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THE ADOPTION PROCESS OF ONLINE SUPERMARKETS

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Abstract

With the growth of global mobile usage, more consumers shop online than ever. New technologies make online services accessible for companies in several markets. In the Netherlands a growing number of supermarkets offer an online service. So far the adoption process of the online supermarkets is much slower compared to the general online shopping adoption. This thesis researches what factors influence the likelihood of consumers to engage in online shopping or buying activities for food related products at online supermarkets.

The technology acceptance model forms a theoretical basis for the conceptual framework of this study. In this model the influence of external variables on internal beliefs in an adoption process of new technology is analyzed. The external variables used in this research include consumer demographics and price. The internal beliefs influencing the likelihood of consumers to buy groceries online are perceived ease of use and perceived usefulness. In this study perceived risk of consumers in the online grocery shopping adoption process is also integrated in the model as an internal belief, because this variable is inextricably bound to the online shopping environment. In this environment perceived risk is subdivided into three categories: perceived quality, perceived service and perceived privacy.

To test the conceptual model of this study a survey was conducted among 148 respondents. The internal beliefs were all measured using a 7-point Likert scale. SPSS was used to analyze the data that was collected in the survey. First a factor analysis was performed to convert the survey questions into variables. Afterwards the relationships between these variables were indicated using regression analyses. To test the hypotheses of the study linear regression analysis and a mediation test were performed.

The findings of this study started with three hypotheses that were confirmed, or partially confirmed. Firstly a positive relationship was found between 'consumer lifestyle' and 'perceived usefulness' of this consumer in the online grocery shopping adoption process. Another positive relationship that was found in the analysis is between the 'degree of urbanization of the habitual surrounding' of a consumer and the 'perceived usefulness' of this consumer in the online grocery shopping adoption process. The last positive relationship that was found between the 'ICT skill' of a consumer and the 'perceived ease of use' of this consumer in the online grocery shopping adoption process. A further exploration of data has been conducted to analyze the conceptual model designed for this study. This analysis shows the dependent variable 'likelihood' of consumers in online grocery shopping might be too specific, since most of the literature was based on theories about online shopping in general.

A recommendation for marketers in the online grocery market is to rely on available data when operating in such a specific environment. This makes it possible to target appropriate consumers with the right lifestyle for the online grocery shopping service. Another recommendation done in this thesis is to focus on the user friendliness of the online grocery shopping service. When the service is user friendly, more consumers will be able to use it, regardless of their level of ICT skill.

Chapter 1 – Introduction

1.1 Introduction

Online shopping is an integral part of everyday life now, more than it has ever been. Younger generations grew up using computers and the internet to find information about products and to buy products. Online shopping makes life easier and therefore it affects the everyday habits of consumers all over the world.

Development online shopping

Consumers have bought products by using the home shopping channel for over a century. Started by mail orders and catalogue shopping, the home shopping channel evolved and changed the entire retail market. George (1987) stated one of the early stage alternatives of home shopping, videotex, was first introduced and became popular in England and France. This success was a surprise since research stated there was no particular interest in certain services. In 1994 retailers like Amazon and Tesco (Winterman & Kelly, 2013) were already trying to go online with their business, facing a lot of issues. One of the difficulties with online selling was the lack of security to collect an online payment safely (Gilbert, 2004). Once this problem was solved a lot of other (online) companies started online to sell their products very quickly.

At first retailers were having an online department just to keep up with technological development. It took a while for the business to evolve and for the retailers to appreciate the real benefits of selling their products in an online environment. Back in the days the reasons why consumers were using the home shopping channel were already researched. Eastlick and Feinberg (1999) stated that the most important argument why consumers order products out of their living room are: shopping convenience, greater merchandise selection, unique merchandise offerings and lower product prices. Convenience and the lack of time limitations were an early benefit of electronic shopping. Reynolds (1974) has also pointed out the convenience and offered arguments, but also stated there is a degree of risk in buying products out of their home, which the consumer must be willing to take. Appendix number one shows the positive and negative factors related to online shopping.

In later years the technology of the internet was affected by the development of smartphones and mobile devices. Due to this change consumers got more experienced in the use of these devices as an online shopping tool. Applications became easier to use and privacy and payment in the online environment became safer in the past years. This led to an increase in consumer trust and therefore to a growing online retail market. In the coming years, over 50% of all online purchases will be done from a smartphone or tablet according to Laan (2014).

In 2015, Wang, Malthouse and Krishnamurthi found that online shopping and especially shopping by using a mobile device has indeed become increasingly important for retail industries. Online shopping is even referred to by Huseynov & Özkan Yildirim (2014) as one of the most common types of activities conducted over the internet, because of huge wins for the consumer by savings of time and travelling cost savings. The global e-commerce sales are estimated at USD 1.8 trillion at the end of 2016. This growing importance will maintain for the coming years according to eMarketer (2014), as there will be over two billion smartphone users on the globe by 2016. This equals one-quarter of the global population. Together they will spend USD 31 billion worth of retail value using mobile devices according to the predictions of Deloitte Consulting.

