended due to product related factors.

Virtual Stores represent a special form of M-Commerce. To engage in this kind of business conditions a number of legal requirements must be met (e.g. possession of a bank account). Hence, the sample concentrates on people of full age. As mentioned before, the target group of the original Virtual Stores are Korean commuters. Therefore, the survey was conducted with respondents that have a more or less convenient access to public means of transport.

The sample consists out of slightly more female individuals than male. Hundred forty-one female respondents are equal to 54,4 percent of the sample. According to the German Federal Statistics Office there are slightly more women in Germany as well – the German population consists of 51 percent women (Statista GmbH, 2011). As regards gender, the sample shows comparable characteristics as the overall German population.

As regards age, the sample shows noticeable characteristics. The sample shows a high percentage of young respondents. About 75 percent of the sample is younger than 45 years, 52,5 is even younger than 30 years (see Appendix T). According to the German Federal Statistics Office just 30,6 percent of all Germans are younger than 30 years. Fifty-seven percent of all Germans are 40 or older (Statista GmbH, 2012). Hence, as regards age the sample shows a different distribution then the overall German population. A fact that influences the following sample characteristics and needs to be considered analysing the results of the survey.

Corresponding to the young sample, the majority of the sample is single. Sixty-five percent of the sample are singles, while only 29 percent are married and 6,5 percent are widowed or divorced (see Appendix U). According to Statista, almost 60 percent of all Germans are married; 15 percent of the population widowed or divorced (Statista, 2012). Accordingly the households of the respondents are mostly single households (22,4 Percent) or two-person-households (45,9 percent) (see Appendix V).

Furthermore, the sample shows a high level of education. More than 55 percent have degrees of universities or universities of applied sciences (see Appendix W). According to the German

Federal Statistics Office, only 27 percent of the overall German population has a higher degree (Statista, 2014).

As regards the current job status, 53,7 percent of all respondents are fulltime employed (see Appendix X/Appendix Y). According to Statista, this value is almost equal to the overall German population (Statista, 2015). However, the sample shows a high percentage of students. Corresponding to the young sample, 25,1 percent of the sample are students. The overall German population has a share of students of approximately three percent (Statista, 2015). However, 85 percent of the sample earns less than 3.000€ a months, while the average German net income is about 2.700€. A characteristic that is probably traced back on the low average age and the according short professional career of the respondents. 22.8 percent of the sample earn between 1.001€ and 2.000€ and 28.2 percent earn between 2001€ and 3.000€ (see Appendix Z).

In terms of the usage of public transport, 20,8 percent of the sample uses public means of transport on a daily basis. 16,6 percent of the sample answered that it would use them several times a week.12,7 percent utilizes public means of transport sometimes. Approximately 50 percent use public means of transport and would theoretically be able to use Virtual Stores on a regular basis. In addition, 93,8 percent of the sample owns or plans to buy a smart phone (see Appendix AA).

Summarized, the sample shows a good distribution concerning gender. However, the sample shows a big share of young people with a high average level of education. According to the age, the majority of the respondents is single, is at the beginning of the career or student and therefore has a rather low income. An approach of explanation for these characteristics can be found in the way the survey has been conducted. As the questionnaire was shared in the extended circle of acquaintances of the author by using social media and email, the majority of the respondents show equal characteristics as the author. In addition, older people are rather hard to access online, consequently the share of people older than 45 year is underrepresented.

6. Results

6.1 Descriptive Analysis

6.1.1 Independent Variables

The first factor queried was Performance Expectancy, which scores a mean value of 4.4. About 54 percent of all respondents expect that Virtual Stores would make their life at least somewhat easier (sum of somewhat agree, agree, strongly agree), while 24 remain undecided. 49 percent at least somewhat disagree (sum of somewhat disagree, disagree, strongly disagree) that Virtual Stores would allow them to shop more consciously, while 20 are undecided concerning this issue. However, 61 percent of all respondents state that Virtual Stores (at least somewhat) allow more leisure time. 36 percent agree or strongly agree on this point, while less than 10 percent disagree or strongly disagree. Also referring to the issue of minimizing the efforts of grocery shopping the respondents feel mainly positive about Virtual Stores. 63 percent (at least somewhat) agree that Virtual Stores are comfortable, while only 18 percent (at least somewhat) disagree. The majority of the interviewed persons see advantages in the delivery service. Buying groceries in Virtual Stores and having the products delivered are appreciated (at least somewhat) by 66 percent, while 14 percent are undecided (see Appendix AB).

Examining Effort Expectancy, it is eye-catching that the values are generally relatively high – the mean of the factor Effort Expectancy is 5,7. More than 83 percent of all respondents think that they are (at least somewhat) confident to use Virtual Stores right away, that the handling of Virtual Stores would be easy, interaction would work without problems and they could use them without any help. In none of these cases, more than 7 percent disagree at all. Still 68 percent of the interviewees agree at least somewhat that the purchasing with Virtual Stores would entirely be within their control – just 15 percent disagree somewhat, disagree or disagree strongly (see Appendix AC).

The fun factor – Hedonic Motivation – is as diverse as Performance Expectancy. The mean value of 3,9 is the lowest of all factors of the Conceptual Model. Approximately 44 percent of the respondents answer negatively when asked if shopping with QR-Codes is fun, while more than 30 percent remained undecided concerning this issue. However, Virtual Stores as a whole can be an entertaining way to shop. 41 percent of all respondents agreed at least somewhat that shopping with Virtual Stores would be fun – 30,5 percent disagreed at least somewhat. Finally, 72 percent of all respondents did not agree that shopping with Virtual Stores could be more fun

than shopping in regular supermarkets. More than half of all respondents disagreed at least somewhat in this point (see Appendix AD).

Concerning Price Value, the respondents seemed not to know much of Virtual Stores. The mean of the factor is 4,0 – in other words, many respondents were undecided. The majority was undecided considering if Virtual Stores offer good value for money (38 percent), while 34 percent at least somewhat agree and 27 percent at least somewhat disagree. Only 1,5 percent of all respondents had strong opinions concerning this statement. When the issue is about the acceptance of additional costs more than 55 percent of the interviewee answer negatively, while 17 percent disagree and 14 percent disagree strongly and 22 percent are undecided. However, 61 percent of the respondents at least somewhat agree that an on time delivery service justifies delivery expenses. Just 15 percent disagree at least somewhat on this issue. 36 percent agree at least somewhat to delivery expenses that depend on the weight of the shopped goods, another 19 percent agree or agree strongly. Finally, also concerning the issue of the acceptance of slightly higher prices the respondents do not show big tendencies. While 38 percent at least somewhat disagree with slightly higher prices, a close 36 percent at least somewhat agree (see Appendix AE).

The next factor examined is Habit. For the majority, online shopping has become normality – almost 70 percent agree or strongly agree on this point. Only 5 percent disagree at least somewhat. In addition, mobile shopping is more and more perceived as a normal activity. Sixty-six percent agree at least somewhat, almost 50 percent agree or agree strongly. Just 18 percent disagree at least somewhat. Concerning online grocery shopping, the opinions are strongly divided. Agreement and disagreement are almost equally diverse. While 24 percent remain undecided, 20 percent disagree somewhat, 22 percent agree somewhat. Fourteen percent disagree and 14 percent disagree – so that 39 percent agree at least somewhat and 37 disagree at least somewhat. Surprisingly, when it comes to Virtual Stores 63 percent agree at least somewhat when asked if shopping in Virtual Stores becomes normal once they are available all over the city and only 17 percent disagree at least somewhat in this issue. Furthermore, the question if Virtual Stores could become a personal habit was agree by 46 percent of all respondents, while 25 percent agreed or strongly agreed. Approximately one third of the interviewees disagreed at least somewhat (see Appendix AF).

Referring to the personal innovativeness of information technology, the respondents are open-minded when comes to the usage of new technologies, which is reflected by the relatively high mean of the factor (5.0). More than 70 percent agree not to hesitate in trying new technologies,

about 60 percent agree at least somewhat that they like to experiment and 53 percent agree at least somewhat to buy or engage new technological devices or services. Focussing on Virtual Stores, there is a high curiosity and openness towards this new technological sales approach. Seventy-eight percent agree at least somewhat, that if they would get in touch with Virtual Stores they would be interested in how they work. Seventy-three percent agree at least somewhat that they would like to experiment with them (see Appendix AG)

Examining the Security Concerns, it is eye-catching that the absolute majority of the respondents does not believe that Virtual Stores might threat the serviceability of their smart phones. Seventy-six percent agreed at least somewhat in this issue. However, concerning the safety of the deposited financial and private data more respondents are anxious. Forty percent agree at least somewhat, that the data are safe – 39 percent of the respondents disagree at least somewhat. The statements referring to unauthorized data usage, or misuse by a third party show comparable results. Approximately 40 percent seems to be somewhat worried about the safety of the data, while the other 40 percent are not (see Appendix AH)

The next factor queried was Product Involvement. The questions revealed a relatively high affinity to groceries and some kind of mistrust against foreign or third parties involved in the process of grocery shopping. Sixty-two percent agree at last somewhat that they need sensorial experiences when they shop for groceries – just 12 percent disagreed at least somewhat. More than half of the respondents agreed at least somewhat that they need the shopped products instantly right after they bought them, while 27 percent are undecided. Forty-two percent agree at least somewhat in having doubts concerning the product quality of Virtual Stores. Twenty-eight percent do not have an opinion concerning this issue. More than half of the interviewees agree at least somewhat that others would not choose their groceries as carefully as they would do it for themselves. Twenty-seven percent of the respondents rather disagree (see Appendix AI).

The Information Factor shows the highest mean of all factors. The issue scoring the highest mean is about late or incomplete delivery. Ninety-five percent of all agree at least somewhat, that this information is important – 40,2 percent agree strongly. After that, information about payment arrangements and security come second in importance. Approximately 89 percent agree at least somewhat on the importance of this issue. Thirty percent agree strongly. Eighty-nine percent would appreciate information about product conditions and guarantees as well. Almost 80 percent agree at least somewhat (22 percent agree strongly) that information about the delivery process and quality control is relevant. Seventy-four percent of all respondents

agreed at least somewhat that information about the actual utilization of Virtual Stores are important (see Appendix AK).

Concerning the Brand Name the survey revealed that for almost half of all respondents stated that brands in general are at least somewhat important, when they choose a retail outlet, while 26 percent remain undecided. When it comes to grocery shopping the importance decreases slightly. Yet 43 percent agree that brands are especially important in terms of grocery shopping, while 29 percent remain undecided. However, concerning online shopping 50 percent appreciated brands. Almost the same number of respondents agreed at least somewhat that brands are important for online grocery shopping. Fifty-five percent state that brands are especially important concerning Virtual Stores. In all of the last three issues 24 to 29 percent remained undecided (see Appendix AJ).

6.1.2 Behavioural Intention

Like all other factors of the Conceptual Model the Behavioural Intention of a potential customer is measured by five statements and the respondents agreement or disagreement. The first statement the interviewees had to rate was whether they were curious to use Virtual Stores. Seventy-one percent of all respondents agreed to be at least somewhat curious. Forty-four percent agreed or agreed strongly to be curious. Only a minority of 15 percent shows (at least somewhat) no interest in Virtual Stores at all. Concerning the general opinion, if the respondents would use Virtual Stores as a shopping opportunity every fourth was undecided. Fifty-seven percent agree at least somewhat that they would use Virtual Stores in the future. Twenty-two percent agree and 13 percent agree strongly. Only 19 percent disagree at least somewhat, while only 8 percent show a strong negative opinion (disagree or disagree strongly).

The statement whether the respondents would use Virtual Stores once in a while if there would be a Virtual Store close to their neighbourhood the majority answers rather positively. While only 14 percent disagree at least somewhat more than two third of the respondents agreed to use Virtual Stores at least occasionally. Still 36 percent agree at least somewhat, that they would use Virtual Stores regularly. Forty percent disagree at least somewhat, but only 19 percent of the respondents disagreed or disagreed strongly. More than every fourth respondent did agree at least somewhat to use Virtual Stores rather than regular supermarkets if there would open one close to their neighbourhood. Fifty-four percent are more sceptical. Thirty-seven percent of all respondents disagree or disagree strongly.

To put it briefly, a relevant number of respondents agreed to use Virtual Stores if there would be one in their neighbourhood. About 67 percent agree at least somewhat to use them occasionally and still 36 percent agreed at least somewhat to use them regularly. More than one quarter of all respondents agreed at least somewhat to prefer them against regular supermarkets (see Appendix AL).

6.1.3 Brand Question and Extra Questions

As regards the actual brand for the Virtual Store in Germany, 76 percent of the respondents agree at least somewhat, that popular frozen food delivery services as Bofrost or Eismann should brand Virtual Stores – 50 percent agree or strongly agree for this kind of brand. Sixty-four percent agree at least somewhat to use Virtual Stores rather if they would be branded by international online retail brands like eBay or Amazon. Only 55 percent agree at least somewhat to prefer Virtual Stores branded by popular German supermarket brands like Rewe, Edeka or Kaisers. Forty-one percent agree at least somewhat, that they would rather use Virtual Stores if they would be branded by a completely new brand. Only 35 percent agree at least somewhat that the brand does not affect their trust towards Virtual Stores, while 37 percent disagree at least somewhat in this point (see Appendix AM).

The Extra Questions gave a number of additional insights concerning potential room for adjustments. Only 31 percent of the respondents agree that they would use Virtual Stores only for groceries. Sixty-six percent would use Virtual Stores for other everyday products like sanitary- or household articles as well. As regards the technological approach of QR-Codes, 41 percent of the respondents disagree at least somewhat that they would rather use Virtual Stores if they would work with another technology, e.g. touchscreens. Thirty-one percent agree at least somewhat that they would rather use Virtual Stores if they would work differently. Another insight of the Extra Questions is that the delivery service is a main plus factor of the Virtual Store – only 25 percent agree at least somewhat that they would rather pick up the shopped goods in a supermarket – half of the respondents disagree. The issue of many respondents still being afraid of low quality products is reflected in the statements about the refusal of late deliveries or single faulty products. Seventy-five percent agree at least somewhat, that they would only use Virtual Stores if the refusal of late delivered or faulty products is possible.

6.2 Bivariate Analysis.

6.2.1 T-test for Equality of Means

In order to give information about potential target groups the questionnaire featured several demographic questions. These questions were about the sex, age, income, marital status, level of education and current status of employment as well as whether the respondent has or plans to buy a smart phone, how frequently he or she uses public means of transport and the number of people in their household.

To examine the relationship between Behavioural Intention and those demographic factors, there are different statistical tests to conclude. The t-test was developed in 1908 by William Gosset. It is used to identify the ratio of a significant difference between two subsamples by comparing the means (LeBlond, 2009). For example, the difference in Behavioural Intention referring to the groups of women and men or the groups of respondents who have (or plan to buy) a smart phone or do not have a smart phone.

However, to conduct the t-test, the first question is concerning the equality of variances of both groups. Only if both variances are approximately equal it is possible to apply the T-Test. (Janssen and Laatz, 2005). Levene's test is used to test if k samples have equal variances. Equal variances across samples are called homogeneity of variance. Some statistical tests, for example the analysis of variance, assume that variances are equal across groups or samples. The Levene test can be used to verify that assumption, accordingly the null hypothesis is:

$$H_0: \sigma_1 = \sigma_2$$
$$H_a: \sigma_1 \neq \sigma_2$$

The Levene test gives information about the level of probability an equality of variances can be assumed. If the value of the significance is lower than 0,05 the null hypothesis is rejected. The Levene Test is a necessary precondition for the execution of a t-test, because it shows how to interpret the results of the t-test (Janssen and Laatz, 2005).

After that, the two-sample t-test (Snedecor and Cochran, 1989) is used to determine if two population means are equal. Accordingly, the null hypothesis of the T-Test:

$$H_0: \mu 1 = \mu 2$$
$$H_a: \mu 1 \neq \mu 2$$

If the value of the significance is lower than 0,05 the null hypothesis is rejected.

Group Statistics

Sex		N	Mean	standard deviation	standard error
Behavioural Intention	no	118	4,5305	1,29361	,11909
	yes	141	4,2979	1,31075	,11039

Independent Sample Test

		Test for the Equality of Variance		t-test for equality of means						
									the Difference	
Sex		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Behavioural Intention	Varianzen sind gleich	,032	,858	1,431	257	,154	,23264	,16257	-0,08750	,55277
	Varianzen sind nicht gleich			1,433	250,117	,153	,23264	,16238	-0,08717	,55244

Table 01: Independent Sample Test

Focussing on the relationship between Behavioural Intention and Sex (see Table 01), the significance level of the Levene Test for the Equality of Variance is 0,858. Consequently, the Null hypothesis is not rejected, as 0,858 is superior to 0,05 and equal variances can be assumed. In this case, we check the first line of the t-test (Janssen and Laatz, 2005). The significance value of the t-test for equality of means is 0,154. As 0,154 is also superior to 0,05 the null hypothesis is not rejected as well and the result of the t-test is not significant. Accordingly, there is a high probability that the means of both sexes are equal or that there is no difference in Behavioural Intention due to the sex.

Looking at the relationship between Behavioural Intention and Smart Phone, the significance level of the Levene Test for the Equality of Variance is 0,704, which means that we do not have to reject the null hypothesis and assume equal variances. The significance value of the t-test is 0,023. Logically we reject the null hypothesis and conclude that there is a high probability that there is a difference in the means of Behavioural Intention due to the fact if the respondent has a smart phone (or plans to buy one) or has none (see Appendix AN).

6.2.2 Spearman's Rank Correlation Coefficient

Another way of testing the relationship between two variables is to calculate the correlation of them. This is always appropriate when these variables are metric, in this case the relationships between Behavioural Intention (ranges from 1 (equal to totally disagree) to 7 (equal to totally agree)) and age, income, frequency of using public means of transport and persons in household.

The result of calculating the correlation of those pairs of variables are the correlation coefficient and the p-value. The correlation coefficient explains the strengths and the direction of the relationship of the two variables. It ranges from -1 to 1. A value close to -1 shows a strong negative correlation, a value close to 1 shows a strong positive correlation. There is no relationship between the variables, if the coefficient is close or exactly 0. The p-value gives information whether the correlation coefficient differs significantly from 0 and if there is a

significant relationship between the variables. Normally, p-values lower than 0,05 are regarded as statistically significant (Green, 2000). Accordingly, the null hypothesis of the correlation coefficient assumes that there is no relationship between the variables and it implies that the relationship between two variables is 0,00 within the basic population. The null hypothesises has to be therefore rejected at a p value of 0,05 (Significance (two tailed)) (Cramer and Howitt, 2010).

In case the data are not normally distributed and/or the relationship of the variables is not linear, it is necessary to use the Spearman-Correlation. The Spearman-Correlation is calculated by the ranks of data and not directly by its measurements. In this way, it is possible to recognize nonlinear relationships and is not limited on normally distributed data. .

Correlations

			Behavioural Intention	Age
Spearman-Rho	Behavioural Intention	Correlation Coefficient	1,000	-,053
		Sig. (2-tailed)		,394
		N	259	259
	Age	Correlation Coefficient	-,053	1,000
		Sig. (2-tailed)	,394	
		N	259	259

Table 02: Spearman-Rho Correlation

Focussing on the relationship between Behavioural Intention and Age, the p-value is 0,394 what is superior to 0,05 (see Table 02). Accordingly, the null hypothesis is not rejected, what means the correlation coefficient does not differ significantly from 0 and there is no significant relationship between the variables. The calculation of the correlation of Behavioural Intention and the size of the household shows a p-value of 0,254. Again, this value is higher than 0,05 what means the null hypothesis is not rejected and the correlation analysis shows no significant relationship between these two variables. Concentrating on the relationship between Behavioural Intention and Net Income, the p-value is 0,166 what is superior to 0,05 as well. Accordingly, the null hypothesis is not rejected, what means the correlation coefficient does not differ significantly from 0 and there is no significant relationship between the variables Behavioural Intention and Net Income (see Appendix AO)

The p-value of the correlation of the variables Behavioural Intention and the Usage of Public Transport is 0,001. In this case p is smaller than 0,05. Accordingly, the null hypothesis is rejected and it can be concluded that there is a relationship between the frequency of using public means of transport and Behavioural Intention. According to the Correlation Coefficient (-0,207), the relationship is slightly negative (see Appendix AO). That suggests, a bit surprisingly, the higher the average frequency of using public transport the lower the mean of

Behavioural Intention. Even if the correlation is not very strong, one should have expected that people who use public means of transport more frequently would appreciate the idea of Virtual Stores more than people who use them less., because they would get in touch with them more often. However, this is not the case.

6.2.3 Kruskal Wallis Test

The Kruskal-Wallis test is a nonparametric alternative to the one-way analysis of variance (ANOVA) test. The Kruskal-Wallis test uses rank sums to determine whether two or more independent samples are taken from the same distribution. It is used when the assumptions of ANOVA are not met. They both assess for significant differences on a continuous dependent variable by a grouping independent variable (with three or more groups). In the ANOVA, we assume that distribution of each group is normally distributed and there is approximately equal variance on the scores for each group. Unlike the analogous one-way analysis of variance, the Kruskal-Wallis Test does not assume a normal distribution of the residuals.

The null hypothesis of the Kruskal-Wallis test assumes that the medians of the groups are equal, if you assume the shape of the distribution in each group is the same. If the distributions are different, the Kruskal–Wallis test can reject the null hypothesis even though the medians are the same (McDonald, 2014). The alternative hypothesis is that at least one population median of one group is different from the population median of at least one other group.

$$H_0: M_1 = M_2 = M_3 \text{ (all median test scores are equal)}$$
$$H_a: \text{Not all of the medians are equal}$$

When Kruskal-Wallis test results are significant (Asymp Sig values lower than 0,05), post-hoc tests between pairs of samples can be used to determine which pairs show significant differences (Conover, 1999).

Focussing on the relationship between Behavioural Intention and Family Status, the test statistics show a high significance value of 0,191 (see Table 03). That means the null hypothesis is not rejected. We assume that there is no statistically significant difference between the mean ranks of the Family Status. In other words, the respondents Family Status has no significant influence on their Behavioural Intention. The Kruskal-Wallis test analysing the means of Behavioural Intention of

Ranks

Family Status		N	Mean Rank
Behavioural Intention	married	75	121,66
	single	167	132,29
	divorced	13	161,88
	widdowed	4	87,25
	Total	259	

Test Statistics [a,b]

	Behavioural Intention
Chi-Quadrat	4,756
df	3
Asymp Sig.	,191

a. Kruskal-Wallis-Test
b. Group Variable: Family Status

Table 03: Kruskal Wallis Test

the different groups of the sample divided by their Level of Education shows similar results. The p-value is 0,1 and consequently the null hypothesis is not rejected. Therefore, there is significant difference between the mean ranks of the Level of Education and we cannot calculate any effect size for a post-hoc comparison. Focussing on the relationship between Behavioural Intention and Job status, the test statistics show a high significance value as well. 0,067. Consequently, the null hypothesis is not rejected and we assume Family Status has no significant influence on their Behavioural Intention (see Appendix AP).