In the Netherlands 97% of the residents has an internet connection at home and 88% of these people use the internet every day. Communication is the most popular online activity and 83% of these consumers also shop online (CBS Netherlands, nd.). Mobile internet use is growing rapidly in the Netherlands and young people mostly shop by using mobile devices; 34% of all online purchases is done by using mobile devices. The younger people are mainly responsible for a national rise of mobile device usage since mobile devices are most commonly used by people between 18 and 25 (CBS Netherlands, nd.). Appendix number two presents an image of the evolution of the online retail market in the Netherlands.

Surprisingly young people are less represented in the category online shopping. The age of the population that shops online mostly is between 25 and 45. Together they spent EUR 6.5 billion in 2014 on several retail items (Schultz, 2014). In 2014 the Dutch online retail market was largely dominated by the online sale of services. Popular products bought online are tickets for events, travel related services and insurances. Buying groceries online is much less popular; only 1% of the food products sold in the Netherlands are bought online nowadays. Shoppingtomorrow (2015) estimates this percentage will rise up to 14% in 2020.

Supermarket sector in the Netherlands

The competition in the Dutch supermarket sector is fierce. The economy is still recovering from an economic crisis and floor space in retail markets is becoming more expensive. In the Netherlands, supermarkets spend almost 4% of their revenue to remain large stores on strategically placed locations (Firm Focus Business Solutions, n.d.). Because margins are relatively small and the average profit in the supermarket sector is only 3-4%, this is a relatively large investment to remain floor space as a competitive advantage (Detailhandel.info, 2014). The density of supermarkets in the Netherlands is relatively high compared to other European countries, like England and France. This increases competition and makes it harder for the larger supermarkets to maintain innovativeness of existing concepts. This also means for supermarkets that having a physical store might be more risky in the future and that it will become harder to establish new stores. Appendix number three provides an overview of available online supermarket formats in the Netherlands.

Another risk comes from city councils in the Netherlands which develop zoning plans for the cities to maintain the variety of different stores within the shopping areas. These plans sometimes stroke with the growing strategy plans from supermarkets. Experts forecast that these plans will stroke with supermarkets even more in the future, because the Dutch political system is trying to level down the density of supermarkets in the Netherlands (Molenaar, 2013). Investing in a good online alternative that accompanies the existing physical stores can reduce this risk. Retail space becomes more expensive and online shopping becomes more popular. A large part of retail space has already been converted into online retail services because consumers have more resources available and are bothered less by allocation rules on their online shopping journey (De Kervenoael, Hallsworth, & Elms, 2014).

Because technology keeps improving more consumers tend to buy products online. In 2014 Dutch consumers spent EUR 4.16 billion on buying online products and services. This is over EUR 400 per buyer each year and these numbers are increasing rapidly (Thuiswinkel.org, 2014). Compared to 2013, consumers spent 8.4% more on total online transactions in 2014. In general, research so far has been limited to studies about motives why people would shop online in the first place. The studies that have been done in online food retail shopping behavior are mostly done in Asia, where the consumers are much more used to and comfortable to use technical devices to make daily life easier (Gong, Stump & Maddox, 2013) (Waterlander, 2014).

Consumers tend to shop online for food related products relatively less compared to other product categories. An explanation for the lower percentage of online sales in the food market may be that the consumer is more conservative within this segment. According to Rein (2008) customers often have concerns about online privacy and about the quality of food bought online. Customers have an ongoing need to see, feel and touch food before purchasing it. This desire is less when customers order perishable products. Lee (2009) and Rein (2008) found that supermarkets should choose their target group for integrating online shopping wisely and focus on early adopters of online shopping. This group consists of younger and higher educated consumers with an income above the national average.

Rabobank (2015) states there is a change going on in the online retail segment where focus shifts from revenue to growth of customer knowledge. In Europe, the supermarkets in England and France are advanced regarding the adjustments to make grocery shopping easy for consumers. In the Netherlands the density of supermarkets is relatively high. This in combination with the somewhat conservative customer attitude results in the arrearage of the Dutch supermarkets compared to the rest of European stores. However, according to Rabobank (2015) the Netherlands will catch up in the coming years and they forecast online sales will eventually cover 20-25% of the total supermarket segment. With the expected rise of online food sales in the coming years, it is clear there are opportunities for companies within this market. However, more extensive research is needed about the attitude of customers towards, and the likelihood to adopt, online grocery shopping, because the research that has been done so far within this market is very limited.

Despite the increasing share of online shopping within the daily consumer spending pattern, the amount of supermarket products bought online is still relatively small compared to total online spending in other retail branches. This master thesis formulates and researches the factors influencing adoption of online grocery shopping in the Netherlands.

1.2 Problem statement and Research Question

The goal of this thesis is to determine how to increase likelihood of people buying groceries online at supermarkets. Extensive research has been done about the evolvement and grow of online retailing, however the supermarket segment remains underexposed in this literature. This master thesis will give better insight in this casus by using the following research question:

What factors influence the likelihood of consumers to engage in online shopping or buying activities for food related products at online supermarkets?

This question will be answered moving along the following chapters:

- Chapter 2 Theoretical framework – Conceptual research about the relationship between and factors influencing online technology, adoption and usage of online technology, followed by the definition of a model to visualize the relationships between the variables.
- Chapter 3 Methodology – Operationalization of research, how are these factors defined and how are the variables measured, followed by a research and survey design.
- Chapter 4 Data and results – Results and analysis of the data, followed by the main correlations between the variables.
- Chapter 5 Discussion and conclusions – Answers to the research questions and discussion about limitations of the research, followed by implications for academic and managerial purposes.

Chapter 2 – Theoretical Framework

2.1 Literature review

In chapter one the problem of the slow adoption process of online grocery shopping has been addressed. The acceptance process of online grocery shopping can be compared with the adoption of modern technologies and computers. Out of the perspective of technology acceptance it is important to first understand the consumer acceptance of online shopping in general. According to Ha & Stoel (2009) perceived ease of use and perceived usefulness play a big part in predicting consumers' attitude towards online shopping. Ha & Stoel (2009) also pointed out trust and enjoyment in using an online shopping tool as two key factors in this subject from marketing research point of view. Trust and enjoyment are both triggered by attributes such as website design, customer service, privacy and security, and the general atmosphere of the website.

An important reason why many consumers do not buy products online while they are in a shopping session is because of the lack of trust in the safety of the system and in the safety of conducting business using the internet (Gefen & Straub, 2003). Consumer trust is defined by Chervany (2001) as to what extent a consumer feels that usage of technology is reliable and credible. Because trust has been defined as a key factor influencing beliefs about safety, it is also undeniable related to perceived risk experienced in an online environment.

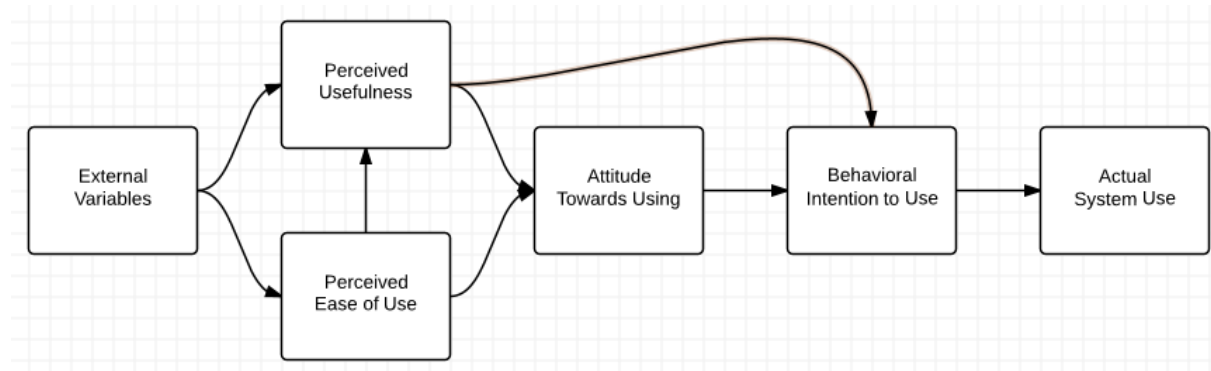
Pavlou (2003) agreed with the statement about the important role of trust in the adoption of online shopping. However, he also stated measuring trust cannot go without measuring perceived risk in the uncertainty of the online shopping environment. The perception of trust and risk is significantly important because of the lack of control of the consumers and the uncertainty of the online environment. Because of the fact consumers have to rely on electronic information several risks are present. In his research he implements trust and risk into the existing, dominating within online shopping adoption, technology acceptance model. With this implementation Pavlou (2013) is trying to "propose a set of key drivers for engaging consumers in online transactions". The main reason he uses the technology acceptance model is because online shopping is technological driven, so this model fits within the online environment.

Online consumers experience a different thinking process compared to offline consumers states Koufaris (2002). He points out the larger risk present in the online environment due to a lower amount of perceived control. According to Koufaris (2002) consumers mainly shop online because of the higher perceived ease of use compared to traditional shopping. As mentioned before, perceived ease of use and perceived usefulness are important in the online shopping environment according to Liu, Forsythe & Black (2011). In their research they even state that perceived risk, perceived ease of use and perceived usefulness, combined can explain over 50% of online shopping adoption for purchase of books and use of banking services. Liu et al. (2011) also state the consistence of perceived risk in former research being higher in non-store shopping formats because the degree of risk is unclear and hard to determine for the consumer. Enjoyment of using online shopping services has turned out to play a role in adoption and

reduction of perceived risk as well, but this relationship has not been researched extensively so far. The technology acceptance model is by far the model most often used in research about understanding consumer adoption of modern technology in several segments. Former research has also validated that the model is ‘a robust and parsimonious framework’ which can be used in this type of studies (Dalcher & Shine, 2003). Appendix number four provides an overview of former research conducted about consumer adoption of technologies and the strategies used in the studies.

2.2 Technology Acceptance Model

The technology acceptance model (Davis, 1989) studies and explains the background of online consumer behavior. According to the research of Lee, Cheung & Chen (2005) this model is a very dominant theory within this subject. Davis, Bagozzi, and Warshaw (1989) stated the following about this process: “to better predict, explain, and increase user acceptance, we need to better understand why people accept or reject technology”. The original version of this model was first presented by Davis (1989) (image below).