6.3 Multivariate Analysis

6.3.1 Correlation Analysis

Similar to the methods applied in chapter 6.2.2, if the aim is to examine the relationship between two metric variables, in this case the relationship between Behavioural Intention and the other variables, it is necessary to calculate the degree of their correlation. In other words, in how far, e.g. the mean of Performance Expectancy relates to the mean of Behavioural Intention. However, the correlation analysis does not determine the degree of dependence, but the degree of their linear relationship. Accordingly, the correlation explains no causal relationship and it is not possible to draw cause and effect conclusions based on correlation (Stockburger, 2010). However, if there is no correlation there will not be a causal relationship either.

The Pearson's Correlation Coefficient (r) measures the strength of a linear relationship between two variables and is a number between -1 and +1. If the relationship is positive, the coefficient is accordingly positive. If the relationship is negative, the coefficient in turn is negative (Rumsey, 2007). A positive correlation coefficient means that as the value of one variable increases, the value of the other variable increases as well; as one decreases the other decreases. A negative correlation coefficient indicates that as one variable increases, the other decreases, and vice-versa. A correlation coefficient with the value 1 or -1 indicates a perfect linear relationship, while values of the coefficient between 1 and -1 give information concerning the strength of the relationship. The higher the value of the coefficient, the stronger the degree of linear relationship. Accordingly, a correlation coefficient of 0 indicates the absence of a linear relationship (Stockburger, 2010). If the correlation is zero, no linear relationship can be found (Rumsey, 2007).

As mentioned in chapter 6.2.2, the null hypothesis of the correlation coefficient assumes that there is no relationship between the variables. It implies that the relationship between two

variables is 0,00 within the basic population. The null hypothesises has to be therefore rejected at a p value of 0,05 (Significance (two tailed)) (Howitt and Cramer, 2008).

Behavioural Intention shows high correlation to a number of variables. Especially Performance Expectancy shows a strong degree of positive linear relationship (r = 0,766), next to Habit (r = 0,723), Hedonic Motivation (r = 0,676) and PIIT (r = 0,630). In addition, Security Concerns (r = 0,498), Price Value (r = 0,381), Effort Expectancy (r = 0,367) and Brand Name (r = 0,164)

		Performance Expectancy	Effort Expectancy	Hedonic Motivation	Price Value	Habit
Behavioural Intention	Pearson Correlation	,766	,367	,676	,381	,723
	Significance (two tailed)	,000	,000	,000	,000	,000
	N	259	259	259	259	259

		PIIT	Security Concerns	Product Involvement	Information Factor	Brand Name
Behavioural Intention	Pearson Correlation	,630	,498	-,517	,106	,164
	Significance (two tailed)	,000	,000	,000	,090	,008
	N	259	259	259	259	259

Table 04: Pearson Correlation

show positive correlations. As explained, the higher the value of aforementioned values increases, the higher coefficients, like Performance Expectancy, Habit, Hedonic Motivation and PIIT show degrees of linear relationship. In all of these cases the null hypothesis of the correlation coefficient, hypothesising there is no correlation between the variables (Rasch, Friese, Hofmann & Naumann,2010), is rejected due to p values lower than 0,05 (see Table 04).

The correlation coefficient of Product Involvement shows a relative high but negative value (r = -0,517). That means, if the value of Behavioural Intention increases the value of Product Involvement decreases. In this case, the null hypothesis is rejected as the p values is lower than 0,05. The variable Information Factor (r = 0,106) apparently shows a positive correlations as well, but the p-value is 0,09 and accordingly superior to 0,05. In this case, the null hypotheses is not rejected, implying no correlation between the variables associated with Pearson's Correlation Coefficient (see Appendix AQ).

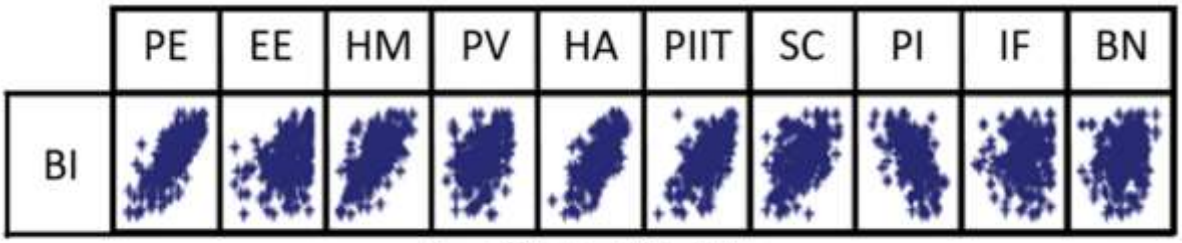


Figure 02: Scatterplot Correlation

The scatterplot (see Figure 02) above visualizes the relationship between the variables by

plotting each data pair. It illustrates how the correlation coefficient changes as the linear relationship between the two variables is altered. When r=0.0 the points scatter widely about the plot, the majority falling roughly in the shape of a circle. As the linear relationship increases, the circle becomes more and more elliptical in shape until the limiting case is reached (r=1.00 or r=-1.00) and all the points fall on a straight line. Looking at the scatterplot, the strong degree of positive linear relationship between Behavioural Intention and Performance Expectancy, Hedonic Motivation, Habit and PIIT are eye-catching as well as the strong degree of negative linear relationship between Behavioural Intention and Product Involvement.

6.3.2 Regression Analysis

Usually, the analysis of the correlation is just an intermediate step in order to conduct, for example, a regression analyses. While the correlation calculated in the previous subchapter focused on the degree to which a linear model may describe the relationship between two variables, the regression emphasises on predicting the dependence of one variable from the other. In regression, the interest is directional, one variable is predicted and the other is the predictor; in correlation, the interest is non-directional, the relationship is the critical aspect (Stockburger, 2001). The purposes of multiple regression are to recognise or predict a single variable from one or more independent variables. Multiple regression with many predictor variables is an extension of linear regression with two predictor variables. (Stockburger, 2001).

Most statistical tests rely upon certain assumptions about the variables used in the analysis. When these assumptions are not met, the results may not be trustworthy (…) and the researchers are forced to question the validity of many of these results, conclusions, and assertions, as they have no idea whether the assumptions of the statistical tests were met. Several assumptions of multiple regression are "robust" to violation (e.g., normal distribution of errors), and others are fulfilled in the proper design of a study (e.g., independence of observations) (Osborne and Waters, 2002). However, there are assumptions of multiple regression that are not robust to violation. Accordingly, to provide a reliable and trustworthy multiple regression analysis these assumptions need to be checked.

One assumption of regression analysis is that there is a linear relationship between the variables. Referring to chapter 6.3.1, the correlation matrix (see Appendix AQ) proves this assumption and shows a number of high correlations between different factors, which could indicate problems with multicollinearity. Multicollinearity is a phenomenon in which two or more predictor variables in a multiple regression model are highly correlated. That means that one predictor can be linearly predicted from the others with a substantial degree of accuracy. In this

case, the coefficient estimates of the multiple regression may change erratically in response to small changes in the model or the data. According to Tabachnick and Fidell (2012), the independent variables with a bivariate correlation more than 0,7 should not be included in multiple regression analysis. The correlation matrix shows that Behavioural Intention and Performance Expectancy (0,766) and Habit (0,723) score higher than 0,70.

In order to detect multicollinearity the variance inflation factor (VIF) is examined (Robinson and Schumacker, 2009). The VIF is a collinearity diagnostic factor that helps to identify and measure the impact of multicollinearity among the variables in a regression model. VIF is calculated by the formula: 1/(1-R2) (Williams, 2015). The result for the VIF is 4,46. As none of the VIF values of collinearity statistics exceeds the threshold of 4,46, they indicate no problem with multicollinearity due to high correlation between the predictors

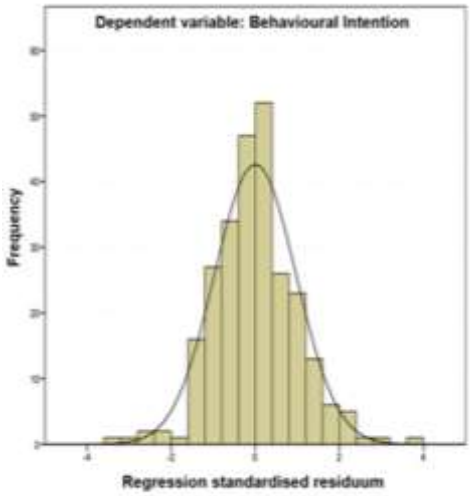


Figure 03: Normal Distribution Behavioural Intention

Regression assumes that variables have normal distributions. Non-normally distributed variables can distort relationships and significance tests. There are several pieces of information, which are useful to the researcher in testing this assumption (Osborne and Waters, 2002). One option is the visual inspection of data plots. Without calculative effort, the graphical inspection of the residuals shows an approximate normal distribution (see Figure 3).

To check for meeting the assumption if the residuals or error terms are normally distributed, we look at the Normal p-p plot of Regression Standardized Residual. The criteria for normal distribution is the degree to which the plot for the actual values coincides with the line of expected values. For this problem, the plot of residuals fits the expected pattern well enough to support a conclusion that the residuals are normally distributed (see Figure 04).

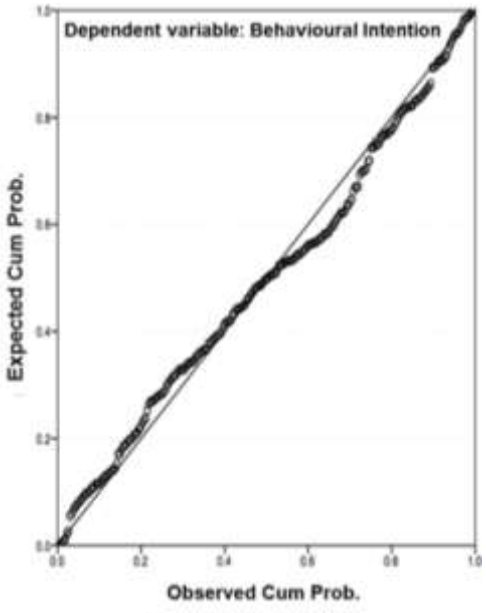


Figure 04: Normal P-P Plot

Another option to test whether the assumption that the sample data are drawn from normally distributed population is the Kolmogorov-Smirnov test (K-S test).

The null hypothesis of the K-S test assumes the data come from a normally distributed population for a p-value smaller than 0,05. The alternate hypothesis is therefore that the data come from a population that is not normally distributed. Consequently, rejecting the null hypothesis means rejecting the assumption of normality for the distribution (Rose, Spinks and Canhoto, 2015). As seen in Table 05, the p-value is 0,015 and accordingly, the null hypothesis is rejected.

Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Unstandardized Residual	,063	259	,015	,986	259	,014

a. Lilliefors Significance Correlation

Table 05: K-S Test

However, the K-S test is very sensitive to the size of the sample - with a large sample even small deviations from normality will be reported as significant. As a result, the K-S tests should always be used in conjunction with visual inspection (Rose, Spinks and Canhoto, 2015). In the context of conducting a K-S test and especially in case of high p-values it is necessary to plot data and try to make an informed decision about the extent of non-normality based on converging evidence (Field, 2013) In other words, there is no reason for over-reliance on tests such as Kolmogorov-Smirnov.

As depicted in Table 05, K-S test shows a significant deviation from the normal distribution (0,015<0,05). Accordingly, the null hypotheses is rejected and one should assume that the data come from a population that is not normally distributed.

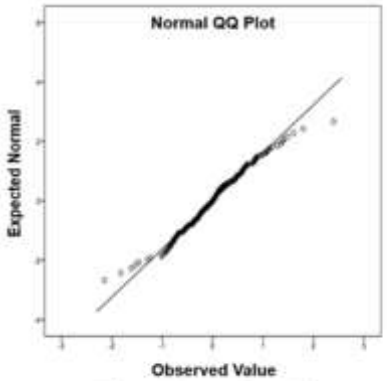


Figure 05: Normal QQ Plot

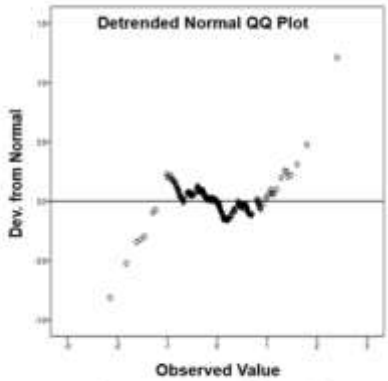


Figure 06 Detrended QQ Plot

The Normal- as well as the Detrended Normal QQ Plot are useful tools for inspecting whether the observed data shows that the assumption of normality is reasonable. The Normal QQ Plot shows that the majority of the data points fall on the straight line, what means the data come from a population that is approximately normal (see Figure 05). The Detrended Normal QQ Plot shows differences between observed and expected values of normal distribution. In case

of normal distribution, points should cluster the horizontal line around zero. However, with some slight deviations on both sides the overall conclusion is that the distribution is normal and linear regression is robust, so that t-statistics and p-values of the regression coefficients can be interpreted (see Figure 06).

The next assumption of linear regression is the assumption of homoscedasticity. Homoscedasticity means that the variance of errors is the same across all levels of the independent variables. When the variance of errors differs at different values of the independent variables or when there is a recognizable trend concerning the size of the residuals, heteroscedasticity is indicated. According to Tabachnick and Fidell (2012), slight heteroscedasticity has little effect on significance tests; however, when heteroscedasticity is marked it can lead to serious distortion of findings and seriously weaken the analysis thus increasing the possibility of a Type I error (Osborne and Waters, 2002). This assumption can be checked by visual examination of a plot of the standardized residuals (the errors) by the regression standardized predicted value. Figure 07 shows there are no suspicious shapes that indicate any kind of heteroscedasticity.

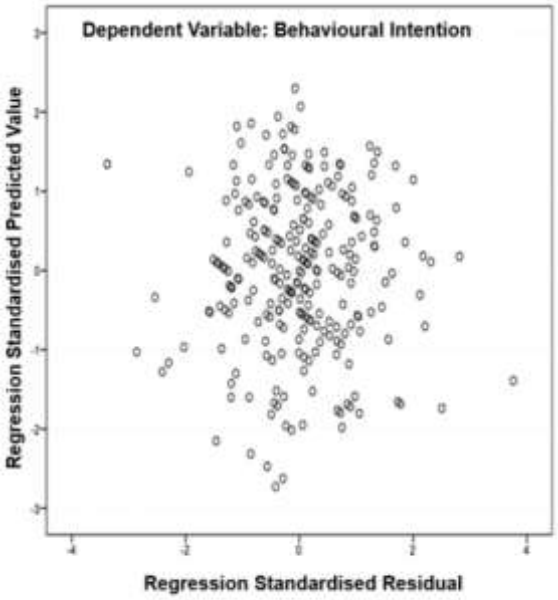


Figure 07: Test for Heteroscedasticity

If all of the assumptions for the multiple linear regression are met, it is possible to conduct the regression analysis in order to identify significant predictors of Behavioural Intention. Therefor the independent variable and several control variables are applied and the following regression equitation was tested:

$$BI = b0 + b1*PE + b2*EE + b3*HM + b4*PV + b5*HB + b6*PT + b7*SC + b8*PI + b9*IF + b10*BN + b11*Sex + b12*Age + b13*Income + b14*PublicTransport + b15*SmartPhone$$

The adjusted R-Square value of the model summary (see Table 6) shows the "goodness of fit" of the model. It displays the extent to which the regression line describes the relationship between the dependent and independent variables and measures the proportion of the total variability of the dependent variable that is explained by the independent variables. The adjusted R-Square value of the model is 0,762. Accordingly, it can be concluded that 76,2

percent of the total variability of Behavioural Intention is explained by the model. This suggests a good fit of the model to the data.

Model Summary[b]

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	,881[a]	,776	,762	,63656

a. Predictors : (Constant), Smart Phone, Sex, Product Involvement, Brand Name, Public Transport, Information Factor, Net Income, Effort Expectancy, Price Value, Security Concerns, Performance Expectancy, PIIT, Age, Hedonic Motivation, Habit

b. Dependent Variable: Behavioural Intention

Table 06: Model Summary

The F value of the ANOVA answers the question if the variance between the means of at least two populations significantly different and determines the p value. The null hypothesis of ANOVA says the model has no explanatory power. That means that none of independent factors help to predict Behavioural Intention and that the model would be useless. However, according to the p-value 0,000 there is a 0,000 chance (see Table 07) the results are given by random chance. In other words, we have strong evidence to reject the null hypothesis as p is lower than 0,05.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	341,330	15	22,755	56,157	,000[b]
	Residual	98,466	243	,405		
	Total	439,796	258			

a. Dependent Variable: Behavioural Intention

b. Predictos : (Constant), Smart Phone, Sex, Product Involvement, Brand Name, Public Transport, Information Factor, Net Income, Effort Expectancy, Price Value, Security Concerns, Performance Expectancy, PIIT, Age, Hedonic Motivation, Habit

Table 07: ANOVA

The p-value of the coefficients is the measure of statistical significance. It tells whether it is likely that there is a relationship in the sample (Muijs, 2004). In other words, they give evidence about the relationship between the independent variables and the dependent variable – in this case Behavioural Intention. The null hypothesis for each independent variable says that the coefficient of the variable does not help to predict the dependent variable for all p-values bigger than 0,05. According to the results, there are several coefficients where the p-value does not reject the null hypothesis. Effort Expectancy (p=0,601), Price Value (p=0,315), Security Concerns (p=0,162), Information Factor (p=0,262), Brand Name (p=0,991), Sex (p=0,421), Age (p=0,405), Net Income (p=0,690), Public Transport (p=0,257) and Smart Phone (p=0,107) show p-values higher than 0,05 (see Appendix AR). Accordingly, these variables do not help to predict Behavioural Intention.

The other predictors show p-values lower than 0,05. Accordingly, the null hypotheses for Performance Expectancy (p=0,000), Hedonic Motivation (p=0,012), Habit (p=0,000), PIIT (p=0,000) and Product Involvement (p=0,000) are rejected. That means all of these variables are able to predict Behavioural Intention. The regression coefficient represents the amount the dependent variable will change if the independent variable changes by one unit holding all of the other independent variables constant (Muijs, 2004).

Therefore, it can be concluded that if the mean of the variable Performance Expectancy increases by 1 the mean of Behavioural Intention rises by 0,395. If the mean of Hedonic Motivation increases by 1 the mean of Behavioural Intention increases by 0,121. If the mean of Habit increases by 1 the mean of Behavioural Intention increases by 0,211. If the mean of PIIT increases by 1 the mean of Behavioural Intention increases by 0,266. All these variables show a positive and significant effect on the dependent variable. According to the negative sign, Product Involvement affects Behavioural Intention in a negative manner. If the mean of Behavioural Intention increases by 1 the mean of Behavioural Intention decreases by -0,229. None of the control variables Sex, Age, Net Income, Public Transport and Smart Phone show a significant impact on Behavioural Intention.

The predictive power of the model is assessed by comparing the predicted values of Behavioural Intention of the model against the true values of Behavioural Intention as well as their absolute deviation. As the R Square value is 0,776, it is possible to visualize in how far the model is able to predict the values of Behavioural Intention. As presented in Figure 08, the predicted values (x-axis) and the true values (y-axis) show a very high correlation, which is a good argument for the high quality of the model.

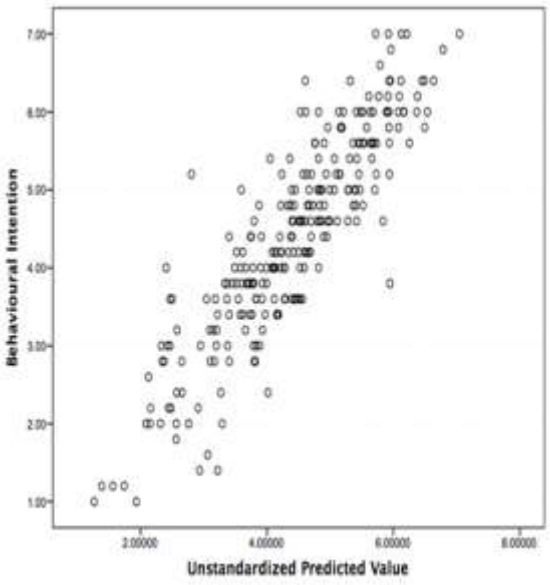


Figure 08: Observed vs. Predicted Values

6.4 Validation of Scales

Summated scales are often used in surveys in order to probe underlying constructs that need to be measured. These may consist of indexed responses to dichotomous or multi-point questionnaires, which are later summed to arrive at a resultant score associated with a particular respondent. Usually, development of such scales is not the end of the research itself, but rather a means to gather predictor variables for use in objective models. However, the importance of

reliability increases as the function of scales is extended to encompass the realm of prediction (Santos, 1999). One of the most popular reliability statistics in use today is Cronbach's alpha (Cronbach, 1951). Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability.

Cronbach's alpha is an index of reliability associated with the variation accounted by the true score of the "underlying construct." The construct is the hypothetical variable that is being measured (Hatcher, 1994).

The alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (in this case 1=strongly disagree to 7=strongly agree). The higher the score, the more reliable is the generated scale. Nunnaly (1978) has indicated 0,7 to be an acceptable reliability coefficient.

Reliability Statistics

Factor	Cronbachs Alpha	Number of items
Performance Expectancy	0,877	5
Effort Expectancy	0,917	5
Hedonic Motivation	0,899	5
Price Value	0,799	5
Habit	0,816	5
PIIT	0,844	5
Security Concerns	0,876	5
Product Involvement	0,728	5
Information Factor	0,756	5
Brand Name	0,881	5
Behavioural Intention	0,907	5

Table 08: Reliabilty Statistics

All alpha coefficients show scores higher than 0,7 (see Table 8). Accordingly, all scales show a high degree of internal consistency. Nevertheless, not for each scale all of the items showed a good contribution in terms of item to total correlation. Examining the scale Price Value, the item “I think Virtual Stores would offer good value for the money.” showed a low inter item correlation and is therefore eliminated. For the other scales, all of the items show a good contribution in terms of item to total correlation. That assesses the individual contribution that measures the correlation of the respective item to the scale.