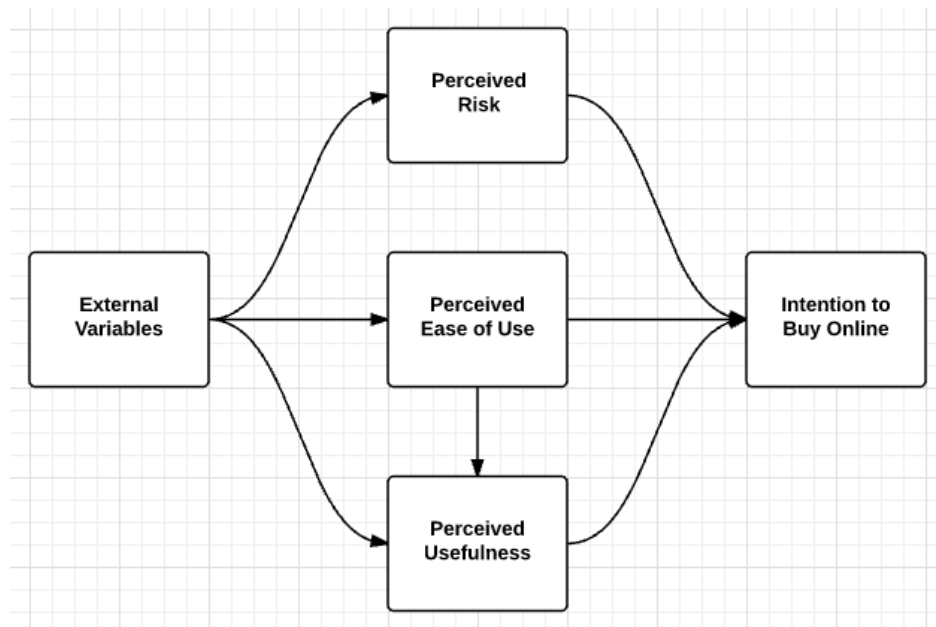
This model is about the impact of external factors on internal beliefs. Davis et al. (1989) assume perceived usefulness and perceived ease of use are primary relevant for acceptance of behavior. Gong et al. (2013) define perceived ease of use as of online shopping: “the degree to which a person believes that using a particular system would be free of effort”. The definition of perceived usefulness of online shopping is defined by Gong et al. (2013) as: “the degree to which a person believes that using a particular system would enhance his or her job performance”. The external variables have been defined (Davis et al., 1989) as individual differences and managerially controllable interventions which influence behavior.

An important factor for consumers to use a ‘non-store format’ are the lower prices of products, this is addressed in the model of Forsythe, Liu, Shannon & Gardner (2006). An important factor customers tend to avoid online shopping are the perceived risks they experience. These two factors would make a valuable contribution to the existing technology acceptance model in order to research the likelihood of customers to engage in online grocery shopping activities. As price is a managerially controllable

intervention which influences consumer behavior this can be accounted as an external variable.

The model as Davis et al. (1989) designed it, should be extended by adding the perceived risks of shopping online. Lee & Tan (2003) researched the perceived risk of product and service failure is much higher in an online environment compared to an offline shopping environment. Because consumers are more likely to shop for low-risk online products it can be concluded perceived risk also has a direct effect on the likelihood to shop online.

The adjusted model that will be used in this research (image below) is a simplified version of the technology acceptance model designed by Davis et al. (1989) extended with the perceived risk.



2.3 Key variables & Hypotheses

To answer the research questions the model introduced in the previous paragraph will be used. This model contains several independent variables influencing the dependent variable.

Dependent Variable

Online shopping intentions and attitude towards online supermarkets are defined as: Users' likelihood to engage in online shopping or buying activities for food related products.

Independent Variables

External variables

- Demographics

Demographics have a significant impact on online shopping behavior. Research has shown that in the adoption process of online grocery shopping, women are more likely to adopt than men (Nasari & Elliott, 2011). Some general demographics such as: gender, age and education level will be questioned, as well as demographics hypothetically related to online grocery shopping such as: lifestyle and habitual environment and degree of urbanization.

H1 – Consumer demographics influence the internal beliefs of consumers in the online grocery shopping adoption process.

H1A – Time constraint lifestyle positively influences the perceived usefulness of consumers in the online grocery shopping adoption process.

H1B – The degree of urbanization negatively influences the perceived usefulness of consumers in the online grocery shopping adoption process.

- Price

According to Burke (1997) and Peterson, Balasubramanian, & Bronnenberg (1997) price is one of the most important indicators for consumers to shop online. Jacoby & Olson (1977) even refer to price as: “the consumer’s perceptual representation or subjective perception of the objective price of the product”. Online grocery shopping is characterized by two types of prices, the price of the goods sold online and the price of the transport to get the products to the customers.

Price sensitivity of the goods sold online is likely to be higher according to Alba & Hutchinson (1987) because a customer has better access to several information sources about product attributes such as price. Degeratu, Rangaswamy & Wu (2001) found that price discounts in combination with good promotion are effective online. Customers tend to look for lower prices online, where they are more interested in getting a good deal in an offline environment.

Another important factor for customers to shop online is convenience (Burke, 1997; Peterson et al., 1997). In the decision making process of online shopping customers compare the gain in convenience to the price of this convenience. Chiang & Dholakia (2003) measured this by designing different situations where the price of the products and deliveries varied over 20% of the total price of products and delivery costs. Because in most online grocery stores the prices of the goods sold are the same as in an online food retailer, Pozzi (2012) concluded that the charges for delivery are also an important factor to measure in online shopping studies.

H2 – Price of product and service positively influences the internal beliefs of consumers in the online grocery shopping adoption process.

H2A – Price of product and service negatively influences the perceived risk of consumers in the online grocery shopping adoption process.