7. Conclusions and Implications

7.1 Main Conclusions

As the elaboration of the Market Analysis shows, there are numerous signs that indicate a market for Virtual Stores in Germany. From a long-term perspective, the indicators show great potential. The megatrend of digitization is more and more penetrating every aspect of our everyday life. When we look at the incredible speed of this digital revolution and how expensive and penetrative computers, internet, mobile and later smart phones altered the way we live, it is hard to believe that there are still major parts of our lives that are more or less unaffected by this phenomenon. Especially as smart phones are gaining more and more importance as tools in various everyday situations.

Focussing on the business world, there are a multitude of examples of how digitization made different processes faster, easier, more efficient, more effective etc. for sellers and buyers. One area highly affected by this development is retailing, respectively online retailing. In contrast to classic retailers, online retailers benefit from various cost advantages, offer a comfortable way of shopping from the living room, including an easy delivery service, often free of charge. Accordingly, online shopping offered lower prices and often more comfortable conditions than bricks and mortar shops. Logically, in the course of increased internet use, more and more consumers became familiar with this new technology. Simultaneously, reservations about online shopping vanished and the number of online shoppers increased. This development had serious consequences – the number of classic outlets- or bookstores, sport outfitter, travel agencies or other specialty shops decreased and department stores struggle for existence while online shopping shows constantly increasing sales figures.

However, until this day, especially in Germany, one sector has remained almost untouched by the rise of online retailing. Just a fraction of the whole grocery market is sold online – 0,2 percent in 2012. While in other European markets, online grocery shopping is already popular, it has not gained momentum on the German market. The Market Analysis revealed that the majority of Germans are still hesitant to shop for groceries online as they mistrust the quality of the delivered fresh food and want to touch, smell and test the groceries before they buy them. In addition, many German consumers see no need to change their shopping habits, due to the high density of supermarkets and the on average low grocery prices. It seems the comfort and

time saving effects of not having to walk through a supermarket and wait in a queue, plus the effortless delivery are the only real benefits of online shopping for the German consumer.

Nevertheless, even if the German online grocery market is still in its infancy, big players from various sectors are positioning themselves, expecting changes in consumers' grocery shopping habits and correspondingly high growth rates, just as in every other previous offline market so far. Consequently, established grocery retailers should be alarmed and be prepared for a paradigm shift in their home market. In case they miss the digital transformation of the grocery market, they might fall by the wayside by the impact of this development just as other specialty shops and department stores. Since there are indications of a growing popularity of online grocery shopping, like slowly increasing sales numbers, an increasing number of diverse online food sellers or the growth of a more open-minded and digital-native target group, the question is not if, but when does the online grocery market start to grow on a bigger scale.

For this reason, the online grocery retailers need to find a concept that highlights the benefits of online grocery shopping and outweighs its disadvantages, as the current approach has not brought the anticipated success. One concept of increasing the awareness of online respectively mobile shopping are Virtual Stores. Placed in the train and metro stations, Virtual Store are perfectly integrated in the workaday life of commuters, allowing them to shop for groceries via smart phone and QR-Codes in the morning and having them delivered at home in the evening. In this way, waiting time is transformed into shopping time and Virtual Stores could provide real benefits. These are the main results of the market analysis. Accordingly, the survey had to answer whether the approach of mobile grocery shopping has a chance to change established grocery shopping habits and if the respondents would feel the Intention to use Virtual Stores in order to do their everyday grocery shopping.

The main objective of this Master Thesis is to determine whether there is a relevant number of consumers in Germany, who show intention to utilize Virtual Stores for everyday grocery shopping. Concerning this question, the results of survey and the responses of the interviewees regarding Virtual Stores are mainly positive. There is apparently a huge curiosity about Virtual Stores, as more than 70 percent of all respondents agree to be at least somehow curious about using Virtual Stores and just a minority of 15 percent is more or less negative at the outset. Concerning how regularly the respondents would use Virtual Stores, in case there is one close to their neighbourhood, approximately two-third agreed at least somewhat that they would use Virtual Stores occasionally. Half of these respondents even agreed or agreed strongly. In terms of regular usage, 36 percent of the respondents agree at least somewhat, approximately 40

percent disagree at least somewhat. However, still more than every fifth respondents agreed or agreed strongly on this matter. About 27 percent agree at least somewhat to prefer Virtual Stores to classic supermarkets. These numbers show the kind of potential Virtual Stores have for the German market. Essentially, this mobile grocery shopping approach might be a potential solution for the retailers to move customers from supermarkets into the world of digital grocery shopping.

7.2 Implications and Model Quality

According to the Conceptual Model, there are ten factors explaining and affecting the consumers Behavioural Intention whether she or he is or is not going to use Virtual Stores and consequently chapter 3.5 presented ten Research Hypotheses also.

Performance Expectancy revealed that the respondents appreciated the efficiency effects of the Virtual Stores. The majority of the respondents agreed that Virtual Stores would make their lives easier, allow them more leisure time and save supermarket shopping effort, waiting in a queue and carrying heavy shopping bags so that the delivery service is perceived as an advantage. The analysis conducted within this thesis revealed that there is a predictive power between Behavioural Intention and Performance Expectancy. In other words, the more the consumer expects the performance of the Virtual Stores to be positive, the more he shows the Behavioural Intention to use them. Accordingly, the **H1** assertion that Performance Expectancy has a positive effect on consumer's Behavioural Intention to use Virtual Stores **can be confirmed**. To be precise, if the mean of Performance Expectancy increases by one unit, the mean value of Behavioural Intention rises by 0,395 units. Consequently, as Performance Expectancy shows the highest regression coefficient of all factors, the efficiency effects should play a major role in bringing Virtual Stores to the market.

The second factor is Effort Expectancy. The majority of the respondents are confident that they would be able to shop with Virtual Stores right away, on their own and that learning to use Virtual Stores would be easy. In addition, the respondents do not expect any difficulties using Virtual Stores, having the process of purchasing always under their control. Overall, these answers seem to be positive in terms of the acceptance of Virtual Stores, as the majority expects they use Virtual Stores effortlessly. In addition, both variables show significant correlations, which assumes that if the mean of Effort Expectancy increases the mean of Behavioural Intention increases as well. However, regression analysis revealed, that Effort Expectancy could not help to predict the Behavioural Intention of a consumer to use Virtual Stores. Accordingly,

H2 claims that Effort Expectancy has a positive effect on consumers' Behavioural Intention to use Virtual Stores **is rejected**.

The next variable is Hedonic Motivation measuring the fun that Virtual Shops could be. The results concerning this factor are mixed. More than 25 percent of all respondents remained undecided about this. While there are slightly more people thinking that Virtual Stores would add a playful element to grocery shopping and would be fun, almost half of the respondents do not believe that it would be more fun than shopping in supermarkets. In addition, more respondents disagree that Virtual Store shopping is an enjoyable activity than vice versa. Moreover, using QR-Codes is predominantly not perceived as an amusing activity. However, the average values of Hedonic Motivation correlate significantly with Behavioural Intention and regression analysis revealed significant results as well. That means Hedonic Motivation is able to predict the mean values of Behavioural Intention. In other words, **H3** claiming that Hedonic Motivation has a positive effect on consumer intention to use Virtual Stores **can be confirmed**, because whenever the mean of Hedonic Motivation increases by one unit, the mean of Behavioural Intention increases by 0,121 units. Compared to Performance Expectancy this increase is rather low, but also in increasing the playful and joyful character it is possible to increase the average Behavioural Intention.

Price Value revealed that more than half of the consumers refused additional costs due to Virtual Stores. Nonetheless, even more respondents agree that additional costs due to a punctual and on-time delivery are justified. Fifty-five percent agree on delivery prices based on the weight of the shopped goods, while slightly higher prices are strongly rejected by almost every fourth respondent. Looking at the results of the singular items of Price Value, one could interpret that additional costs are always something that the customer dislikes. However, the respondents seem to be aware that the included delivery services causes additional costs, which cannot be borne just by the retailer. Accordingly, they agree to delivery costs for a punctual delivery service that allow them to define delivery times. However, these results have to be interpreted separately, as Price Value and Behavioural Intention correlate but show no predictive power in their relationship. Accordingly, Price Value does not predict Behavioural Intention and therefore **H4 is rejected.**

The fifth factor is Habit. For the absolute majority, online and mobile shopping is already part of normality. When the focus is on the normality of online grocery shopping, the results are almost evenly distributed. While 39 percent (at least somewhat) agree online grocery shopping is not unusual, 37 percent answered the opposite, with almost the same distribution of opinion.

However, if they are asked to imagine whether shopping with Visual Stores might become normality, almost two thirds agree at least somewhat and almost half of the respondents agree that it might become a habit for them. This shows how open-minded and receptive many people are to novelties in shopping for groceries that apparently offer real benefits. Accordingly, for a considerably large group of people, the established grocery shopping habits are not gridlocked. This is also proven by correlation and regression analysis, where Habit and Behavioural Intention showed significant results. Consequently, **H5 is confirmed**, as the results of Habit have the power to predict Behavioural Intention. Whenever the mean of Habit increases by one unit the mean of Behavioural Intention increases by 0,211 units.

PIIT reflects the personnel level of innovativeness towards new and innovative technologies. The respondents are mostly very open minded when it comes to technologies. About 70 percent are not hesitant to try new technologies, 60 percent agree at least somewhat to like to experiment, and 53 percent agree at least somewhat to buy new technologies or to try out new services. This openness and curiosity towards new technologies is also expressed in the statements concerning Virtual Stores. If a Virtual Store would be accessible, 78 percent would at least somewhat be interested in how Virtual Stores work, 73 percent would at least somewhat like to experiment with them. This curiosity is a relevant factor for Behavioural Intention. Both, correlation and regression analysis show significant results and whenever the mean of PIIT increases by one unit the mean of Behavioural Intention increases by 0,266 units. Accordingly, **H6**, assuming the more consumer shows willingness to experiment with new technologies, the more likely the consumer shows intention to use Virtual Stores, **can be confirmed**.

Security Factors refer to security and serviceability of the device, safety of personal and financial data and their potential misuse. In this case, the survey presented mixed results. The majority does not fear any problems concerning the usability of smart phone because of Virtual Store usage. However, when the focus is on data security and privacy protection there are more doubts, but in any case, the majority is concerned and approximately 20 percent remain undecided. Therefore, drawing further conclusions in this case is difficult. As Security Concerns and Behavioural Intention correlate but Security Concerns shows no predictive power in their relationship, **H7 is rejected.**

The Literature says Product Involvement has a positive effect on online shopping and accordingly, it has a positive effect on Behavioural Intention as well. However, the hypothesis might be true for products other than groceries. The absolute majority of the respondents agreed at least somewhat that they need to touch and feel the products, that they need the products

instantly and that others could not chose groceries as well and conscientiously as they would do it for themselves. However, more people (41 percent) doubt at least somehow that Virtual Stores would not offer the same fresh and high-quality products as regular supermarkets as vice versa, while 28 percent stay undecided on this issue. These results show that there is still a high degree of uncertainty and doubt concerning the quality of food. In this case, many people seem to rely only on their own judgement, about whether groceries are appropriate or not. In addition, there seem to be numerous people who enjoy impulse buying. Virtual Stores are naturally not able to address these needs. Correlation and regression analysis show significant results, proving that Product Involvement is able to predict values of Behavioural Intention. As opposed to the suggestion by Literature Review, the influence of Product Involvement on Behavioural Intention is negative, not positive. Therefore, it can be concluded that when the mean of Product Involvement increases by one unit, the mean of Behavioural Intention decreases by -0,229. Accordingly, **H8 is confirmed** for the formulation Product Involvement has a negative effect on the Behavioural Intention to use a Virtual Store.

The factor Brand Name is also assumed to play an important role in shopping activities and for the Behavioural Intention to use Virtual Stores also. Even if approximately 25 percent of all respondents remain undecided for all items of the factor, the majority value brands. Almost 50 percent agree at least somewhat that brands are important when they choose their retail outlet or their online shop and that brands would play a major role in online grocery retailing. However, more than the information that brands are (at least somewhat) important, cannot be concluded at this point. As Brand Name and Behavioural Intention correlate but Brand Name shows no predictive power in their relationship, **H9 is rejected**.

Concerning the results of the Information Factor, it is striking, that it shows very high values for each item. It seems like information concerning all areas of Virtual Stores are highly important for the consumers, while information concerning delay in delivery or cases of incomplete orders are most (95 percent at least agree somewhat to the importance)and concerning the actual utilization of the store are least important (73 percent at least agree to the importance). However, as Information Factor and Behavioural Intention do not correlate and regression showed no significant results either, **H10 is rejected**.

After considering how the different factors of the models influence the Behavioural Intention to use Virtual Stores, another goal of the thesis was to develop a model that includes all relevant factors that affect whether a customer would show intention to use or refuse to use Virtual

Stores. In the context if this Master Thesis, the developed Conceptual Model demonstrated to be a very suitable instrument.

In general, a model fits the data well if the differences between the observed values and the model's predicted values are small. Figure 08 shows graphically how close the observed values of Behavioural Intention and the predicted values of Behavioural Intention are together. The adjusted R-Square value of 0,762 shows the high goodness of fit of the model. It expresses in how far the regression line describes the relationship between the dependent and independent variables. It measures the proportion of the total variability of the dependent variable, which is explained by the independent variables. As the adjusted R-Square value of the model is 0,762, it can be concluded that 76,2 percent of total variability of Behavioural Intention is explained by the model. This is a good result.

7.3 Brand Name and Extra Questions

The answer to the question which Virtual Stores brand the respondents would prefer is very interesting. 50 percent of all respondents agree or agree strongly that they would rather use Virtual Stores if they would be branded by popular frozen food delivery services, such as Bofrost or Eismann. 75 percent agreed at least somewhat. In second place, 65 percent agree at least somewhat, that international online retailers, such as Amazon or eBay should run Virtual Stores. Supermarkets are only in third place. 55 percent agree at least somewhat, that popular German grocery retailers, such as Rewe, Edeka or Kaisers should run Virtual Stores with their own brand.

The interpretation of these results is difficult, as frozen food retailers obviously have no experience in handling fresh food. However, it is possible that they enjoy a good reputation in terms of quality control, cold chain maintenance and punctual delivery. Accordingly, many respondents might put Virtual Stores ahead of frozen food retailers, as they seem competent to do the same with fresh groceries. It is also remarkable that online retailers like eBay or Amazon enjoy more acceptance then regular supermarkets. Maybe online retailers appear more innovative and competent in the field of state-of-the-art sales approaches then classic grocery retailers, whose images and business approaches are obviously more conservative. Nevertheless, that grocery retailers have the biggest expertise in grocery retailing is not reflected by these results, although it is their core area of business. It seems that due to the perceived missing competence in the delivery activities, and due to the missing competence and image concerning innovative and modern sales approaches, consumers would prefer companies other than classic grocery retailers to brand Virtual Stores.

The Extra Questions revealed that there are more respondents not having problems with buying fresh food "virtually" in general than vice versa. However, still almost 30 percent agree at least somewhat, that they would not use Virtual Stores in order to buy fresh groceries. 66 percent are willing to extend their online shopping to include other non perishable household goods like hygiene products. Accordingly, it can be concluded, that it would make sense that whenever Virtual Stores are implemented to extend the product range to other convenience goods such as sanitary- or household products. Concerning advancements in the technology, the Extra Questions could not really give new information. Slightly more people disagreed at least somewhat that they would rather use Virtual Stores if they would work with another technology, while still almost 31 percent agreed to prefer touch screens. Only one quarter of the respondents at least somewhat liked the idea of picking up the products bought in a supermarket, rather than being supplied by a delivery service, what again indicates the high relevance of the delivery service.

Another important finding is revealed the agreement to the statement: I would only use Virtual Stores, if I could refuse late deliveries or faulty products. 75 percent of the respondents agreed at least somewhat to this statement. This reveals again how strong the doubts and fears of the consumers are that they might be disappointed and suffer a financial loss. Accordingly, implementing the option to refuse a late delivery or faulty products might be an opportunity to convince hesitant consumers, remove their doubt and unease.

7.4 Managerial Implications

The results of this Master Thesis are clear. Just like most other products, the retailing of groceries also has a digital future. The results of the analysis leave no doubt that the online grocery market is going to grow substantially in the next years. Accordingly, managers of grocery retailing companies should be aware that their sector is going to face changes and that a certain proportion of their current clients is going to prefer to buy their food online in the near future. This is a development that they can neither change nor stop. The target group is also clear. Consequently, it is the major duty of a manager to prepare her/his company for this digital shift. Although there are already several online grocery retailers on the German market, online grocery shopping is still in its infancy. Companies need to find a way to make sure that the majority of online shoppers prefer their online shops in order to prevail against the competition. However, as the current market situation and the small market share of online shopping shows, just offering a web shop or an app, allowing the consumer to browse the products by categories on a screen does not seem to be the most promising way to enter the online market. On the one

hand, standard grocery web shops do not seem to be very appealing. On the other hand, they are generally unable to communicate the benefits of online grocery shopping. In addition, the transition from the supermarket to web shop might be difficult for many consumers, as it would break old and established shopping habits in a relatively ruthless way. Accordingly, managers need to understand that the progress from supermarket shopping to online grocery shopping might need more time compared to other products and that consumers need to be taken by the hand.

At this point, Virtual Stores seem like a bridge as they combine a physical shopping environment and the digital aspects of online shopping. In contrast to regular online grocery shops, Virtual Shops are integrated in the everyday environment of urban commuters in an eye-catching and prominent manner. They attract attention and stimulate the curiosity of the consumers. Instead of going to supermarkets the consumers just use another facility to do their everyday grocery shopping. Consequently, the transition from a supermarket shopping to online grocery shopping is more comfortable and gradual Virtual Stores offer beneficial solutions for busy and stressed commuters. Accordingly, companies that are planning to or have already entered the online grocery market should seriously consider implementing Virtual Stores in metro and train stations of the biggest German cities. Once a consumer has a good experience with Virtual Stores, with the corresponding mobile application and the related brand, the chances are high that the consumer might stick to this service and company, when she or he does online grocery shopping with a home PC or a smart phone in the future. Additionally, this kind of online shopping allows various options for customer loyalty programs as every customer can be addressed personally and the company will benefit from superior and comprehensive understanding of customer relations. Virtual Stores show the potential to work as a key factor in building strong relationships with the regular online grocery customer of the future. The investment in the implementation of Virtual Stores will probably cause high expenditures. However, it can be regarded as investment into the companies' future online client base.

Therefore, it is advisable for any company that sees its future in online grocery shopping to invest in this sales approach and to develop infrastructures which allow online and mobile grocery shopping, including a reliable delivery service. After that, they should contact the operating companies of the different public transport stations and buildings and negotiate how and under which conditions Virtual Stores can be implemented on site and finally build up the Virtual Stores in the stations.

7.5 Research Limitations

The research findings of the present study are limited, mainly due to the characteristics of the young sample. The relatively young age of most of the respondents represents certain characteristics, e.g. lower net income, smaller households, unmarried etc. Even if there was no statistical proof that Age and Behavioural Intention correlate, that could be valid for predicting other factors.

In addition, the amount of data collected is still relatively low. The sample size represents only a fraction of the potential customers and prospects. In consideration of a project like Virtual Stores and the corresponding costs of its implementation, managers should not rely on a sample of 259 respondents, but conduct a survey with a considerably larger sample. Nevertheless, the applied sample can be characterised as representative. Another critical or at least debateable issue is the construction of the scales of the factors. None of the factors shows officially validated scales and there was no extensive and time-consuming analysis phase including confirmatory factor analyses or numerous pre-tests. Moreover, quantitative and detailed studies dealing with the combined topics of classic supermarket shopping, online or mobile grocery shopping and its transition are rare.

Overall, the main limitation is the measurement of the Behavioural Intention towards a non-observable phenomenon with a quantitative baseline study. The respondents can only estimate how they would behave regarding Virtual Stores. The results have therefore to be reviewed in a field test to verify the behavioural issues.

List of References

Books

A

Alexandrov, A. (2010); **Characteristics of Single-Item Measures in Likert Scale Format**; published by University of Wisconsin.

Allen, E., Seaman, C. (2007); **Likert Scales and Data Analyses**; published by Quality Progress.

Ajzen, I., and Fishbein, M. (2005); **The Influence of Attitudes on Behavior**; published in The Handbook of Attitudes, D. Albarracín, B. T. Johnson, and M. P. Zanna (eds.), Mahwah, NJ: Erlbaum, pp. 173-221.

B

Bandura, A. (1997); **Self-efficacy: The exercise of control**; published by New York: W.H. Freeman and Company.

Bakan, D. (1966); **The Duality of Human Existence**; published by Chicago: Rand McNally.

Bhatnager, A., Misra, S. and Rao, H. R. (2000); **On risk, convenience, and internet shopping behaviour**; published by Communications of the ACM, 43 (11), 98–105.

C

Carlsson, Christer, Hyvonen, Kaarina, Repo, Petteri, and Walden, Pirkko (2005); **Asynchronous Adoption Patterns of Mobile Services**; published by Proceedings of the 38th Hawaii International Conference on System Sciences,January.

Conover, W. (1999); **Practical nonparametric statisics (3rd ed.)**; published by: New York: Wiley & Sons.

Cronbach, L. J. (1951); **Alpha and the internal structure of tests**; published by Psychometrika; 16:297-334, 1951.

D

Deaux, K., and Kite, M. (1987); **Thinking about Gender: A Handbook of Social Science Research**; published by B. B. Hess, and M. M. Ferree (eds.), Beverly Hills, CA: Sage Publications, pp. 92-117.

F

Field, A. (2013); **Discovering statistics using SPSS**. 4th ed.; published by London: Sage.

H

Hartwick, J. and Barki, H. (1994); **Explaining the Role of User Participation in Information System Use**; Management Science (40:4), pp. 40-465.

Hatcher, L. (1994); **A step-by-step approach to using the SAS(R) system for factor analysis and structural equation modelling**; Published by Cary, NC: SAS Institute.

Hegen, Marvin (2010); **Mobile Tagging. Potenziale von QR-Codes im Mobile Business**, published by Diplomatica-Verlag; Page 31

Henning, M., and Jardim, A. (1977). **The Managerial Woman**, published by Garden City, NY: Anchor Press.

Cramer, D. and Howit, D. (2010); **Introduction to Statistics in Psychology** 5th edition; published by Prentice Hall; Page 46.

J

Janssen, J., and, Laatz, W. (1999); **Statistische Datenanalyse mit SPSS für Windows: Eine anwendungsorientierte Einführung in das Basissystem Version 8 und das Modul Exakte Tests**; published by Springer Science+Business Media. Page 35.

K

Kim, SS. and Malhotra NK. (2005); **A Longitudinal Model of Continued IS Use: An Integrative View of Four Mechanisms Underlying Postadoption Phenomena**; published by Management Science, 51 (5): pp. 741-755.

Kim, S. S., Malhotra, N. K., and Narasimhan, S. (2005); **Two Competing Perspectives on Automatic Use: A Theoretical and Empirical Comparison**; published by Information Systems Research (16:4), pp. 418-432.

Kotrik, Juraj (2009); **UTAUT – die gegenwärtige Weiterentwicklung von TAM. / UTAUT – the contemporary Advancement of TAM**; published by Vienna University of Economics and Business.

L

Lian, J. and Lin, T. (2008); **Effects of consumer characteristics on their acceptance of online shopping: Comparisons among different product types**; published by Computers in Human Behavior, 24, 48 – 65.

Liang, T. P. and Huang, J. S. (1998); **An empirical study on consumer acceptance on products in electronic markets: A transaction cost model**; published by Decision Support Systems, 24, 29–43.

M

McDonald, J.H. (2014); **Handbook of Biological Statistics (3rd ed.)** published by Sparky House Publishing, Baltimore, Maryland; pp. 157-164.

Miller, J.B. (1976); **Toward a new Psychology of Women**; published by Beacon Press; Boston.

Minton, H. L. and Schneider, F.W. (1980); **Differential Psychology**; published by Waveland Press; Prospect Heights; IL

Morris, M. G., Venkatesh, V., and Ackerman, P. L. (2005); **Gender and Age Differences in Employee Decisions about New Technology: An Extension to the Theory of Planned Behavior**; published by IEEE Transactions on Engineering Management (52:1), pp. 69-84.

Muijs, D. (2004); **Doing quantitative research in education with SPSS (2nd edn)**; published by Thousand Oaks, CA: Sage.

N

Newell, A., and Rosenbloom, P. S. (1981); **Mechanisms of Skill Acquisition and the Power Law of Practice, in Cognitive Skills and Their Acquisition**; published by J. R. Anderson (ed.), Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 1-55.

Nunnaly, J. (1978); **Psychometric theory**; published by: New York: McGraw-Hill.

P

Peter, J. P. and Olson, J. C. (1996); **Consumer Behaviour and Marketing Strategy**; published by Chicago: Irwin.

Pride, William M. and Ferrell O.C. (2009); **Foundations of Marketing, 3rd Edition**; published by Houghton Mifflin Company.

R

Rasch, Friese, Hofmann & Naumann (2010); **Quantitative Methoden** - Band 1 (3. Auflage); published by Heidelberg: Springer.

Robinson, C. and Schumacker, R. (2009); **Interaction effects: centering, variance inflation factor, and interpretation issues**; published by Multiple Linear Regression Viewpoints 35:6-11.

Rumsey, D. (2007); **Intermediate Statistics for Dummies**; published by Wiley & Sons, Incorporated.

S

Snedecor, George W. and Cochran, William G. (1989); **Statistical Methods**, Eighth Edition; published by Iowa State University Press.

Striegl S. (2008); **Differenzierung im Lebensmitteleinzelhandel: Einsatz neuer Technologien am POS**; published by VDM Verlag Dr. Müller.

Strugatz, Rachel (2012); **M-Commerce On Rise**; Publication title: WWD; published by Condé Nast Publications Inc.

V

Venkatesh, V. and Davis F. (2000); **A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies;** Robert H. Smith School of Business, Van Munching Hall, published by University of Maryland; Sam M. Walton College of Business Administration, University of Arkansas.

Venkatesh, V., Morris, M.G. and Ackermann P.L. (2000); **A Longitudinal Field Investigation of Gender Differences in Individual Technology Adoption Decision Making Processes**; published by Organizational Behaviour and Human Decision Processes (83:1), pp. 33-60.

W

Wieselhuber & Partner (2014); **W&P Fit Monitor; Category Killer – Der stationäre Handel unter Zugzwang**; published by Dr. Wieselhuber & Partner GmbH Unternehmensberatung

Wong, P.T., Kettlewell, G. and Sproule, C.F. (1985); On the Importance of Being Masculine: Sex Role Attribution, and Women's Career Achievement; published by Sex Roles (12:7/8), pp. 757-769.

Periodicals

A

Ajzen, I., and Fishbein, M. (2000); Attitudes and the Attitude- Behavior Relation: Reasoned and Automatic Processes; published by **European Review of Social Psychology** (11:1), pp. 1-33.

Alba, J. W., and Hutchinson, J. W. (1987); Dimensions of Consumer Expertise; published by **Journal of Consumer Research** (13:4), pp. 411-454.

Anonymous 2 (2009); Business – The great patent battle; Smart phone lawsuits; Publication title: **The Economist**; published by The Economist Intelligence Uni.

Anonymous 3 (2006); Where to find low prices; Publication title: Consumer Reports; published by **Consumers Union** of U.S., Inc.

Anonymous 4 (2014); Online Advertising Co-Op Grows to 10,000+ Merchants in 2013; Publication title: **Marketing Weekly News**; Published by NewsRX.

Anonymous 13 (2006); McDonald's Selects Enpocket to Drive Late-Night Store Traffic; Food Service Giant to Roll Out Direct Response Marketing Campaigns through Mobile Couponing; Publication title: Business Wire; published by **Business Wire**.

Anonymous 9 (2011); Tesco opens virtual store in South Korea; Publication Title: **Retail Week**; published by Emap Limited.

Anonymous 11, (2011); South Korea: South Korean Launches Worlds First Virtual Store; Publication Title: **Asian News Monitor**; published by Thai News Service Group.

Anonymous 12 (2011); Virtual Grocery Store Targets South Korean Straphangers; Publication Title: **DM News**; published by Haymarket Media Incorporated.

Agarwal, R. and Prasad, J. (1997); The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies; published by **Decision Sciences** (28:3) pp. 557-582.

Agarwal, R. and Prasad, J., (1998); A conceptual and operational definition of personal innovativeness in the domain of information technology; published by **Information Systems Research**, 9 (2), 204–215.

B

Bem, D.J. and Allen, A. (1974); On predicting some of the people some of the time: The search for cross-situational consistencies in behavior; Published by **Psychological Review**, pp. 506-520.

C

Chau, P. Y . K., and Hui, K. L. (1998); Identifying Early Adopters of New IT Products: A Case of Windows 95; published by **Information & Management** (33:5), pp. 225-230.

Childers, T. L., Carr, C. L., Peck, J., and Carson, S. (2001); Hedonic and Utilitarian Motivations for Online Retail Shopping Behavior; **Journal of Retailing** (77:4), pp. 511-535.

Cho, Y. (2008); Effects of Social Networking Sites (SNSs) on Hyper Media Computer Mediated Environments (HCMEs); published by **The International Business & Economics Research Journal** (IBER). Vol 7, Issue 7, pp. 27-40.

Cho, Y., Im, I., Fjermestad, J. and Hiltz, S. R., (2003); The impact of product category on customer dissatisfaction in cyberspace; published by **Business Process Management Journal**, 9 (5), 635 – 651.

Cho, Yoon C (2009); Assessing Customers' Attitudes/Expectations Toward Online Grocery Businesses; published by **Journal of Business & Economics Research** (7:7), pp. 49-62.

Cho, Y., Im, I., Hiltz, S. & Fjermestad, J. (2001); The Effects of Post-Purchase Evaluation Factors on Online vs. Offline Customer Complaining Behavior: Implications for Customer Loyalty; published by the **Conference of Association for Consumer Research** (October, Austin, Texas).

Chuttur M.Y, (2009); Overview of the Technology Acceptance Model: Origins, Developments and Future Directions; Indiana University, USA; Published by **Sprouts: Working Papers on Information Systems**, 9(37).

D

Darley, W. K., Blankson, C. and Luethge, D. J., (2010); Toward an integrated framework for online consumer behavior and decision making process: A review; published by **Psychology and Marketing**, 27 (2), 94–116.

Davis F. (1986); A Technology Acceptance Model for empirically testing new end-user information systems: theory and results, doctoral dissertation; **Massachusetts Institute of Technology**, MA.

Davis, F. (1989); Perceived usefulness, perceived ease of use, and user acceptance of information technology; **MIS Quarterly**, 13 (3), 319-40.

Davis, F; Bagozzi, RP; Warshaw, PR (1989); User Acceptance of Computer Technology: A Comparison of Two Theoretical Models; **Management Science**, 35 (8): 982-1003.

Deaux, K., and Lewis, L. L. (1984); Structure of Gender Stereotypes: Interrelationships among Components and Gender Label, published by **Journal of Personality and Social Psychology** (46:5), pp. 991-1004.

Docksai, Rick (2009); Smarter Smart Phones; Publication title: **The Futurist**; published by World Future Society.

Dodds, W. B., Monroe, K. B., and Grewal, D. (1991); Effects of Price, Brand, and Store Information on Buyers; published by **Journal of Marketing Research** (28:3), pp. 307-319.

Dolnicar, S. and Jordaan, Y. (2006); Protecting Consumer Privacy in the Company's Best Interest; published by **Australasian Marketing Journal**, 14 (1), 39–61.

E

Eastin, M. S. (2002); Diffusion of E-commerce: An analysis of the adoption of four E-commerce activities; published by **Telematics and Informatics**, 19 (3), 251–267.

F

Farina, A. (1982); The Stigma of Mental Disorders, in In the Eye of the Beholder: Contemporary Issues in Stereotyping, published by **A. G. Miller** (ed.), New York: Praeger, pp. 305-363.

Fazio, R. (1990); Multiple Processes by Which Attitudes Guide Behavior: The Mode Model as an Integrative Framework; published by **Advances in Experimental Social Psychology** (23:1), pp. 75-109.

Flavián, C. and Guinalíu, M. (2006); Consumer trust, perceived security and privacy policy: Tree basic elements of loyalty to a web site; published by **Industrial Management & Data Systems**, 106 (5), 601–620.

Figueiredo, John M. de (2000); Finding Sustainable Profitability in Electronic Commerce; published by **Sloan Management Review**.

French, J.P.R., and Raven B. (1959); The Bases of Social Power; Studies in Social Power, D. Cartwright (ed.); published by **Institute for Social Research, An Arbor**, MI, pp. 150-167.

G

Gilligan, C. (1982); In a Different Voice: Psychological Theory and Women's Development, published by Cambridge, MA: **Harvard University Press**.

H

Hasher, L., and Zacks, R. T. (1979); Automatic and Effortful Processes in Memory; published by **Journal of Experimental Psychology**: General (108:3), pp. 356-388.

Hassanein, K. and Head, M. (2006); The Impact of Infusing Social Presence in the Web Interface: An Investigation Across Different Products; published by **International Journal of Electronic Commerce**, 10(2), 31 – 55.

Hall, D. and Mansfield, R. (1975); Relationship of Age and Seniority with Career Variables of Engineers and Scientists; published by **Journal of Applied Psychology** (60:2) pp. 201-210.

Hathaway, Simon (2013); Comment: Retailers need to get more serious about M-Commerce; Publication Title: **Retail Week**; published by Emap Limited.

Hernández, B., Jiménez, J. and Martín, M. J., (2009); The impact of self-efficacy, ease of use and usefulness on e-purchasing: An analysis of experienced e-shoppers; published by **Interacting with Computers**, 21, 146–156.

Hernández, B., Jiménez, J. and Martín, M. J. (2011); Age, gender and income: do they really moderate online shopping behaviour?; published by **Online Information Review**, 35 (1), 113–133.

Hill, W. W. and Beatty, S. E., (2011); A model of adolescents' online consumer self – efficacy (OCSE); published by **Journal of Business Research**, 64, 1025–1033.

Hirschman, E. C. (1980); Innovativeness, Novelty Seeking, and Consumer Creativity; **Journal of Consumer Research** (7:3), pp. 283-295.

Holbrook, M. B., and Hirschman, E. C. (1982); The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun; published by **Journal of Consumer Research** (9:2), pp. 132-140.

Hwang, Y. (2009); The impact of uncertainty avoidance, social norms and innovativeness on trust and ease of use in electronic customer relationship management; published by **Electron Markets**, 19, 89–98.

J

Jasperson, J., Carter, P. E., and Zmud, R. W. (2005); A Comprehensive Conceptualization of the Post-Adoptive Behaviors Associated with IT-Enabled Work Systems; published by **MIS Quarterly** (29:3), pp. 525-557.

Jennings, J. M., and Jacoby, L. L. (1993); Automatic Versus Intentional Uses of Memory: Aging, Attention, and Control; published by **Psychology and Aging** (8:2), pp. 283-293.

K

Keisidou, E., Sarigiannidis, L., and Maditinos, D. (2011); Consumer characteristics and their effect on accepting online shopping, in the context of different product types; published by **Int. Journal of Business Science and Applied Management**, Volume 6, Issue 2.

Kim, J. and Forsythe, S. (2010); Factors affecting adoption of product virtualization technology for online consumer electronics shopping; published by **International Journal of Retail & Distribution Management**, 38 (3), 190–204.

Korgaonkar, P. K. and Wolin, L. D. (1999); A Multivariate Analysis of Web Usage; published by **Journal of Advertising Research**, March/April, 53-68.

Krugman, H. E. (1966); The Measurement of Advertising Involvement; published by **Public Opinion Quarterly** (30:4), pp. 583-596.

L

LeBlond D. (2009); Understanding Hypothesis Testing Using Probability Distributions; published by **Journal of Validation Technology**.

Lee, C. H., Eze, U. C. and Ndubisi, N. (2011); Analyzing key determinants of online repurchase intentions; published by **Asia Pacific Journal of Marketing and Logistics**, 23 (2), 200–221.

Lee, H., Cho, H. J., Xu, W., and Fairhurst, A. (2010); The Influence of Consumer Traits and Demographics on Intention to Use Retail Self-Service Checkouts; published by **Marketing Intelligence & Planning** (28:1), pp. 46-58.

Liao, Z. and Shi, X., (2009); Consumer perceptions of internet-based e-retailing: an empirical research in Hong Kong; **Journal of Services Marketing**, 23 (1), 24–30.

Liao, Z. and Cheung, M. T., (2001); Internet-based e-shopping and consumer attitudes: An empirical study; published by **Information and Management**, 38 (5), 299–306.

Limayem, M., Hirt, S. G., and Cheung, C. M. K. (2007); How Habit Limits the Predictive Power of Intentions: The Case of IS Continuance; published by **MIS Quarterly** (31:4), pp. 705-737.

Lowengart, O. and Tractinskky, N., (2001); Differential effects of product category on shoppers. selection of web-based stores: A probabilistic modelling approach; published by **Journal of Electronic Commerce Research**, 2 (4), 12–26.

Lustig, C., Konkel, A., and Jacoby, L. L. (2004); Which Route to Recovery; published by **Psychological Science** (15:11), pp. 729-735.

Lynott, P.P., and McCandless, N.J. (2000); The Impact of Age vs. Life Experiences on the Gender Role Attitudes of Women in Different Cohorts; **Journal of Woman and Aging** (12:2); pp. 5-21.

M

McGarvey, Robert (2000); Search us, says Google; Publication title: Technology Review; published by **Technology Review** Inc.

Meyers-Levy, J., and Tybout, A. (1989); Schema Congruity as a Basis for Product Evaluation; published by **Journal of Consumer Research** (16:1), pp. 39-54.

Midgley, D. F., and Dowling, G. R. (1978); Innovativeness: The Concept and its Measurement; published by **Journal of Consumer Research** (4:2), pp. 229-242.

Molta, Dave (2004); Smart phones get smarter; Publication title: **Network Computing**; published by United Business Media.

Morris, M.G. and Venkatesh V. (2000); Age Differences in Technology Adoption Decisions: Implications for a Changing Workforce; published by **Personnel Psychology** (53:2), pp. 375-403.

Motowidlo, S.J. (1982); Sex Role Orientation and Behaviour in a Work Setting; **Journal of Personality and Social Psychology** (42:5); pp. 935-945.

N

Neufeld, D. J., Dong, L. and Higgins, C. (2007); Charismatic Leadership and User Acceptance of Information Technology; published by **European Journal of Information Systems** (16:4), pp. 494-510.

O

O'Cass, A. and Fenech, T. (2003); Web retailing adoption: Exploring the future of Internet users' web retailing behaviour; published by the **Journal of Retailing and Consumer Services**, 10 (2), 81–94.

P

Pan, Y. and Zinkhan, G. M. (2006); Exploring the impact of online privacy disclosures on consumer trust; published by **Journal of Retailing**, 82 (4), 331–338.

Pedersen, P. and Nysveen, H. (2005); Search mode and purchase intention in online shopping behaviour; published by **International Journal of Internet Marketing and Advertising**, 2 (4), 288 – 306.

Perea y Monsuwé, T., Dellaert, B. and de Ruyter, K., (2004); What drives consumers to shop online? A literature review; **International Journal of Service Industry Management**, 15 (1), 102–121.

Peterson, R. A., Balasubramanian, S. and Bronnenberg, B. J., (1997); Exploring the implications of the Internet for consumer marketing; published by **Journal of Academy of Marketing Science**, 25 (4), 329–346.

Plude, D. J., and Hoyer, W. J. (1985); Attention and Performance: Identifying and Localizing Age Deficits," in Aging and Human Performance; published by N. Charness (ed.), London: Wiley, pp. 47-99. Posner, R. A. 1996. Aging and Old Age, Chicago: **University of Chicago Press**.

Porter, L. (1963); Job Attitudes in Management: Perceived Importance of Needs as a Function of Job Level; published by **Journal of Applied Psychology** (47:2) 141-148.

R

Rhodes, S.R. (1983); Age-Related Differences in Work Attitudes and Behaviour: A Review and Conceptual Analysis; published by **Psychological Bulletin** (93:2); pp. 328-367.

Roca, J. C., García, J. J. and de la Vega, J. J., (2009); The importance of perceived trust, security and privacy in online trading systems; published by **Information Management & Computer Security**, 17 (2), 96–113.

Rogers, E. M., (1995); Diffusion of innovation; published by **The Free Press**.

Rose, S., Spinks, N. and Canhoto I. (2015); Management research: applying the principles; published by **British Library Cataloguing in Publication Data**; Page 348.

Rotter, G. S., and Portugal, S. M. (1969); Group and Individual Effects in Problem Solving; published by **Journal of Applied Psychology** (53:4), pp. 338-341.

S

Stofega, W., and Llamas, R. T. (2009); Worldwide Mobile Phone 2009-2013 Forecast Update; IDC Document Number 217209, IDC; published by **Framingham State College, MA**

T

Taylor, Mary Alice (2003); Online Grocery Retailing: Building the Last Mile to the Customer; published by **Harvard Business Review**.

Thong J. Y. L. (1999); An Integrated Model of Information Systems Adoption in Small Businesses; published by **Journal of Management Information Systems** (15:4), pp. 187-214.

V

van der Heijden, H. (2004); User Acceptance of Hedonic Information Systems; published by **MIS Quarterly** (28:4), pp. 695-704.

Venkatesh, V. and Morris, M.G. (2000); Why Don't Men Ever Stop to Ask For Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behaviour; published by **MIS Quarterly** (24:1), pp. 115-139.

Venkatesh V; Morris M; Davis G; Davis F (2003); User Acceptance of Information Technology: Toward a Unified View; Published by: Management Information Systems Research Center, University of Minnesota; Source: **MIS Quarterly**, Vol. 27, No. 3 (Sep., 2003), pp. 425-478.

Venkatesh V., James Y. L. Thong, and Xin Xu (2012); Unified theory of acceptance and use of technology (UTAUT, UTAUT2); published by **MIS Quarterly**; Vol. 36 No. 1 pp. 157-178/March 2012.

Verplanken, B., and Wood, W. (2006); Interventions to Break and Create Consumer Habits; published by **Journal of Public Policy & Marketing** (25:1), pp. 90-103

W

Warshaw, P.R. (1980); A New Model for Predicting Behavioural Intentions: An Alternative to Fishbein; published by **Journal of Marketing** (17:2); pp. 152-172.

Wei, L. and Zhang, M. (2008); The impact of Internet knowledge on college student's intention to continue to use the Internet; published **Information Research**, 13 (3), 1–22.

Wourple, Doug (2007); Save Time and Frustration When Shopping Online; Publication title: **PR Newswire** [New York]; published by PR Newswire Association LLC.

Z

Zaichkowsky, J. L. (1985); Measuring the involvement construct; published by **Journal of Consumer Research**, 12 (3), 341–352.

Zeithaml, V. A. (1988) Consumer Perceptions of Price, Quality, and Value: A Means–End Model and Synthesis of Evidence; **Journal of Marketing** (52:3), pp. 2-22.

Zhou, Zheng (2002); Users' Attitudes Toward Web Advertising: Effects of Internet Motivation and Internet Ability; published by **Advances in Consumer Research**, 29, 71-78.

Electronic documents

A

Anonymous 1 (2013); More Than 2 Billion People Use the Internet, Here's What They're Up To; http://www.thecultureist.com/2013/05/09/how-many-people-use-the-internet-more-than-2-billion-infographic/; Published by The Culture-ist; Accessed: 4th February 2014

Anonymous 5 (2012); E-Commerce verändert den Einzelhandel; published by IDG Business Media GmbH; http://www.channelpartner.de/a/e-commerce-veraendert-den-einzelhandel,2574211; Accessed 20th February 2014.

Anonymous 6 (2013); Infographic: M-Commerce & You; Publication title: Mobile Mentality; published by Apptive; http://www.apptive.com/blog/2013/ 07/23/infographic-m-commerce-you/; Accessed 23rd February 2014.

Anonymous 7 (2014); Milch und Butter online bestellen - Amazon liefert ab Sommer Lebensmittel an die Tür; published by Focus Money as a product of Focus Online; http://www.focus.de/finanzen/news/milch-und-butter-bis-vor-die-tuer-amazon-fresh-liefert-ab-sommer-lebensmittel_id_3628583.html; Accessed 6th June 2014.

Anonymous 8 (2013); Rewe will sein Online-Geschäft massiv ausbauen; published by Handelsblatt GmbH – as part of Verlagsgruppe Handelsblatt GmbH & Co. KG; http://www.handelsblatt.com/unternehmen/handel-dienstleister/lebensmittelhaendler-rewe-will-sein-online-geschaeft-massiv-ausbauen/8063116.html; Accessed 1st September 2014.

AT Kearney (2012); Online-Food-Retailing: Nischenmarkt mit Potential; published by A.T. Kearney GmbH; http://www.atkearney.de/documents /856314/ 1214680/BIP_Online-Food-Retailing_Nischenmarkt mit_ Potenzial.pdf/76360586-e8c5-4e83-89bd-b9e13bafea96; Accessed 25th August 2014.