H2B – Price of product and service positively influences the perceived usefulness of consumers in the online grocery shopping adoption process.

- Consumer Characteristics

Because online shopping is still evolving each year, with new products and new market trends, the characteristics of online shopping consumers are also still changing. The largest group of consumers shopping online are students and young professionals in the age of 18-30 (Tang & Lv, 2011). Due to the continuing development of technology and the shift in society to a 24/7 working mentality people are more likely to use services making their lives easier (Gong et al., 2013).

Lokken et al. (2003) have found a fundamental difference between 'online shoppers' and 'non-online shoppers'. Online shoppers choose convenience over privacy and are more risk taking in an online environment. These consumers are common to use computers and the internet in their daily life, so for this group the convenience factor is the most important trigger to buy online. The non-online shoppers are more concerned about privacy and have much less developed computer skills compared to the online shoppers. The article also states it is therefore important to educate about potential risks of shopping in an online environment.

Soopramanien & Robertson (2007) extended this subdivision even further in naming 'buyers' (consumers buying products online), 'browsers' (consumers looking for products but not buying online) and 'non-internet shoppers' (consumers not using the internet for shopping). Some consumers both buy and browse online so they can be accounted to both groups: the adopters of online shopping. Both groups are separated because both groups of consumers have different ideas about the perceived benefit and the perceived risk when buying online. This differences get smaller when larger amounts of money are involved.

H3 – Consumer characteristics influence the internal beliefs of consumers in the online grocery shopping adoption process.

H3A – ICT skills negatively influence the perceived risk of consumers in the online grocery shopping adoption process.

H3B – ICT skills positively influence the perceived ease of use of consumers in the online grocery shopping adoption process.

Internal Beliefs (Medium characteristics)

- Perceived Risk

The term 'perceived risk' was introduced by Bauer (1960), and was followed by lots of research focusing on the influence of perceived risk on the customer decision making process (Hsieh & Tsao, 2014). The definition of perceived risk at the time of introduction was stated as: "the unpredictable results that consumers perceive when they engage in purchasing behavior, these results may have negative influence on the consumers". This risk is perceived much higher in an online environment compared to an offline retail environment (Hsieh & Tsao, 2014). Vijayasarathy and Jones (2000) even stated this higher risk can negatively influence the likelihood of consumers to shop for products online because there is a negative effect on attitude towards online shopping.

The perceived risk is much higher online because consumers find it harder to judge the quality and reliability of the products sold (Bhatnagar et al., 2000) because there is no opportunity to see and feel the product before buying (Kolesar and Galbraith, 2000). This risk is called the product performance risk (Horton, 1976). To judge about the product quality, consumers use the quality of the website as a performance indicator for the brand or the product. Forsythe et al. (2003) formulate another risk next to the product quality risk: the time or convenience risk of online shopping, defined as: "the risk of wasting time in online shopping, inconveniences associated with searching or browsing webpages and even delayed product delivery". Financial risk, "potential net loss of money" (Derbaix, 1983) can also occur in online shopping when the payment system is not secured properly, especially in online credit card usage.

Because this study focuses on perceived risk within an online environment, literature states it is important to consider all types of risk in the research. In the model designed for this study all types of online perceived risk are taken into account: perceived quality, perceived service and perceived privacy. In the technology acceptance model the perceived risk combined with the ease of use and the usefulness of a website, influence on the attitude towards and likelihood to use the website.

H4 – Perceived risk negatively influences the likelihood of consumers to adopt the online grocery shopping process.

- Perceived Ease of Use

Renny, Guritno & Siringoringo (2013) defined the term 'perceived ease of use' of an online retailer as: "the internal belief ties to the respondent's assessment of the mental effort using the company website" where a consumer feels the use of the system is free of effort. Venkatesh (2003) uses the term to describe "the degree of ease associated with the use of the system".

Within the technology acceptance model ease of use is influenced by the usability of the website and this is positively related to the likelihood to use the online shopping service. This positive attitude is because usability enlarges efficiency by eliminating the importance of having good IT skills to use the service. Also a user can experience a time win or perform more tasks in the same amount of time.

H5 – Perceived ease of use positively influences the likelihood of consumers to adopt the online grocery shopping process.