AT Kearney (2013); Online-Food-Retailing: Ein Markt im Aufschwung; published by A.T. Kearney GmbH; http://www.atkearney.de/documents/85 6314/3014702/BIP+Online-Food Retailing+Ein+Markt+im+Aufschwung.pdf /2cfae910-1c7e-4ccb-98fc-730e6ae10ff5; Accessed 25th August 2014

B

Bendel, Oliver (2010); Die Renaissance des Papiers. Codes als Elemente hybrider Publikationsformen; published by Institut für Bibliotheks- und Informationswissenschaft der Humboldt-Universität zu Berlin; http://libreas.eu/ausgabe17/texte/05bendel.htm; Accessed 7th May 2014.

Blackburn, Peter (2012); Virtual Stores: the New Way to Sell to Customers; published by Elateral Ltd.; http://www.elateral.com/article/items/virtual-stores-the-new-way-to-sell-to-customers.html; Accessed: 2nd August 2014.

Brown, S. A., and Venkatesh, V. (2005); Model of Adoption of Technology in the Household: A Baseline Model Test and Extension Incorporating Household Life Cycle; MIS Quarterly (29:4), pp. 399-426.

C

Cardinal, David (2011); Virtual stores help shoppers save real time; Ziff Davis, LLC.PCMag Digital Group; http://www.extremetech.com/mobile/99033-virtual-stores-help-shoppers-save-real-time; Accessed: 3rd August 2014.

Cheredar, Tom (2012); At peak, Amazon sold a whopping 306 items per second in 2012; http://venturebeat.com/2012/12/27/at-peak-amazon-sold-a-whopping-306-items-per-second-in-2012/; Published by VentureBeat powered by WordPress; Accessed: 4th February 2014.

D

Dahmen, (2014); Official Handout -Dietmar Dahmen at Controller Forum Graz März; Published by ICG Integrated Consulting Group; http://www.controller-forum.org/data/_uploaded/file/pdf/Vortr%C3%A4ge%202014/02-Vortag% 203_Dietmar%20Dahmen-ecx%20international%20AG.pdf; Accessed 24th August 2014.

de Voos, Kees (2011); The Evolution of Mobile Commerce; published by Agile Commerce – a blog about the future of multichannel commerce; http://multichannel-retailing.com /2011/04 /the-evolution-of-mobile-commerce-2/; Accessed 17th March 2014.

Deloitte (2011); The changing face of retail – The store of the future: the new role of the store in a multichannel environment; published by Deloitte LLP. as Member of Deloitte Touche Tohmatsu Limited; http://www.deloitte.com/assets/Dcom-Germany/Local%20Assets/Images/06_ CBuT/2013/CB_R_store_of_the_future_2013.pdf ; Accessed 29th August.

Denso Wave (2013); What is a QR Code – You can learn about the QR Code's features and standards here; published by DENSO WAVE INCORPORATED; http://www.qrcode.com/en/about/; Accessed 3rd March 2013.

E

Eckstein, Aline; Halbach, Judith; Mobile Commerce in Deutschland – Die Rolle des Smartphones im Verkaufsprozess – Eine Studie des E-Commerce Center Handel (ECC Handel) in Zusammenarbeit mit PayPal und Shopgate; http://ecckoeln.de/downloads/ themen/ECC_Handel_Mobile_Commerce_in_Deutschland_2012.pdf; Accessed 23rd August 2013.

F

Fittkau & Maaß Consulting (2013); W3B Report: Lebensmittel im Internet – Rezepte, Ernährungsinformationen und Lebensmittelvertrieb online; published by Fittkau & Maaß Consulting – Internet Consulting & Research Services; http://www.fittkaumaass.de/reports-und-studien/e-commerce/lebensmittel-im-internet; Accessed 25th August 2014.

G

Gesellschaft für Konsumforschung (GfK) (2012); Einfluss mobiler Endgeräte auf das Online Shopping wächst; published by Enigma GfK of GfK Group; http://www.gfk.com/de/ Documents/Pressemitteilungen/2012/20120628_oss_dfin.pdf; Accessed 20th February 2014.

Graber, Dirk (2012); Mister Spex wächst um rund 150 Prozent; published by Mister Spex GmbH; http://misterspex.de/presse/2011-02-02_PM_Mister_ Spex_ macht _11_Millionen _Euro_Umsatz_in_2010.html; Accessed 24th August 2014.

Green, C. (2000); Classics in the History of Psychology – Statistical Methods For Research Workers; published by York University, Toronto, Ontario; http://psychclassics. yorku.ca /Fisher/Methods/chap3.html; Accessed 28th September 2015.

H

Hansen, Nele & Hielscher, Handryk, (2013); Lebensmittel per Mausklick – Nie wieder Schlange stehen; published by WirtschaftsWoche Online (wiwo.de) as a product of the Handelsblatt GmbH; http://www.wiwo.de/unternehmen/handel /lebensmittel-per-mausklick-nie-wieder-schlange-stehen/v_detail_tab_print/ 8983810.html; Accessed 1st September 2014.

K

Kerbusk, Hans-Peter (2009); Das große Sterben; published by SPIEGEL-Verlag Rudolf Augstein GmbH & Co. KG; http://www.spiegel.de/ spiegel/print/d-66208552.html; Accessed 26th August 2014.

Khurana, Ajeet (2013); Top 11 Advantages of Ecommerce Over Traditional Retail; published by: About.com Ecommerce; http://ecommerce.about.com/od/eCommerce-Basics/tp/ Advantages-Of-Ecommerce.htm; Accessed 20th February 2014.

Korgaonkar, P., Silverblatt, R. and Girard, T. (2006); Online retailing, product classifications, and consumer preferences; published by Internet Research, 16 (3), 267 – 288.

Koufaris, M. (2002); Applying the technology acceptance model and flow theory to online customer behaviour; published by Information Systems Research, 13 (2), 205–223.

M

Mahoud, Ayhaan (2012); QR Code Usage among European Smartphone Owners Doubles over Past Year; published by comScore Inc. http://www. comscore.com/ger/Insights/Press-Releases/2012/9/QR-Code-Usage-Among-European-Smartphone-Owners-Doubles-Over-Past-Year; Accessed 9th May 2015.

O

Osborne, J. and Waters E. (2002); Four assumptions of multiple regression that researchers should always test. Practical Assessment, Research & Evaluation, 8(2); published by PARE - Practical Assessment, Research & Evaluation; http://PAREonline.net/getvn.asp?v=8&n=2; Accessed 28th September 2015.

Organization for Economic Co-Operation and Development (2011); OECD Factbook 2011-2012 - Economic, Environmental and Social Statistics; published by OECD iLibrary; http://www.oecd-ilibrary.org/economics/die-oecd-in-zahlen-und-fakten-2011-2012_9789264125476-de; Accessed 27th

P

Paukner, Pascal (2013); Jeder fünfte Deutsche leidet unter Dauerstress – Studie zur Alltagsbelastung; published by Süddeutsche Zeitung Digitale Medien GmbH / Süddeutsche Zeitung GmbH; http://www.sueddeutsche.de/leben/ studie-zur-belastung-im-alltag-jeder-fuenfte-deutsche-leidet-unter-dauerstress-1.1807168; Accessed 28th September 2014.

phaydon | research + consulting (2014); Mobile Commerce Insights 2013 – Erfolgsszenarien, Trends und Kontexte für Commerce to go & Couch Commerce; http://mcommerce. phaydon. de; Accessed 25th March 2014.

R

Rhiem, Ulrich (2004); E-Commerce: Begriff, Geschichte, aktueller Stand und Ausblick; published by Wissensgesellschaft Neue Medien und ihre Konsequenzen. Bonn: Bundeszentrale für politische Bildung; http://www.itas.kit.edu/pub/v/2004/rieh04b.pdf; Accessed 18th February 2014.

S

Santos, R. (1999), Cronbach's Alpha: A Tool for Assessing the Reliability of Scales; published by Journal of Extension (JOE) of the U.S. Cooperative Extension System; http://www.joe.org/joe/1999april/tt3.php; Accessed 29th September 2015.http:// www.supermarktblog.com /2013/11/01/ lebensmittel-online-bestellen-die-angst-vor-der-matschaubergine; Accessed 25th August 2014.

Schader, Peer (2015); Tomaten im Laden, Klopapier per Post; published by ZEIT ONLINE GmbH http://www.zeit.de/wirtschaft/unternehmen/2015-07/amazon-fresh-lebensmittel-lieferung-supermarkt; Accessed 25th August 2014.

Schader, Peer (2013); Lebensmittel online bestellen: Die Angst vor der Matschaubergine - Lebensmittel liefern? Die Deutschen sind noch skeptisch; published by Peer Schader; Kanzowstr. 16; 10439 Berlin on Supermarktblog as part of Exciting Commerce Networks; http://www.supermarktblog.com /2013/11/01/ lebensmittel-online-bestellen-die-angst-vor-der-matschaubergine; Accessed 25th August 2014.

Schwetje, Hinsch, and Kurczynski (2012); Retail Brands in Deutschland – eine Studie zur Markenstärke und zu ihren Treibern im deutschen Einzelhandel; published by Batton & Company; http://www.batten-company.com/uploads/media/BBDO8_Insights8_3_Studie_ %C3%BB_Markenst%C3%B5rke_von_Retail-Brands.pdf; Accessed 3rd July 2015.

Stabenow, Michael (2012); Deutsche machen am meisten Urlaub – Arbeitszeiten in Deutschland; published by Frankfurter Allgemeine Zeitung GmbH; http://www.faz.net/aktuell/wirtschaft/arbeitszeiten-in-europa-deutsche-machen-am-meisten-urlaub-11861279.html; Accessed 27th September 2014.

Statista GmbH (2011); Bevölkerung auf Grundlage des Zensus 2011; published by by Statista – Das Statistik Portal; https://www.destatis.de/DE/ZahlenFa https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Bevoelkerungsstand/Tabellen/Zensus_Geschlecht_Staatsangehoerigkeit.htmlkten/GesellschaftStaat/ Bevoelkerung/Bevoelkerungsstand/Tabellen/Zensus_Geschlecht_Staatsangehoerigkeit.html; Accessed 28th September 2015.

Statista GmbH (2012); Deutsche Bevölkerung nach Altersgruppen; published by Statista – Das Statistik Portal; https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/ Bevoelkerung/ Bevoelkerungsstand/Tabellen_/lrbev01.html; Accessed 28th September 2015.

Statista GmbH (2013); Durchschnittliche Wochenarbeitszeit von Vollzeit-beschäftigten in den Ländern der Europäischen Union (EU-28) im Jahr 2013 (in Stunden); published by Statista – Das Statistik Portal; http://de.statista. com/ statistik/daten/ studie/75864/umfrage/ durchschnittliche- wochenarbeitszeit-in-den-laendern-der-eu/; Accessed 27th September 2014.

Statista GmbH (2014); Bevölkerung nach Bildungsabschluss in Deutschland; published by Statista – das Statistik Portal; https://www.destatis.de/DE/ZahlenFakten/Gesellschaf

tStaat/BildungForschungKultur/Bildungsstand/Tabellen/Bildungsabschluss.html; Accessed 28th September 2015.

Statista GmbH (2015); Erwerbstätigkeit weiterhin auf Wachstumskurs; published by Statista – das Statistik Portal; https://www.destatis.de/DE/ZahlenFakten/Gesamtwirtschaft Umwelt/ Arbeitsmarkt/Arbeitsmarkt.html; Accessed 28th September 2015.

Starbucks Corporation (2013); Get the Starbucks app® for iPhone® and Android™; published by Starbucks Corporation; http://www.starbucks.com /coffeehouse/mobile-apps; Accessed 7th May 2014.

Stockburger D. (2001); Introductory Statistics: Concepts, Models, and Applications; published by The Psychology Department at Missouri State University; http://www.psychstat. missouristate.edu/introbook/sbk16.htm; Accessed 28th September 2015.

T

Tichawa, Nick (2012); M-Commerce: The New Way To Buy; published by APPMOSPHERE INC; http://appmosphereinc.com/m-commerce-the-new-way-to-buy/; Accessed 17th March 2014.

TK – Techniker Krankenkassen (2013); Bleib locker, Deutschland! TK-Studie zur Stresslage der Nation; published by Techniker Krankenkasse Pressestelle Hamburg; http://www.tk.de/centaurus/servlet/contentblob/590188/Datei/ 115476/TK_Studienband_zur_Stressumfrage.pdf; Accessed 28th September 2014.

Treiß, Florian (2013) Infografik: Aufstieg des mobilen Onlinehandels; published by Deutsche Mobilbranchenvereinigung; http://mobilbranche.de/ 2013/07/mobile-e-commerce/37754; Accessed 20th February 2014.

W

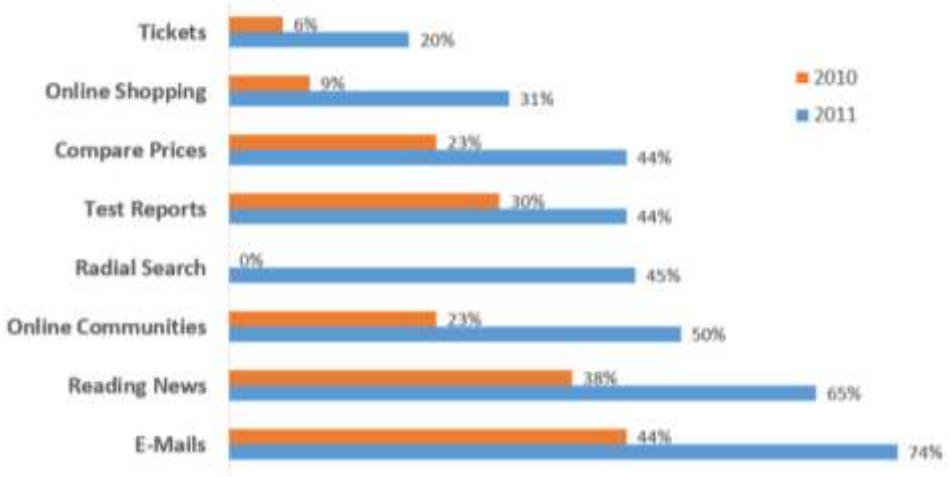
Wagner, Peter (2015); Die App Nation; published by SPIEGEL-Verlag Rudolf Augstein GmbH & Co. KG; http://www.spiegel.de/spiegel/print/d-128629160.html; Accessed 27th March 2015.

Weigert, Martin (2014); Lebensmitteleinkauf im Internet - Supermarkt-Ketten in Gefahr; published by netzwertig.com as a publication of Blogwerk AG; http://netzwertig.com/2014/06/06/lebensmitteleinkauf-im-internet-supermarkt-ketten-in-gefahr/; Accessed 6th June 2014.

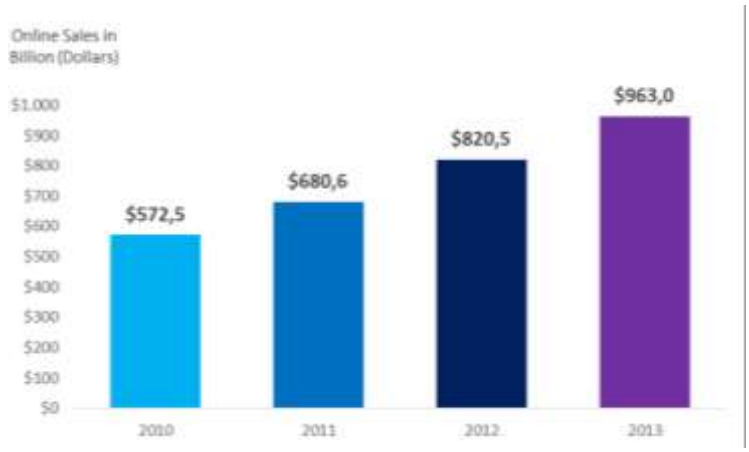
Williams, R. (2015); Multicollinearity; published by the University of Notre Dame; https://www3.nd.edu/~rwilliam/stats2/l11.pdf; Accessed 28th September 2015.

List of Appendices

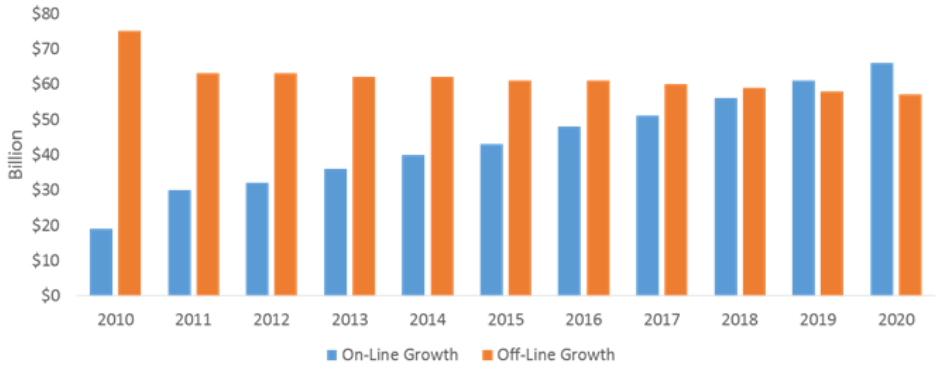
Appendix A: Most popular activities by using a smartphone in Germany (ECC handel, 2012)



Appendix B: Development of Global E-Commerce (Statista, 2013)

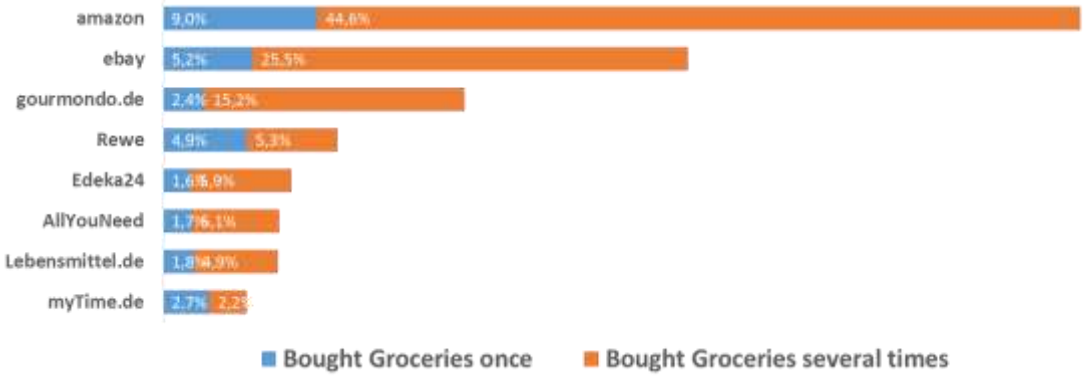


Appendix C: E-Commerce to eclipse Offline-Sales by 2019 (Goldman Sachs Research, 2012)



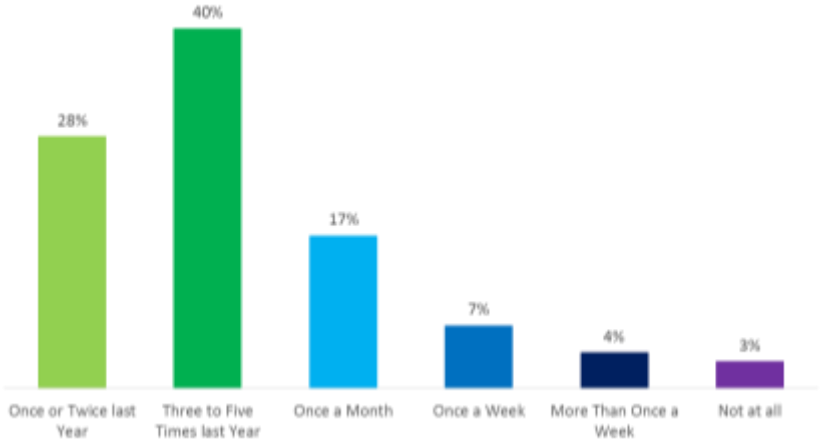
Appendix D: Role of Smart Phone in Buying Process (phaydon research, 2014)

Appendix E: Where do Online Grocery Shopper buy? (Wieselhuber & Partner, 2014)

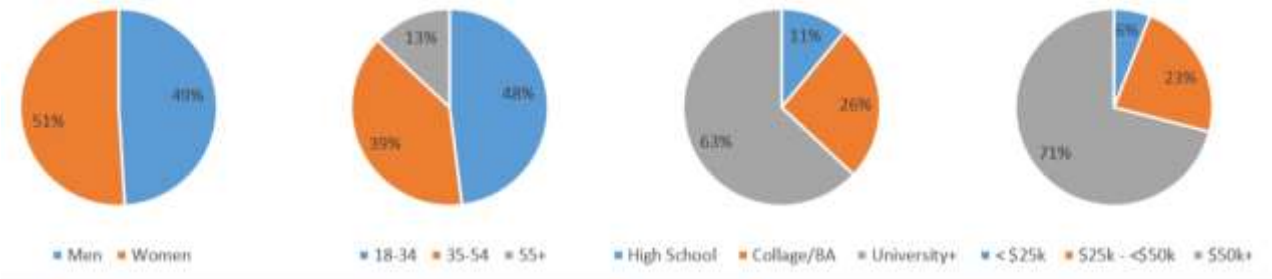


Appendix F: Examples of commercial uses of QR-Codes (Starbucks Inc., 2014; Diesel, 2012)

Appendix G: How often did you scan a QR-Code last year (Statista, 2012)



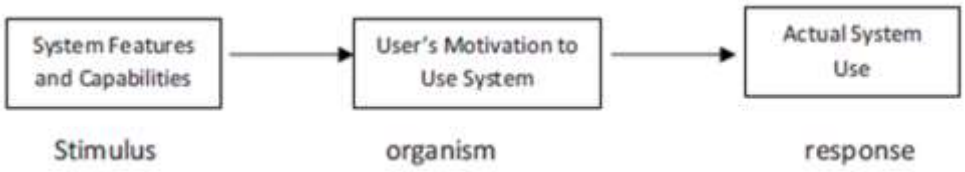
Appendix H: Job-Related Stress Factors on the Rise (Techniker Krankenkasse, 2013)



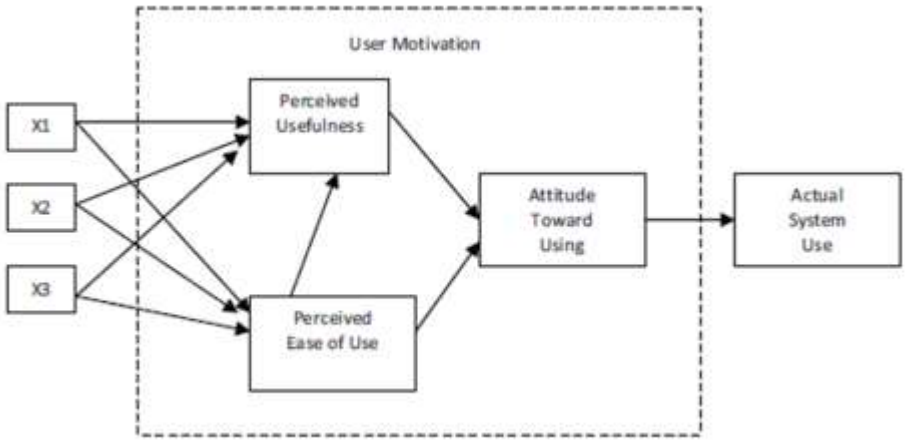
Appendix I: Communities/year in ten biggest German cities (Current Annual Reports of Transport Companies)

City	Inhabitants	Transport Company	Commuters/year	Trend
Berlin	3.375.222	BVG	947,3 Mio.	+ 1,0%
Hamburg	1.734.272	HVV	728,6 Mio.	+1,6%
Munich	1.388.308	MVV	662,8 Mio.	+2,7%
Cologne	1.024.373	KVB	276,6 Mio.	+0,5%
Frankfurt	687.775	VGF	161,4 Mio.	-0,6%
Stuttgart	597.939	VVS	348,9 Mio.	+3,2%
Düsseldorf	593.682	Rheinbahn	218,0 Mio.	+0,5%
Dortmund	572.087	DSW21	139,2 Mio.	+2,1%
Essen	566.862	EVA	125,3 Mio.	+2,0%
Bremen	546.451	VBN	140,6 Mio.	+0,3%

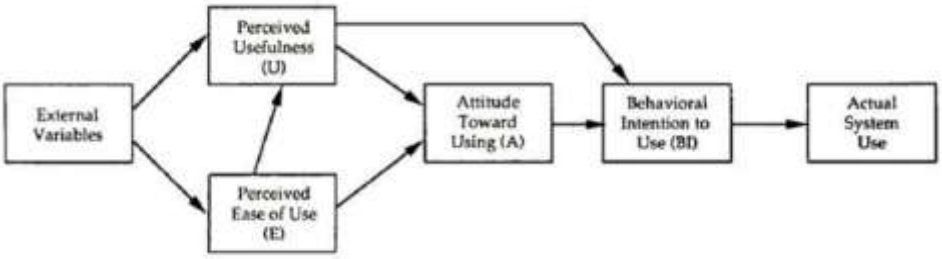
Appendix J: Conceptual Model for Technology Acceptance (Davis, 1985)



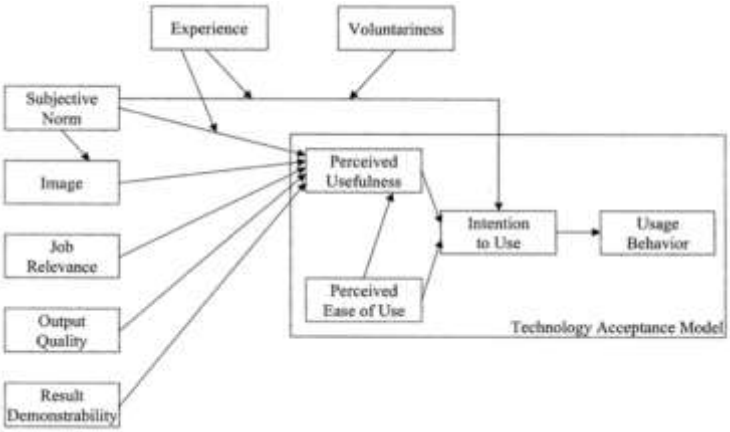
Appendix K: IT Research Development – From TAM to UTAUT



Original Technology Acceptance Model (Davis,1986)

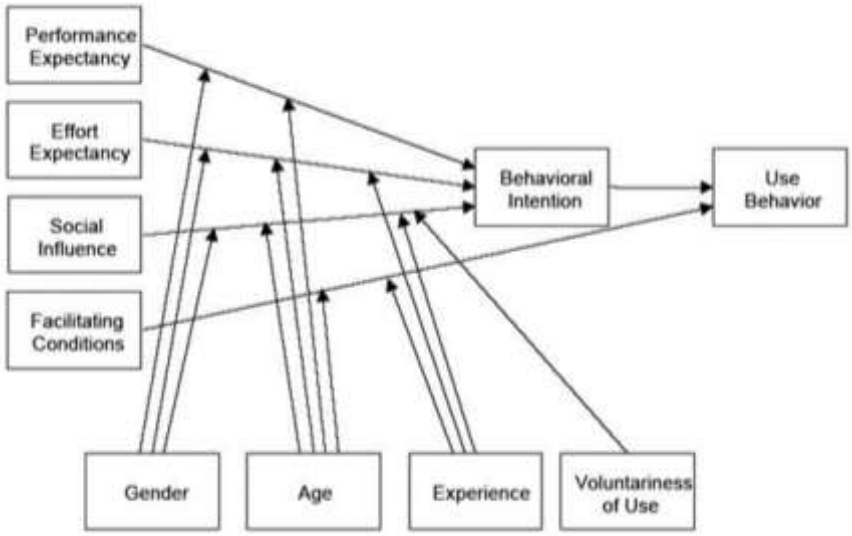


Adjusted Technology Adoption Model (Davis, Bagozzi, Warshaw, 1989)

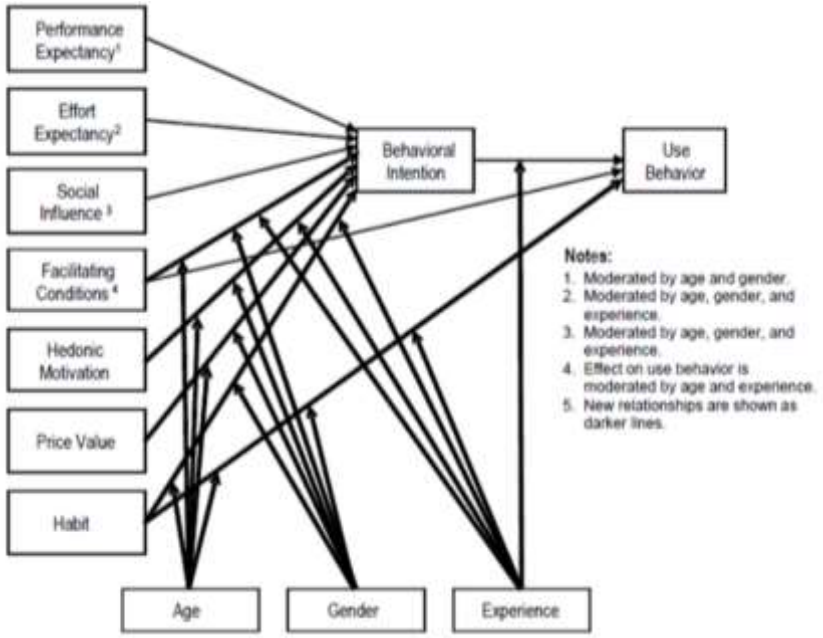


Theoretical Expansion of Technology Acceptance Model (Venkatesh and Davis, 2000)

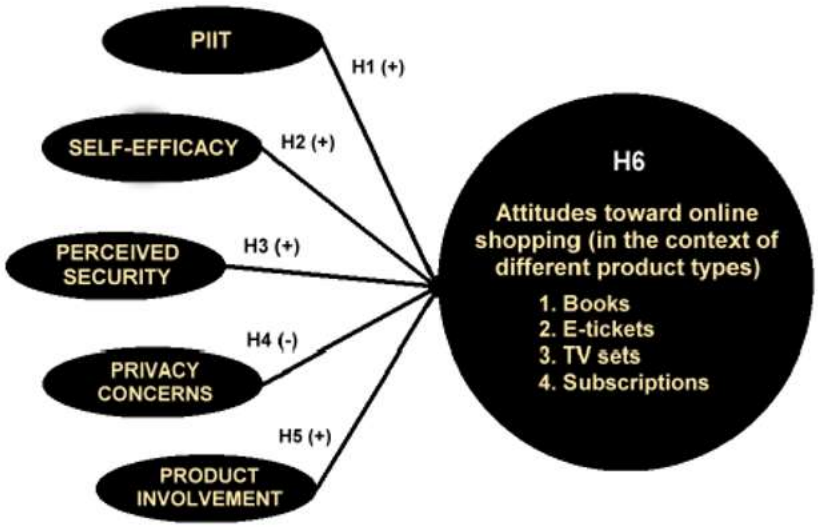
Appendix L: Unified Theory of Acceptance and Use of Technology, (Venkatesh *et al.*, 2003)



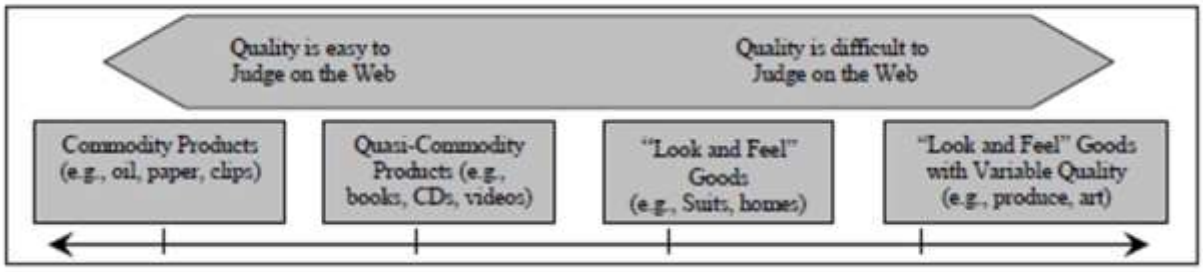
Appendix M: Unified Theory of Acceptance and Use of Technology 2 (Venkatesh *et al.*, 2012)



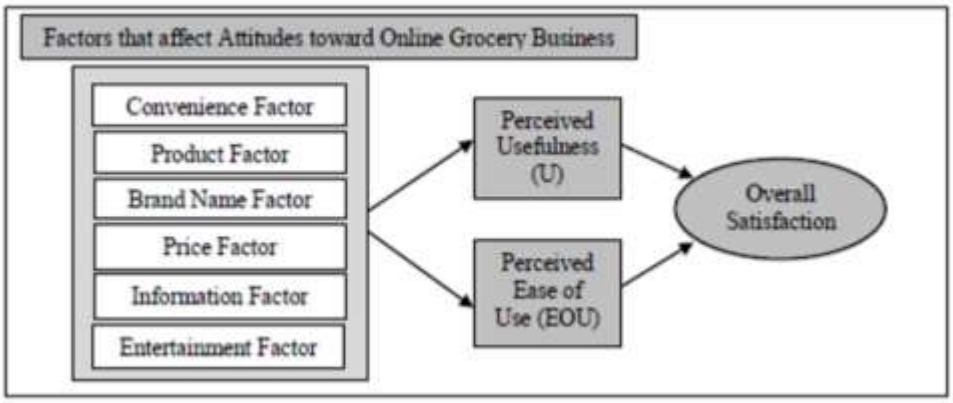
Appendix N: Research Model – Attitude toward Online Shopping (Keisidou *et al*., 2011)



Appendix O: The Dot Com Retail Continuum (Figueiredos, 2000)

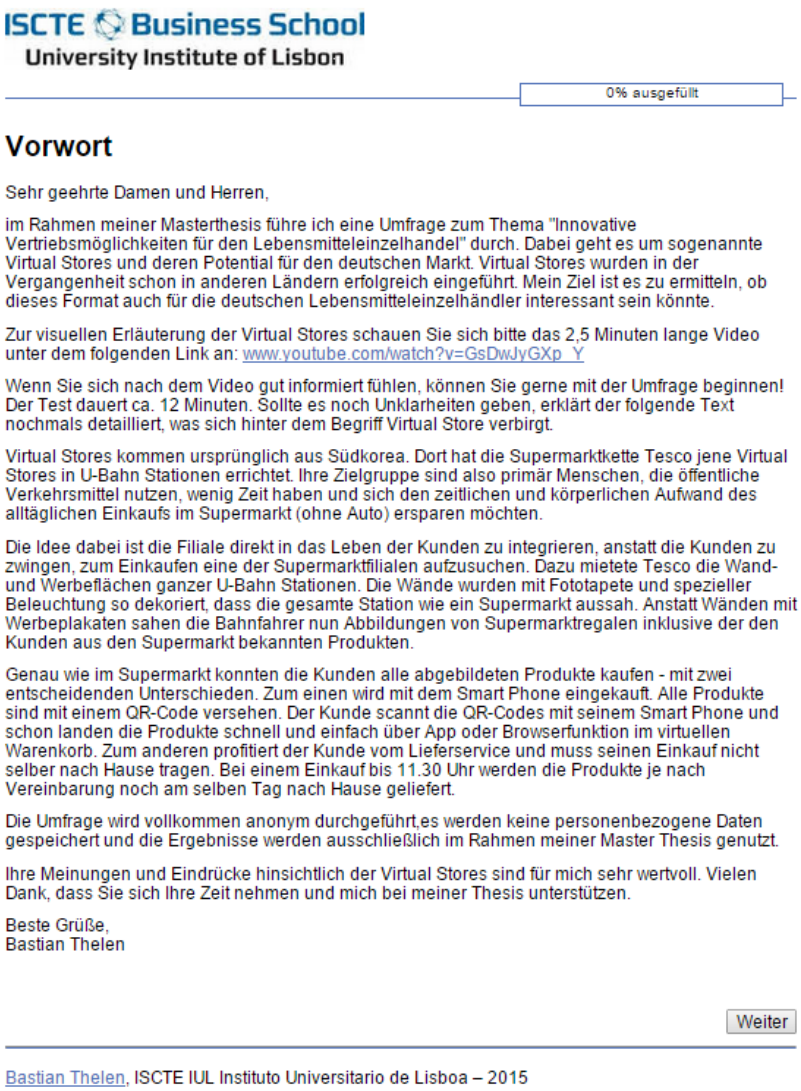


Appendix P: The Proposed Model of Customers' Attitudes/Expectations toward Online Grocery Business- & E-Satisfaction (Cho, 2009)



Appendix Q: Coalescence of the applied models defining Behavioural Intention to use Virtual Stores

Appendix R: Welcome Page of the Survey



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Vorwort

Sehr geehrte Damen und Herren,

im Rahmen meiner Masterthesis führe ich eine Umfrage zum Thema "Innovative Vertriebsmöglichkeiten für den Lebensmitteleinzelhandel" durch. Dabei geht es um sogenannte Virtual Stores und deren Potential für den deutschen Markt. Virtual Stores wurden in der Vergangenheit schon in anderen Ländern erfolgreich eingeführt. Mein Ziel ist es zu ermitteln, ob dieses Format auch für die deutschen Lebensmitteleinzelhändler interessant sein könnte.

Zur visuellen Erläuterung der Virtual Stores schauen Sie sich bitte das 2,5 Minuten lange Video unter dem folgenden Link an: www.youtube.com/watch?v=GsDwJyGXp_Y

Wenn Sie sich nach dem Video gut informiert fühlen, können Sie gerne mit der Umfrage beginnen! Der Test dauert ca. 12 Minuten. Sollte es noch Unklarheiten geben, erklärt der folgende Text nochmals detailliert, was sich hinter dem Begriff Virtual Store verbirgt.

Virtual Stores kommen ursprünglich aus Südkorea. Dort hat die Supermarktkette Tesco jene Virtual Stores in U-Bahn Stationen errichtet. Ihre Zielgruppe sind also primär Menschen, die öffentliche Verkehrsmittel nutzen, wenig Zeit haben und sich den zeitlichen und körperlichen Aufwand des alltäglichen Einkaufs im Supermarkt (ohne Auto) ersparen möchten.

Die Idee dabei ist die Filiale direkt in das Leben der Kunden zu integrieren, anstatt die Kunden zu zwingen, zum Einkaufen eine der Supermarktfilialen aufzusuchen. Dazu mietete Tesco die Wand- und Werbeflächen ganzer U-Bahn Stationen. Die Wände wurden mit Fototapete und spezieller Beleuchtung so dekoriert, dass die gesamte Station wie ein Supermarkt aussah. Anstatt Wänden mit Werbeplakaten sahen die Bahnfahrer nun Abbildungen von Supermarktregalen inklusive der den Kunden aus den Supermarkt bekannten Produkten.

Genau wie im Supermarkt konnten die Kunden alle abgebildeten Produkte kaufen - mit zwei entscheidenden Unterschieden. Zum einen wird mit dem Smart Phone eingekauft. Alle Produkte sind mit einem QR-Code versehen. Der Kunde scannt die QR-Codes mit seinem Smart Phone und schon landen die Produkte schnell und einfach über App oder Browserfunktion im virtuellen Warenkorb. Zum anderen profitiert der Kunde vom Lieferservice und muss seinen Einkauf nicht selber nach Hause tragen. Bei einem Einkauf bis 11.30 Uhr werden die Produkte je nach Vereinbarung noch am selben Tag nach Hause geliefert.

Die Umfrage wird vollkommen anonym durchgeführt,es werden keine personenbezogene Daten gespeichert und die Ergebnisse werden ausschließlich im Rahmen meiner Master Thesis genutzt.

Ihre Meinungen und Eindrücke hinsichtlich der Virtual Stores sind für mich sehr wertvoll. Vielen Dank, dass Sie sich Ihre Zeit nehmen und mich bei meiner Thesis unterstützen.

Beste Grüße,
Bastian Thelen

Weiter

Bastian Thelen, ISCTE IUL Instituto Universitario de Lisboa – 2015

Appendix S: Questionnaire in English

H1	PE1.	Virtual Stores would make my life easier.
	PE2.	Virtual Stores would allow me to shop more consciously.
	PE3.	Virtual Stores would allow me more time/leisure time (compared to when I go shopping in supermarkets).
	PE4.	Virtual Stores would spare me the efforts of grocery shopping (which appear when I shop groceries in supermarkets).
	PE5.	Buying groceries in Virtual Stores and having the products delivered would be an advantage for me.
H2	EE1.	I am confident to shop be able to shop with Virtual Stores right away.
	EE2.	Learning how to handle Virtual Stores, would be easy for me.
	EE3.	Interacting with Virtual Stores would probably not give me any trouble.
	EE4.	If I wanted to, I am confident I could purchase products via Virtual Stores on my own
	EE5.	Using Virtual Stores to purchase products would be entirely within my control.
H3	HM1.	Shopping with QR-Codes is (probably) fun.
	HM2.	Virtual Stores would add a playful element to grocery shopping.
	HM3.	Shopping with Virtual Stores would probably be fun.
	HM4.	Shopping with Virtual Stores would probably be enjoyable.
	HM5.	Shopping with Virtual Stores would probably be more fun than shopping in supermarkets or the like.
H4	PV1.	I think Virtual Stores would offer good value for the money.
	PV2.	I would use Virtual Stores, even if there would be additional costs.
	PV3.	I think a punctual and in due time delivery service justifies additional delivery expenses.
	PV4.	Concerning Virtual Stores I would accept a little higher prices for the products than in regular supermarkets.
	PV5.	Concerning Virtual Stores I would accept delivery expenses that dependent on the amount of the shopped products.
H5	HA1.	To shop something online is normal.
	HA2.	To shop someting by smart phone is normal.
	HA3.	Shopping groceries online is nothing unusual.
	HA4.	I can imagine, shopping with Virtual Stores becomes normal once they are available all over the cities of the country.
	HA5.	I can imagine, shopping with Virtual Stores becomes a habit for me once they are available all over the cities of the country.
H6	PIIT1.	In general, I am not hesitant to try out new information and communication technologies.
	PIIT2.	I like to experiment with new information and communication technologies.
	PIIT3.	I like to buy new technological products/like to experience new innovative services
	PIIT4.	If I would see a Virtual Store I would be interested in how it works.
	PIIT5.	If I would see a Virtual Store I would like to experiment with it.
H7	SC1.	Using Virtual Stores would not threat the serviceability of my mobile phone.
	SC2.	Using Virtual Stores would not threat the safety of my deposited personal or financial data.
	SC3.	I do not believe the company running the Virtual Stores will save or use personal data without authorization.
	SC4.	I think my personal data are save and appropriately treated by the company running the Virtual Stores.
	SC5.	I am not afraid that the data stored by the company running Virtual Stores might be misused by a third party.
H8	PI1.	When I buy groceries I need the direct sensual experience (to see, smell, touch, eat them).
	PI2.	When I buy groceries most of the time I need the products instantly.
	PI3.	When I buy my everyday groceries I always need a large selection of products.
	PI4.	I doubt that Virtual Stores would offer the same top quality and fresh groceries as regular supermarkets or the like.
	PI5.	I do not believe that other people would chose groceries as good and conscientious for as I would do that for myself.
	BQ1.	I would rather tend to use Virtual Stores, if they would be branded by popular German grocery retailers as Rewe, Edeka or Kaisers.
	BQ2.	I would rather tend to use Virtual Stores, if they would be branded by popular frozen food delivery services as Bofrost or Eismann.
	BQ3.	I would rather tend to use Virtual Stores, if they would be branded by popular international online retailers as Amazon or eBay.
	BQ4.	I would rather tend to use Virtual Stores, if they would be branded by another or completely new brand.
	BQ5.	The brand of a Virtual Store would affect my trust concerning the quality of the service provided by Virtual Stores.

H9	BN1.	Brands are important for me when I choose my retail outlet.
	BN2.	Brands are especially important for me when I choose my retail outlet for shopping groceries.
	BN3.	When I do online shopping I prefer established and well known brands concerning the online-shops.
	BN4.	Especially when it comes to online grocery shopping brands would play a major role.
	BN5.	Virtual Stores are modern and innovative and would have a positive effect on the image of the brand.
H10	IF1.	When I imagine to shop in Virtual Stores information concerning product features, product conditions and guarantees would be important for me.
	IF2.	When I imagine to shop in Virtual Stores information concerning the delivery process and quality control would be important for me.
	IF3.	When I imagine to shop in Virtual Stores information concerning the payment arrangements and security would be important for me.
	IF4.	When I imagine to shop in Virtual Stores information concerning the actual utilization of the store would be important for me.
	IF5.	When I imagine to shop in Virtual Stores Information concerning delay in delivery or cases of missing completeness of the order would be important for me.
H11	BI1.	I am curious about using Virtual Stores.
	BI2.	I could imagine to use Virtual Stores in the future as shopping opportunity.
	BI3.	I would use Virtual Stores once in a while if there would open one close to my neigbourhood.
	BI4.	I would use Virtual Stores regularly if there would open one close to my neigbourhood.
	BI5.	I could imagine that I would prefer Virtual Stores to regular Supermarkets concerning everyday grocery shopping.
	EX1.	I would use Virtual Stores, but not for fresh food.
	EX2.	I would use Virtual Stores even for further everyday products.
	EX3.	I would rather use Virtual Stores if they would work with another technology, e.g. touchscreens.
	EX4.	After I shopped with Virtual Stores I would rather pick the products up by myself e.g. in a supermarket.
	EX5.	I would only use Virtual Stores, if I could refuse late deliveries or single faulty products.