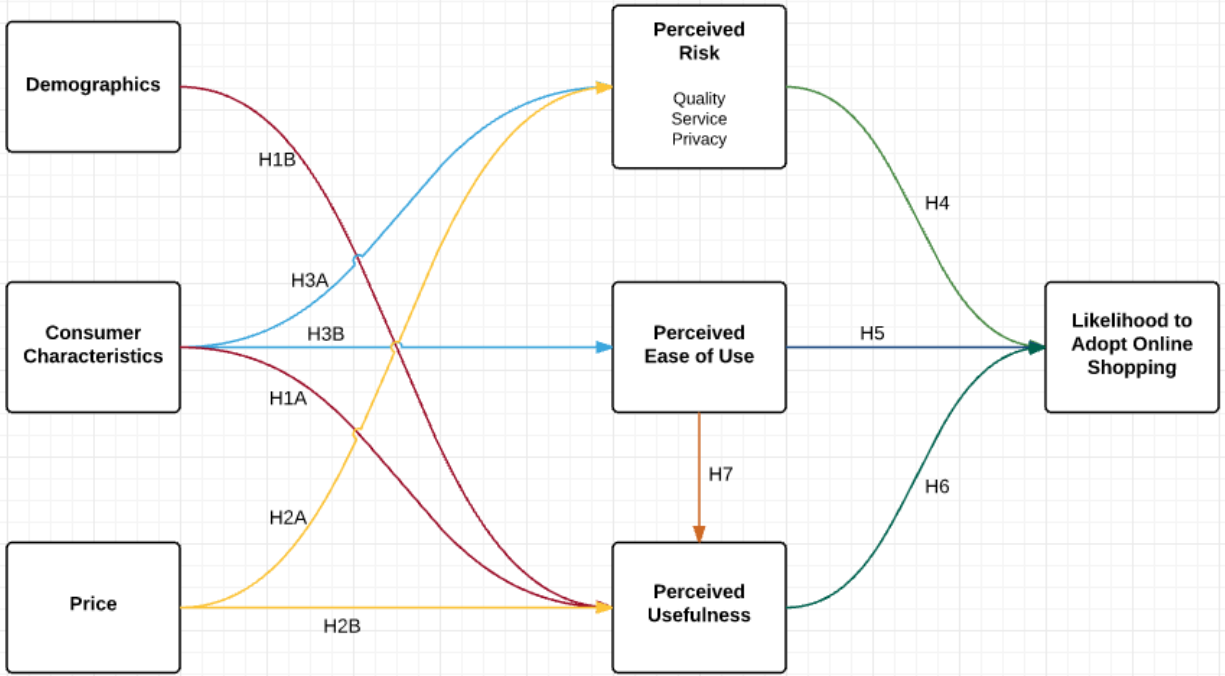
- Perceived Usefulness

Renny et al. (2013) described the term ‘perceived usefulness’ as: “the time and effort saving and cost reducing” of using the website “this is positively related to more effectiveness, better performance and higher productivity”. They stated that perceived usefulness has a direct effect on the intention to use the internet for a purchase. They have also found out the attitude towards usability of online shopping is positively influenced by both factors. Venkatesh (2003) links this benefit to the outcome of possible gains in job performance.

Within the technology acceptance model the internal belief of advantage by using the online shopping channel will lead to a better performance. This increases one’s positive attitude towards the online retail channel and will also lead to a higher likelihood to use the system.

H6 – Perceived usefulness positively influences the likelihood of consumers to adopt the online grocery shopping process.

H7 – Perceived usefulness mediates the perceived ease of use of consumers in the online grocery shopping process.



Chapter 3 - Methodology

3.1 Research design

In order to test the hypotheses and the conceptual model quantitative research will be needed. Quantitative research was defined by Ary et al. (2002) as: “objective measurement and statistical analysis of numeric data to understand and explain phenomena”. To answer the main research question the causes of the relationships between the variables need to be outlined and explained so this type of research only will be appropriate for this thesis. To obtain this data an online survey has been conducted among Dutch consumers who were able to give their opinion about the likelihood they would buy groceries online at this moment.

Because the results of the survey will be representing what is going on in one moment in time and the ultimate goal is to find a correlating effect between the independent variable and the dependent variable, non-experimental cross sectional data will be used in the analysis. The study is non-experimental because neither the participants nor the situation were manipulated. The questions of the survey were chosen in such a way they would not influence or manipulate the participants. The participants were allocated into the one group and they filled out the exact same survey questions.

The questions of the survey are grouped in six components. Each component is consistent with one of the hypotheses. Another advantage of grouping the questions of the survey is that the questionnaire is more comprehensible for the respondents so they will not be bored by the questions. At the beginning of the survey there was a short introduction about the concept of online grocery shopping so the participants were aware of the subject of the questions in the survey. Parasumaran, Grewal & Krishnan (2004) already stated that the sequence of the survey questions is also important to minimize data errors and to make the survey as efficient as possible for the respondents. Appendix number five shows the survey questions as presented to the respondents of the questionnaire.

The first component of the survey consists of statements about perceived risk. Different parts of perceived risk are being measured by the perceived quality, the perceived service and the perceived privacy of a consumer during an online shopping trip. The respondents can indicate to what extent they agree on each statement. The second component of the survey contains questions about the external variable ‘price’. This part is presented after the perceived risk part because these questions align with the questions about perceived risk. The questions are again statements being presented. After the price, statements about the perceived ease of use and the perceived usefulness follow. This part represents the benefits and the efficiency of shopping online. The participants can again indicate to what extent they agree with this statements. The demographics and consumer characteristics are questioned at the end of the survey, since respondents usually do not like to share personal information. To start with general questions about the subject and a short introduction at the start of the survey, the researcher can gain the trust of the participants, which makes the respondents more willing to share information to benefit the quality of the research.

3.2 Methodology

To measure the intention to purchase groceries online, a survey was conducted as mentioned in the previous paragraph. Among 150 participants certain positive and negative aspects of online shopping were questioned as described in the independent variables. SPSS will be used to analyze these measures and to identify the relationships between the dependent and independent variables.

Within marketing research, a lot of information is collected using surveys or observations. This pieces of information form a sample for a study after being transformed into variables. SPSS is a widely used program within marketing research to obtain statistic overviews of the data and to limit this data by using statistical indicators. The program is also used for the study of separate variables and for the study for relationships between variables. This has also been done with the data from the online shopping survey conducted; therefore SPSS is an adequate tool to test the hypothesis that were formulated in chapter two.