DE1. Sex: ☐ female ☐ male

DE2. Age: ☐ <18 ☐ 18-29 ☐ 30-44 ☐ 45-59 ☐ 60-70 ☐ 70<

DE3. Number of people in your household: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 und mehr

DE4. Do you possess a smart phone? ☐ Yes ☐ No

DE5. Achieved or aspired graduation:

- ☐ No Graduation
- ☐ Haupt-/ Volksschulabschluss
- ☐ Polytechnische Oberschule (DDR)
- ☐ Realschulabschluss
- ☐ Fachhochschulreife
- ☐ Allgemeine Hochschulreife, Abitur
- ☐ Bachelor / Diplom / Master
- ☐ Other Title

DE6. Which of the following statements is correct for your current situation

- ☐ I work full time
- ☐ I work part time
- ☐ Currently I am without a job
- ☐ Housewife / Househusband
- ☐ Trainee
- ☐ Pupil
- ☐ Not specified

DE7. I use public transportation to get to my job / I frequently visit metro- or train stations.

- ☐ daily (on working days)
- ☐ frequently (several times the week)
- ☐ sometimes (several times a month)
- ☐ infrequently (few times a month)
- ☐ almost never / never (once a month or fewer)

Appendix T: Statistics Age

Age	Frequency	Percentage
18-29	136	52,5
30-44	66	25,5
45-59	33	12,7
60-70	17	6,6
70+	7	2,7
Total	259	100,0

Appendix U: Statistics Marital Status

Family Status	Frequency	Percentage
Married	75	29,0
Single	167	64,5
Divorced	13	5,0
Widdowed	4	1,5
Total	259	100,0

Appendix V: Statistics Household

People in household	Frequency	Percentage
1	58	22,4
2	119	45,9
3	50	19,3
4	22	8,5
5	8	3,1
more tha 5	2	0,8
Total	259	100,0

Appendix W: Statistics Usage of Public Transport

Level of Education	Frequency	Percentage
Certificate of Secondary Education	9	3,5
Polytechnic Degree	1	,4
Realschul Degree	21	8,1
Advanced technical college entrance qualification	35	13,5
General qualification for university entrance	49	18,9
Bachelor / Diplom / Master	143	55,2
Other Degree	1	,4
Gesamt	259	100,0

Appendix X: Status of Employment

Job Status	Frequency	Percentage
fulltime employed	139	53,7
part-time employed	25	9,7
house wife /husband	10	3,9
retired	7	2,7
trainee	9	3,5
student	65	25,1
pupil	3	1,2
currently unemployed	1	,4
Total	259	100,0

Appendix Y:

Job Status	Frequency	Percentage
I work full time	139	53,7
I work part time	25	9,7
Housewife / Househusband	10	3,9
Retired	7	2,7
Trainee	9	3,5
Student	65	25,1
Pupil	3	1,2
Without Employment	1	0,4
Total	259	100,0

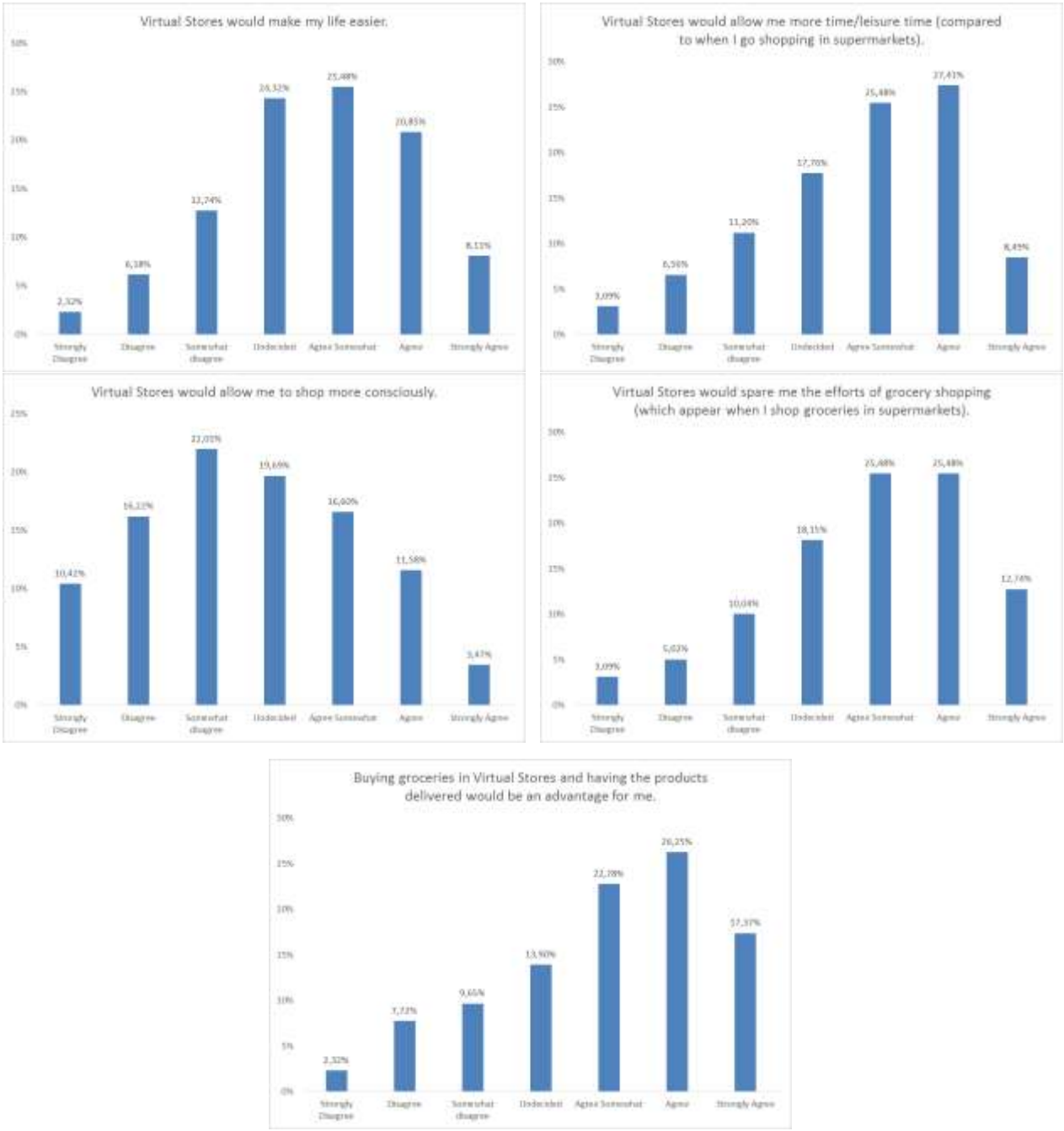
Appendix Z: Statistics Net Income

Net Income	Frequency	Percentage
less than 400€	29	11,2
400€ - 1000€	59	22,8
1001€ - 2000€	59	22,8
2001€ - 3000€	73	28,2
3001€ - 4000€	25	9,7
more than 4000€	14	5,4
Total	259	100,0

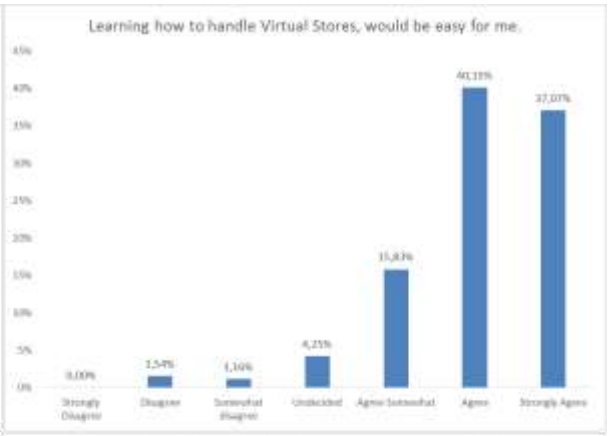
Appendix AA:

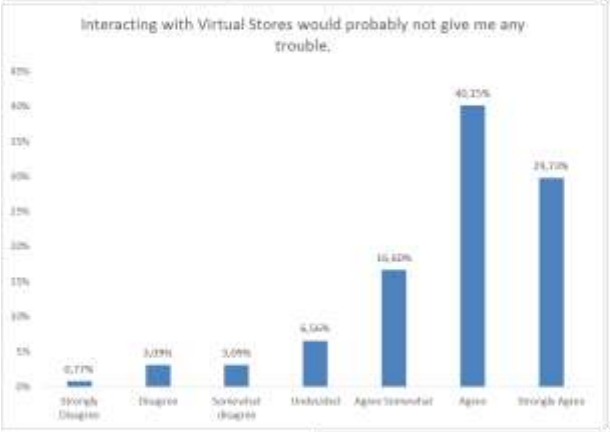
Usage of Public Transport	Frequency	Percentage
daily (on business days)	54	20,8
frequently (several times a week)	43	16,6
sometimes (several times a month)	33	12,7
rarely (2 or 3 times a month)	40	15,4
(Almost) never (once a month or less)	89	34,4
Total	259	100,0

Appendix AB: Values Performance Expectancy

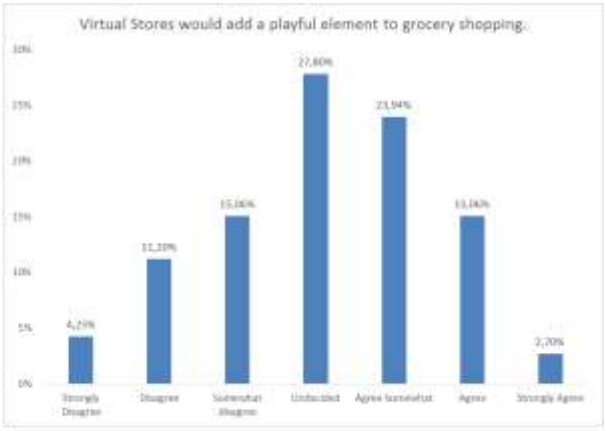


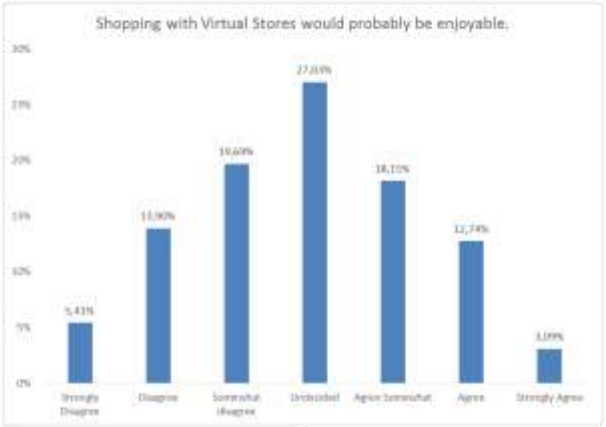
Appendix AC: Effort Expectancy

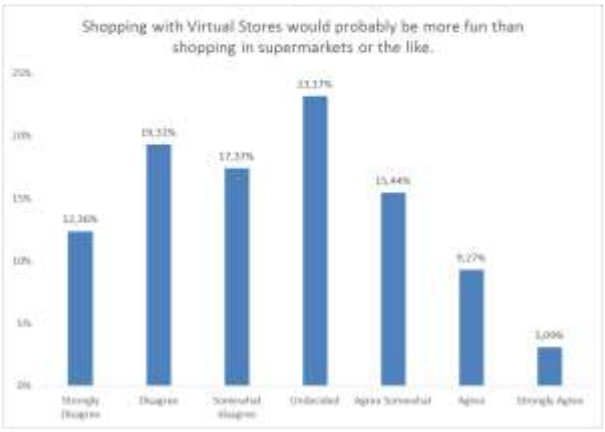




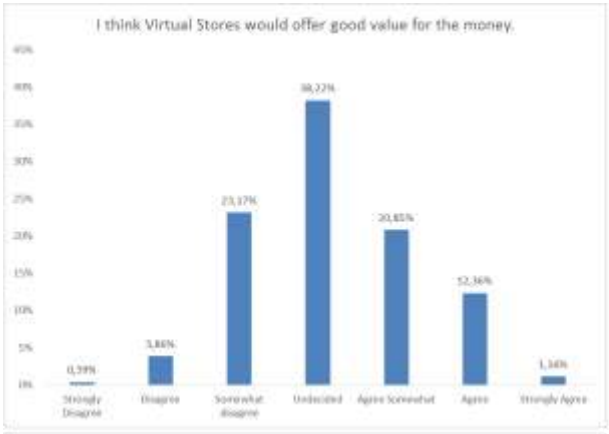
Appendix AD: Hedonic Motivation:

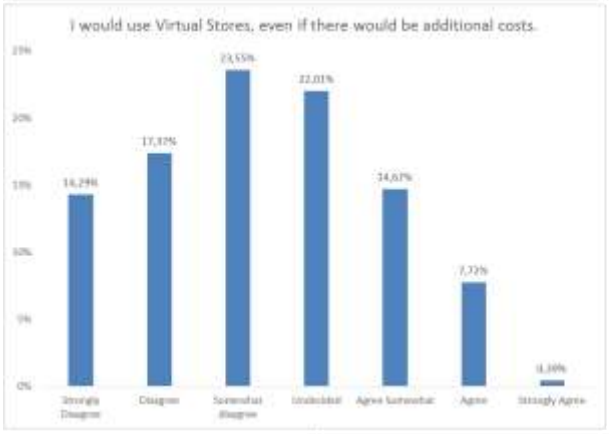


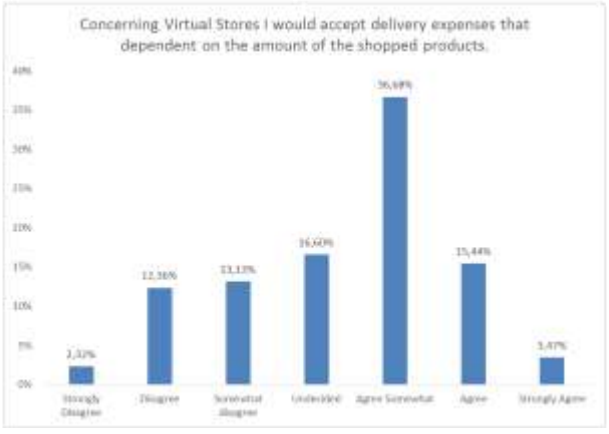




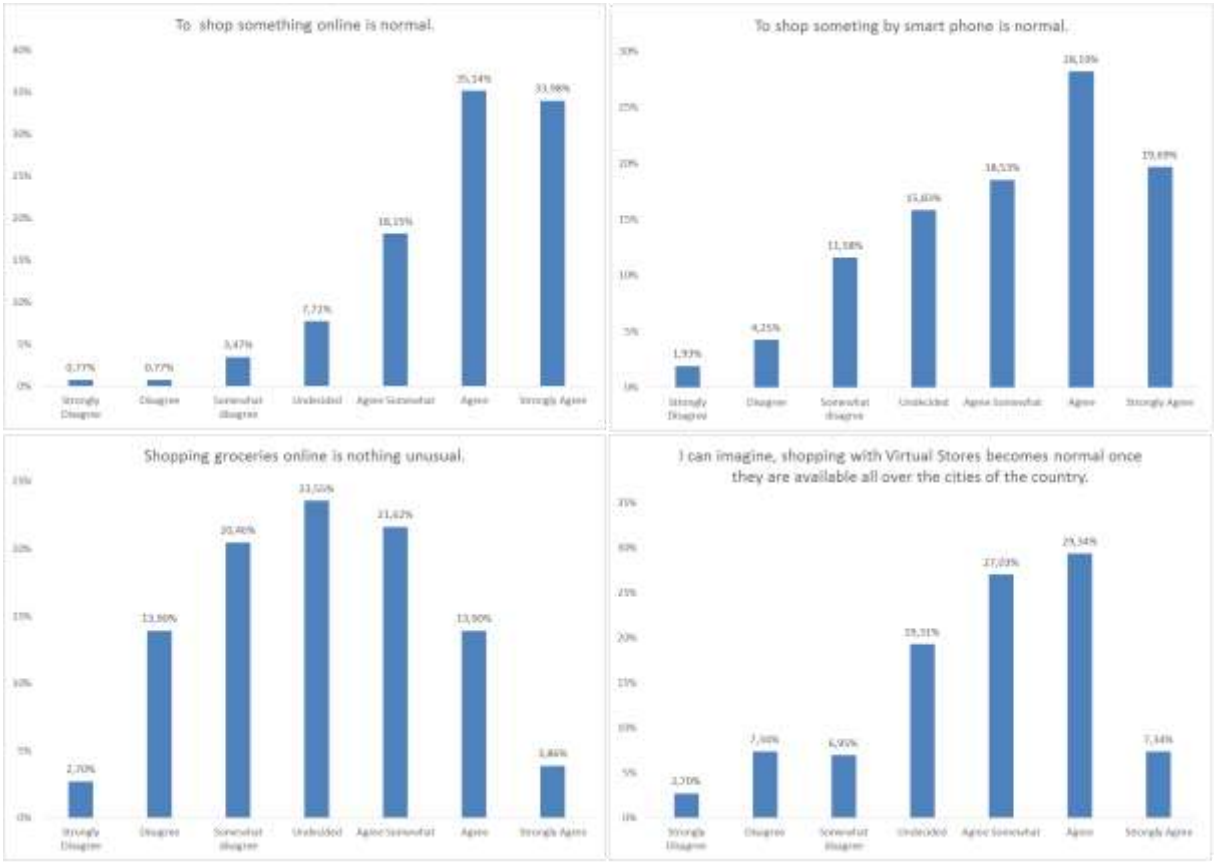
Appendix AE: Price Value



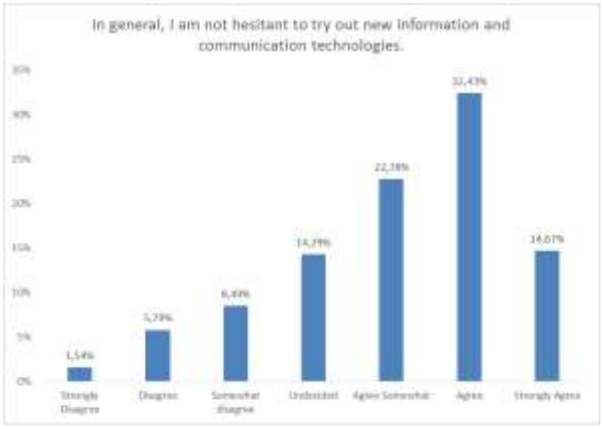


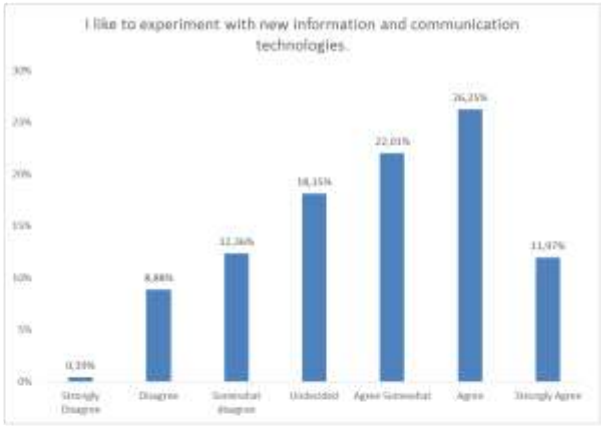


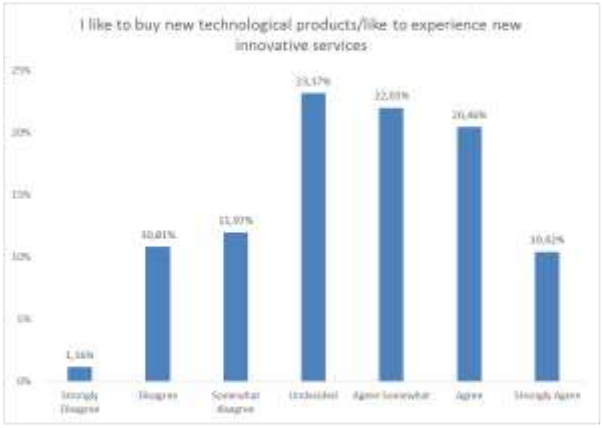
Appendix AF: Habit

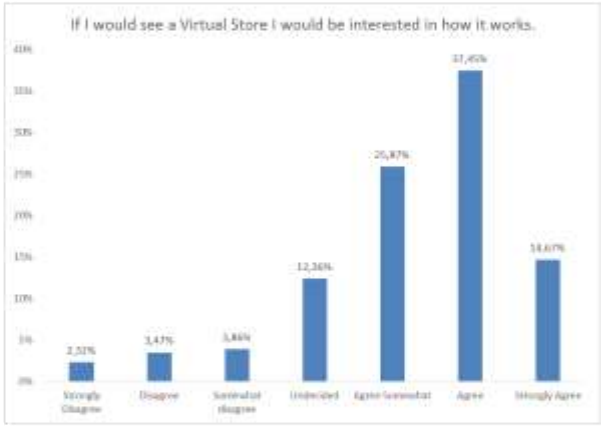


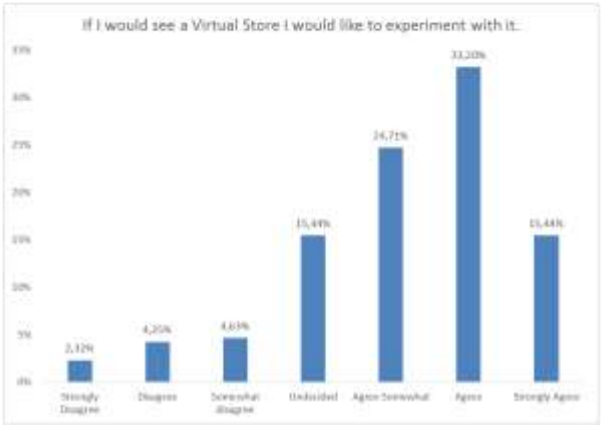
Appendix AG: Personnel Innovativeness of Information Technologies



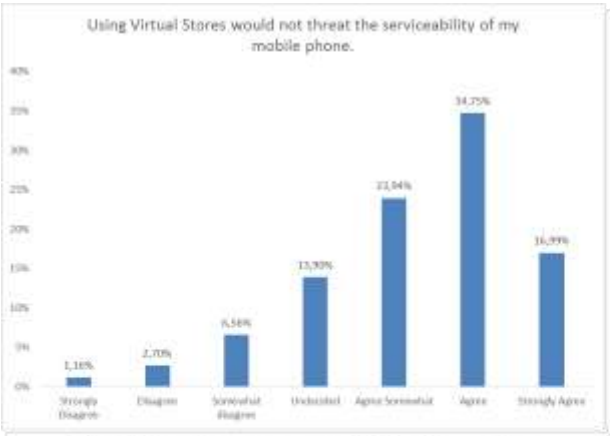


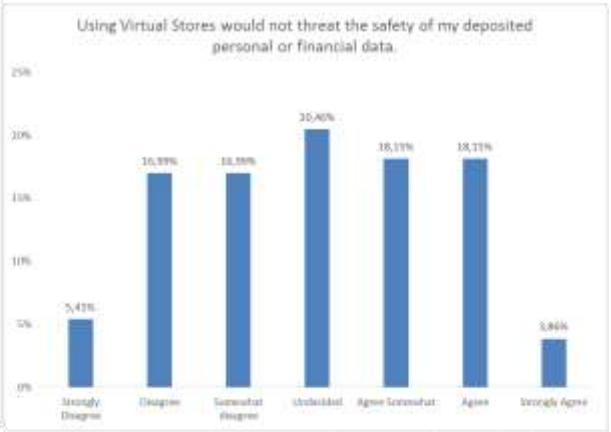


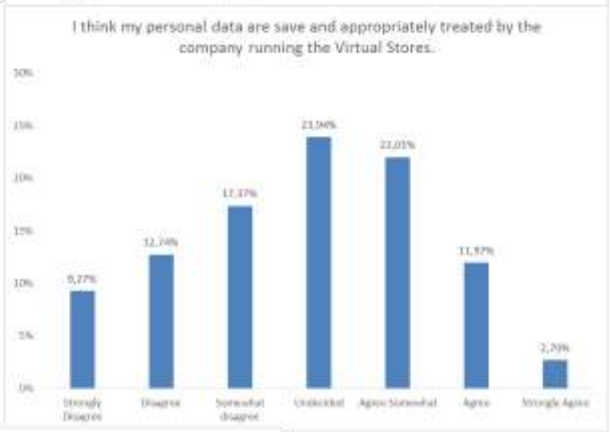




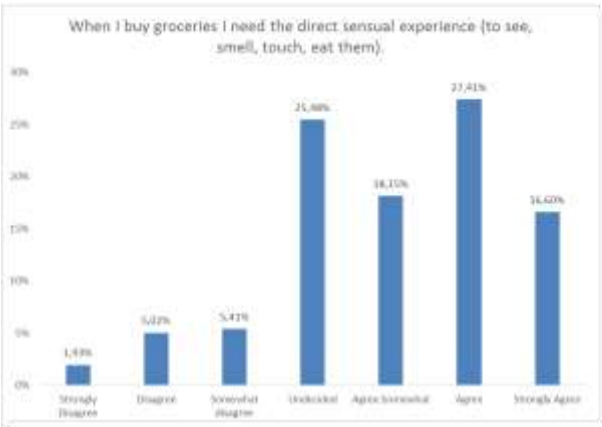
Appendix AH: Security Concerns

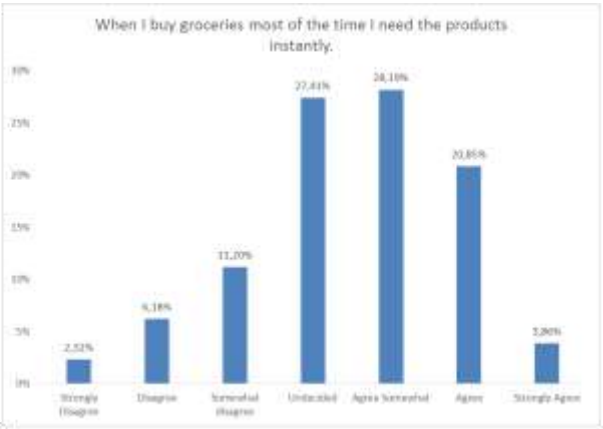


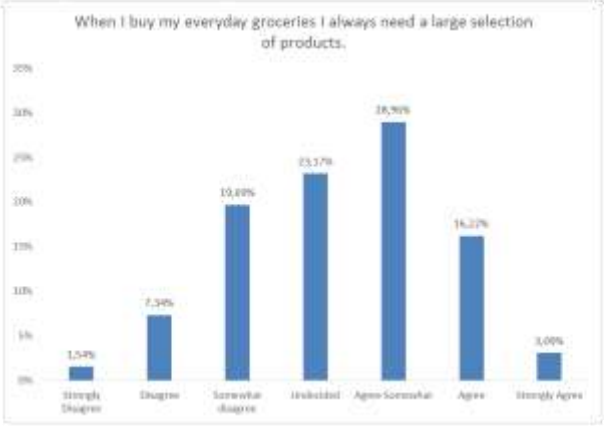


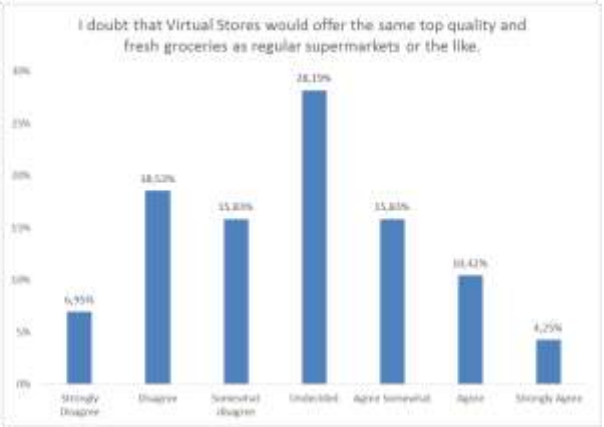


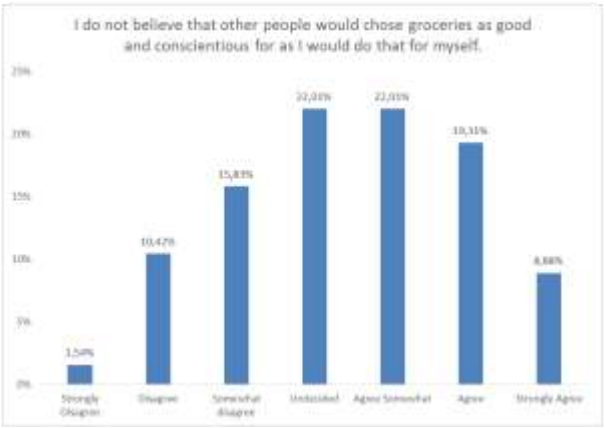
Appendix AI: Product Involvement











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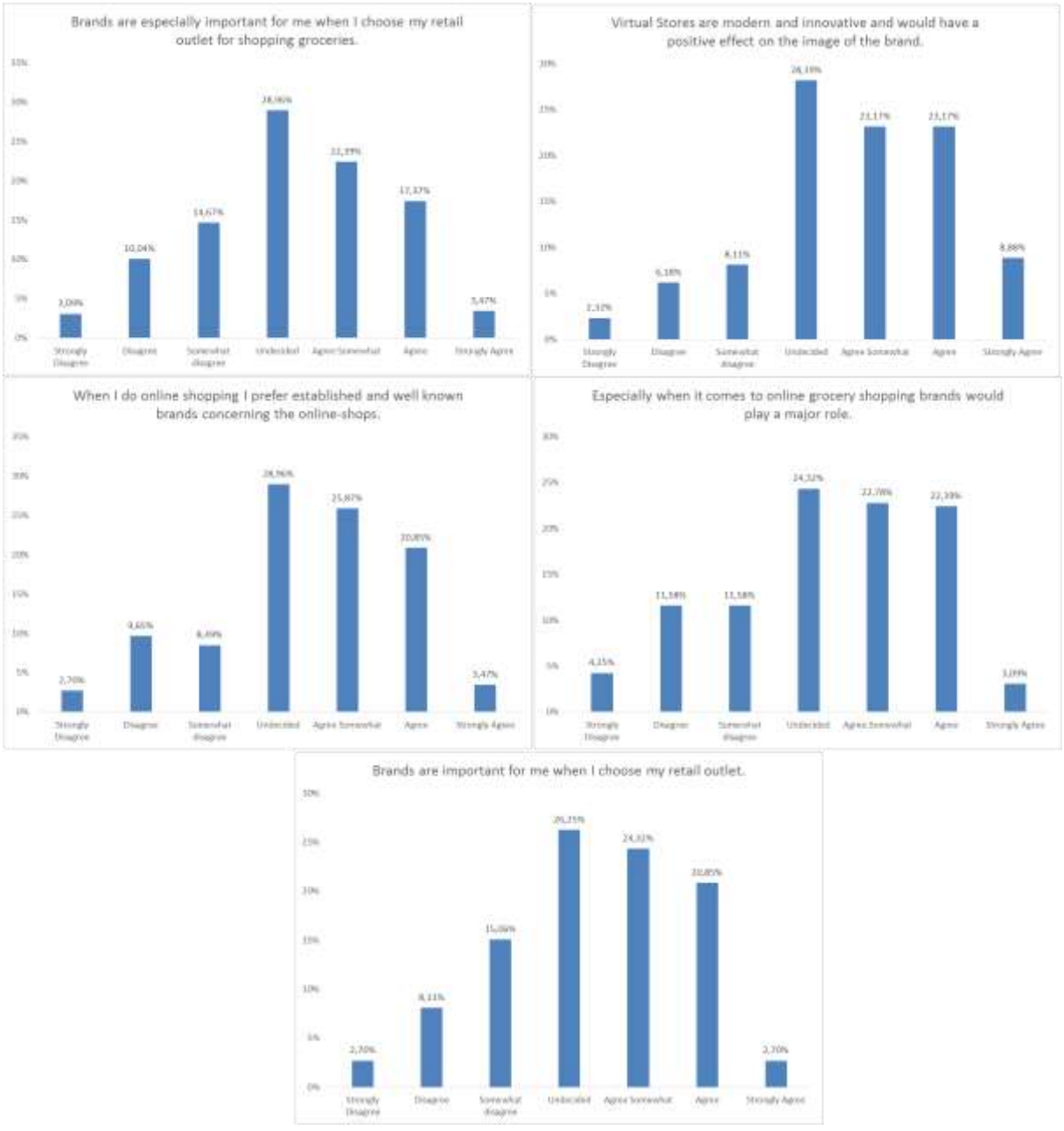
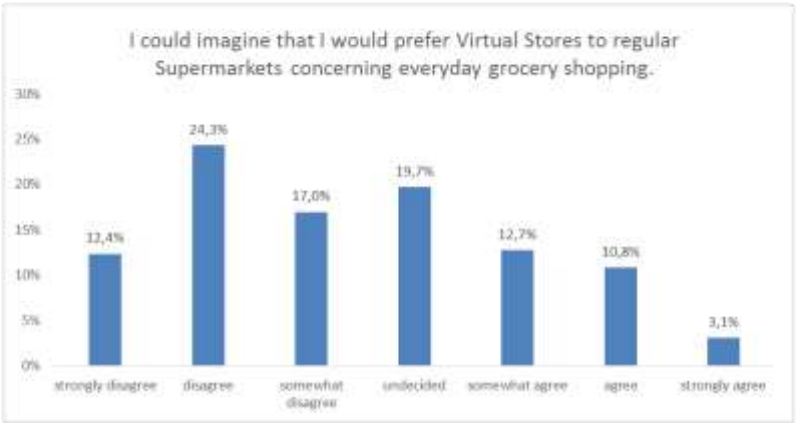
Appendix AJ: Brand Name

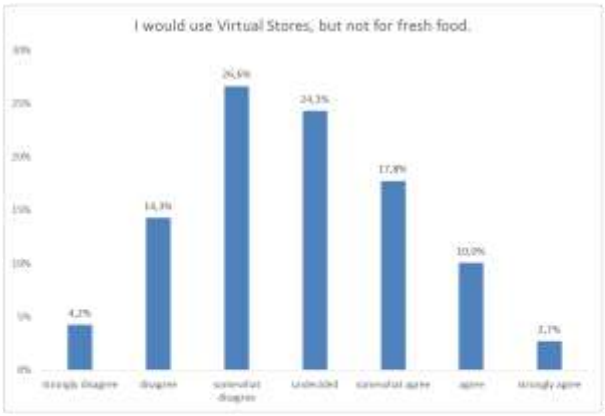


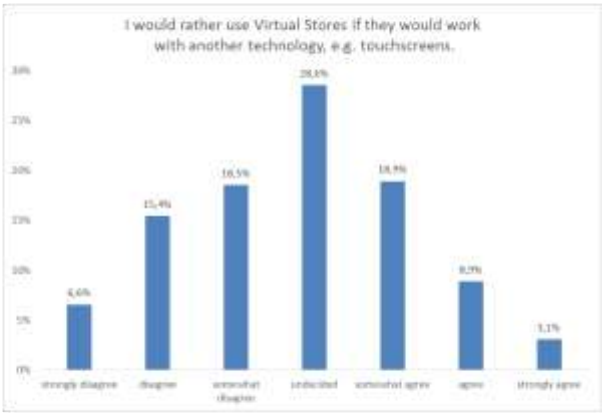
Appendix AK: Information Factor

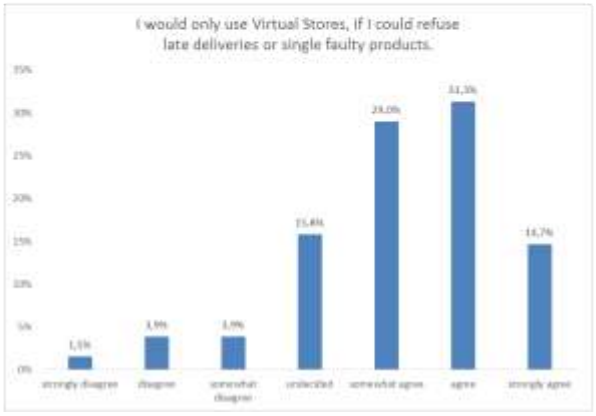
Appendix AL: Behavioural Intention



Appendix AM: Extra Questions







Appendix AN: Independent Sample Test Smart Phone

Group Statistics

Smart Phone		N	Mean	standard deviation	standard error
Behavioural Intention	no	16	3,6875	1,46054	,36513
	yes	243	4,4510	1,28412	,08238

Independent Sample Test

		Levene Test for the Equality of Variance		t-test for equality of means						
									95% Confidence Interval of the Difference	
Smart Phone		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Behavioural Intention	Equal Variances assumend	,145	,704	-2,284	257	,023	-,76353	,33426	-1,42176	-,10530
	Equal Variances not assumend			-2,040	16,563	,058	-,76353	,37431	-1,55485	,02779

Appendix AO: Spearmann-Rho Correlation

Correlations

			Behavioural Intention	Net Income
Spearman-Rho	Behavioural Intention	Correlation Coefficient	1,000	,086
		Sig. (2-tailed)		,166
		N	259	259
	Net Income	Correlation Coefficient	,086	1,000
		Sig. (2-tailed)	,166	
		N	259	259

Correlations

			Behavioural Intention	Public Transport
Spearman-Rho	Behavioural Intention	Correlation Coefficient	1,000	-.207**
		Sig. (2-tailed)		,001
		N	259	259
	Public Transport	Correlation Coefficient	-.207**	1,000
		Sig. (2-tailed)	,001	
		N	259	259

Correlations

			Behavioural Intention	Household Size
Spearman-Rho	Behavioural Intention	Correlation Coefficient	1,000	-.207**
		Sig. (2-tailed)		,001
		N	259	259
	Household Size	Correlation Coefficient	-.207**	1,000
		Sig. (2-tailed)	,001	
		N	259	259

Appendix AP: Kruskal Wallis Test – Level of Eductaion – Job Status

Ranks

Level of Education		N	Mean Rank
Behavioural Intention	Certificate of Secondary Education	9	85,61
	Polytechnic Degree	1	12,50
	Realschul Degree	21	103,36
	Advanced technical college entrance qualification	35	131,99
	General Qualification for University Entrance	49	125,20
	Bachelor / Diplom / Master	143	138,40
	Other Degree	1	171,50
	Total	259	

Test Statistics [a,b]

	Behavioural Intention
Chi-Quadrat	10,633
df	6
Asymp. Sig.	,100

a. Kruskal-Wallis-Test

b. Group Variable: Level of Education

Ranks

Job Status		N	Mean Rank
Behavioural Intention	fulltime employed	139	133,42
	part-time employed	25	121,82
	house wife / husband	10	97,85
	retired	7	60,71
	trainee	9	96,61
	student	65	144,42
	pupil	3	112,00
	currently unemployed	1	82,50
	Total	259	

Test Statistics [a,b]

	Behavioural Intention
Chi-Quadrat	13,224
df	7
Asymp. Sig.	,067

a. Kruskal-Wallis-Test

b. Group Variable: Job Status

Appendix AQ: Correlationmatrix

		Behavioural Intention	Performance Expectancy	Effort Expectancy	Hedonic Motivation	Price Value	Habit	PIIT	Security Concerns	Product Involvement	Information Factor	Brand Name
Behavioural Intention	Korrelation nach Pearson	1	,766	,367	,676	,381	,723	,630	,498	-,517	,106	,164
	Signifikanz (2-seitig)		,000	,000	,000	,000	,000	,000	,000	,000	,090	,008
	N	259	259	259	259	259	259	259	259	259	259	259
Performance Expectancy	Korrelation nach Pearson	,766	1	,290	,647	,326	,616	,445	,375	-,394	,102	,176
	Signifikanz (2-seitig)	,000		,000	,000	,000	,000	,000	,000	,000	,103	,004
	N	259	259	259	259	259	259	259	259	259	259	259
Effort Expectancy	Korrelation nach Pearson	,367	,290	1	,209	,098	,488	,592	,266	-,211	-,037	-,124
	Signifikanz (2-seitig)	,000	,000		,001	,114	,000	,000	,000	,001	,551	,046
	N	259	259	259	259	259	259	259	259	259	259	259
Hedonic Motivation	Korrelation nach Pearson	,676	,647	,209	1	,359	,576	,495	,490	-,327	,062	,236
	Signifikanz (2-seitig)	,000	,000	,001		,000	,000	,000	,000	,000	,319	,000
	N	259	259	259	259	259	259	259	259	259	259	259
Price Value	Korrelation nach Pearson	,381	,326	,098	,359	1	,336	,227	,372	-,268	,101	,179
	Signifikanz (2-seitig)	,000	,000	,114	,000		,000	,000	,000	,000	,104	,004
	N	259	259	259	259	259	259	259	259	259	259	259
Habit	Korrelation nach Pearson	,723	,616	,488	,576	,336	1	,614	,508	-,403	,082	,177
	Signifikanz (2-seitig)	,000	,000	,000	,000	,000		,000	,000	,000	,188	,004
	N	259	259	259	259	259	259	259	259	259	259	259
PIIT	Korrelation nach Pearson	,630	,445	,592	,495	,227	,614	1	,426	-,283	,064	,125
	Signifikanz (2-seitig)	,000	,000	,000	,000	,000	,000		,000	,000	,303	,045
	N	259	259	259	259	259	259	259	259	259	259	259
Security Concerns	Korrelation nach Pearson	,498	,375	,266	,490	,372	,508	,426	1	-,242	,102	,214
	Signifikanz (2-seitig)	,000	,000	,000	,000	,000	,000	,000		,000	,102	,001
	N	259	259	259	259	259	259	259	259	259	259	259
Product Involvement	Korrelation nach Pearson	-,517	-,394	-,211	-,327	-,268	-,403	-,283	-,242	1	,120	,122
	Signifikanz (2-seitig)	,000	,000	,001	,000	,000	,000	,000	,000		,054	,051
	N	259	259	259	259	259	259	259	259	259	259	259
Information Factor	Korrelation nach Pearson	,106	,102	-,037	,062	,101	,082	,064	,102	,120	1	,172
	Signifikanz (2-seitig)	,090	,103	,551	,319	,104	,188	,303	,102	,054		,006
	N	259	259	259	259	259	259	259	259	259	259	259
Brand Name	Korrelation nach Pearson	,164	,176	-,124	,236	,179	,177	,125	,214	,122	,172	1
	Signifikanz (2-seitig)	,008	,004	,046	,000	,004	,004	,045	,001	,051	,006	
	N	259	259	259	259	259	259	259	259	259	259	259

Appendix AR: Collinearity Statistics and VIF Values

Model		Collinearity statistics	
		Tolerance	VIF
1	Constant		
	Performance Expectancy	,451	2,215
	Effort Expectancy	,437	2,288
	Hedonic Motivation	,437	2,286
	Price Value	,753	1,328
	Habit	,384	2,607
	PIT	,432	2,313
	Security Concerns	,602	1,660
	Product Involvement	,699	1,430
	Information Factor	,833	1,201
	Brand Name	,789	1,268
	Sex	,861	1,161
	Age	,466	2,147
	Net Income	,678	1,475
	Public Transport	,805	1,242
	Smart Phone	,797	1,254

a. dependent variable: Behavioural Intention

Appendix AS: Regression Coefficients

Coefficients[a]

Model		Not standardised coefficients		Standardised coefficients		
		Regression coefficient	Rregression coefficient	Beta	T	Sig.
1	Constant	,591	,501		1,179	,239
	Performance Expectancy	,395	,047	,380	8,422	,000
	Effort Expectancy	-,029	,055	-,024	-,524	,601
	Hedonic Motivation	,121	,048	,116	2,535	,012
	Price Value	,040	,039	,035	1,007	,315
	Habit	,211	,057	,180	3,664	,000
	PIT	,266	,050	,245	5,305	,000
	Security Concerns	,056	,040	,055	1,403	,162
	Product Involvement	-,229	,047	-,175	-4,829	,000
	Information Factor	,059	,053	,037	1,124	,262
	Brand Name	,000	,038	,000	,012	,991
	Sex	-,069	,086	-,026	-,806	,421
	Age	,046	,055	,037	,834	,405
	Net Income	-,014	,036	-,015	-,400	,690
	Public Transport	-,032	,028	-,038	-1,137	,257
	Smart Phone	-,298	,184	-,055	-1,619	,107

a. dependent variable: Behavioural Intention