After all the respondents filled out the survey questions, the answers were converted into variables as SPSS input. In the survey several questions were asked for each variable formulated in the conceptual model. To be able to put this questions together into one variable (factor), a factor analysis was performed. In a factor analysis “a large quantity of variables will be reduced to a smaller amount of previously unknown dimensions which are also referred to as factors” (Janssens, Wijnen, De Pelsmacker & Van Kenhove, 2008). This first analysis is needed to determine the strength of the relationship between and, to the extent possible, to reduce the amount of original variables by the definition of a smaller set of dimensions and maintain the majority of information. This strategy of preparing data material for further analysis is referred to as an exploratory factor analysis, because all paths from every factor to every variable is being tested. In the factor analysis the three basic assumptions of factor analysis were respected: interval or ratio measurement level, use of standardized data when measurement units of variables differ and the number of observations is at least ten times the amount of variables. Also the meaningfulness of performing a factor analysis will be checked on beforehand.

To determine the relationship between one dependent variable and one or more independent variables, a linear or multiple regression analysis was performed. This analysis: “tries to explain the variation in one independent variable as much as possible on the basis of the variation in a number of relevant independent variables” (Janssens et al., 2008). A model will be estimated using the following general formula:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n + \varepsilon$$

Y = dependent variable

X_i = independent variable

b_i = parameter to be estimated, coefficient

ε = disturbance term

(Janssens et al., 2008)

In the regression analysis the general conditions of performing a linear or multiple regression will be respected: causality between variables, all relevant models in consideration, variables at least interval scaled, linear relationship between variables, assumption of additive relationship, sufficient number of observations, no multicollinearity, attention for outliers and the residuals are independent, normally distributed, assumption of homoscedasticity and no autocorrelation.

3.3 Operationalization of data

To determine the relationship between the likelihood of consumers to shop for groceries online and the internal beliefs that influence this relationship all variables are being measured in the survey questions. To measure the external factors and internal beliefs scales have been used that are already extensively used in former research about online shopping. Appendix number four provides an overview of existing literature and research adoption online shopping, the internal beliefs they measured and the scales that have been used to measure this internal beliefs.

The scale used in the survey within this study for the likelihood to use the online grocery shopping channel is the same as Davis et al. (1989) used within their research in the technology acceptance model. This scale is used to measure the first part of internal beliefs for the perceived ease of use and the perceived usefulness of online grocery shopping adoption. The questions asked for perceived ease of use measure to what extent respondents agree on the assertion the process of ordering, navigating and paying on the website is easy. The answers were based on a 7-point Likert scale varying from one 'strongly agree' to seven 'strongly disagree'. Perceived usefulness was measured by questions about to what extent participants agree on statements about shopping online for groceries would be efficient, convenient and time saving. The answers were equally based to the answers measuring the perceived ease of use of the service.

Forsythe et al. (2006) extensively researched the relationship between the perceived risk and the perceived ease of use of online shopping. This is used in the same way, based on a 7-point Likert scale, in the survey. Within the literature (Eggert, 2006) there is a clear subdivision of perceived risk in an online environment: perceived quality, perceived service and perceived privacy. These three components are also included in the survey and used in the analysis as representation of perceived risk. In the questions measuring perceived quality the respondents had to indicate to what extent they agreed on statements about the quality at an online supermarket compared to offline supermarkets. Again a 7-point Likert scale was used where one represented 'strongly agree' and seven represented 'strongly disagree'. Perceived service was measured in the same way as quality but participants had to indicate to what extent they agreed on statements about the perceived service of an online supermarket and to what extent they know how to get this service. Perceived privacy in the survey was more about to what extent users are comfortable to share information in an online supermarket environment and to what extent they believe their personal information will not be used for purposes they did not give permission for in advance.

The external variables were questioned in the survey in the form of questions about price. Participants had to indicate to what extent they would be willing to pay extra for delivery or for better product quality online. The answers to these questions were again based on a 7-point Likert scale allocated in the same way as the other agree or disagree questions. At the end of the survey questions about demographics and consumer characteristics were asked. The demographics contained some general questions about gender (nominal), age (years), education level (high school to doctorate degree), habitual surrounding (countryside to city central location) and lifestyle of the respondents (nominal). The consumer characteristics were divided into two components. The first component was about the level of ICT skill of the participants based on agree to disagree varying answers. The second component was about how often they used online shopping and online grocery shopping services before. These answers were based on a 5-point Likert scale varying from 'always' to 'never'.

3.4 Validity and Reliability

The participants were approached to take part in the survey by e-mail and by social media. Therefore all respondents were free to participate in the study. This benefits the reliability of the answers because nobody was forced to participate and all respondents remain anonymous. The participants in the survey were comfortable giving honest answers because they trust to remain anonymous and the answers will only be used within this study and thus remain confidential.

Factor analysis

As mentioned before all conditions needed to perform a factor analysis have been respected. For every variable of the conceptual model questions in the survey were asked. The factor analysis was used to reduce the number of questions and to convert them into analyzable variables. The questions of each variable were put into the factor analysis. If the output of one factor analysis indicated one question was not significant the question was removed from the analysis. If the MSA score indicated it was not useful to perform a factor analysis the insignificant variables were deleted from the input. Appendix number six shows which questions from the survey belong to which factor and which questions did not have an adequate MSA score.

Regression

In the regression analysis all conditions needed to perform a regression analysis were respected. The regression analysis was used to uncover underlying relationships between variables. A reliability test was performed to measure the reliability of the scales from the variables used in the regression. The results of the test are imaged below. The variables that did not pass the reliability test were not involved in the regression analysis.

Reliability test scales

Table 1 – Cronbach's Alpha for all scales constructed after factor analysis

Scale	Mean	Variance	α
Price	6.61	6.905	0.584
ICT Skill	4.73	2.212	0.658
Perceived Quality	7.68	5.987	0.559
Perceived Service	6.47	6.999	0.726
Perceived Privacy	9.76	5.556	0.511
Perceived Ease of Use	7.57	8.302	0.761
Perceived Usefulness	10.20	18.925	0.869

To test the reliability of the scale from each variable, a Cronbach's Alpha was used to measure the internal consistency of the variables (items). The cut-off point used in this analysis was a minimum value of 0.6 for α . The output of the reliability test shows all variables score a 'good' result for Alpha, except for price, perceived quality and perceived privacy. These values are too low and also cannot be increased by changing the composition of the variables. This means these variables have not been taken into account in the regression analysis. (Laerd. (n.d.))

Chapter 4 – Data Results & Analysis

4.1 Descriptive statistics

In total, 148 respondents participated in the online grocery shopping survey. The tables below depict the descriptive characteristics of the population of respondents who participated in the survey.

Table 2: Descriptive Statistics Gender

Gender	Frequency	Percentage	Cumulative Percentage
Male	52	35.1 %	35.1 %
Female	96	64.9 %	100 %
Total	148	100 %	

Table 3: Descriptive Statistics Age

Age	Frequency	Percentage	Cumulative Percentage
< 18	1	0.7 %	0.7 %
18-24	56	37.8 %	38.5 %
25-34	51	34.5 %	73 %
35-44	10	6.8 %	79.7 %
45-54	12	8.1 %	87.8 %
55-64	18	12.2 %	100 %
Total	148	100 %	

Table 4: Descriptive Statistics Educational Level

Education	Frequency	Percentage	Cumulative Percentage
MBO	13	8.8 %	8.8 %
HBO	47	31.8 %	40.5 %
BSc	33	22.3 %	62.8 %
MSc	41	27.7 %	90.5 %
PHD	6	4.1 %	94.6 %
High School	8	5.4 %	100 %
Total	148	100 %	

Table 5: Descriptive Statistics Degree of Urbanization Habitual Surrounding

Habitual Surrounding	Frequency	Percentage	Cumulative Percentage
Small Village	27	18.2 %	18.2 %
Larger Village	24	16.2 %	34.5 %
City Outside City Center	39	26.4 %	60.8 %
City Central Location	58	39.2 %	100 %
Total	148	100 %	

Table 6: Descriptive Statistics Transportation to Supermarket

Transportation	Frequency	Percentage	Cumulative Percentage
Walking	51	34.5 %	34.5 %
By Bike	38	25.7 %	60.1 %
By Car	58	39.2 %	99.3 %
By Public Transport	1	0.7 %	100 %
Total	148	100 %	

The first number that stands out in the demographics is the percentage of women who participated in the survey. This percentage (65%) is higher than the amount of male respondents (35%). The average age of the participants is 26.53; this is no surprise since the largest group of respondents belongs to the age categories 18-24 and 25-34, representing 73.5% of the sample. Another number that stands out in the demographics is the deviation of education level of the participants. Most respondents have obtained a bachelors, masters or doctors university degree, representing 54.1% of the sample. The largest group of participants lives in a city at a central location (39.2%) and either walks (34.5%) or travels by car (39.2%) to the supermarket.

Table 7: Pearson Correlation Matrix of Dependent and Independent Variables

Variable	1	2	3	4
1. Online grocery shopping (dependent variable)				
2. ICT Skill	-0.166			
3. Perceived Service	0.067	-0.070		
4. Perceived Ease of Use	-0.040	0.219	0.195	
5. Perceived Usefulness	0.094	0.100	-0.040	0.187

In the table above, the various correlations between the dependent variable and the independent variables are displayed. First was tested if the variables are normally distributed: Both variables were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). The relationships between the variables were measured using the Pearson Correlation. The numbers in the table show the strength and the direction of these relationships. The coefficient of the relationships vary between minus one and one, where minus one represents a perfect negative relationship and one represents a perfect positive relationship.

The perceived ease of use variable shows the strongest correlation to other variables, however all correlation numbers are relatively low. The strongest correlation is between the perceived ease of use variable and the variable ICT skill of a consumer. This correlation is positive ($r = 0.219$). This correlation however is no surprise since this was already extensively discussed in previous literature. The conceptual model as presented in chapter two also shows a positive relationship between these two variables in hypothesis 3B. The relationship makes sense since the better consumers' ICT skills are, the easier it will be for this consumer to use the online supermarket service.

Another variable correlating with the ease of use variable is the perceived usefulness variable. The table shows a positive correlation between these two variables ($r = 0.187$). This positive correlation is no surprise since the relationship between perceived ease of use and perceived usefulness is also extensively researched in former studies and this (possibly mediating) relationship is tested in hypothesis seven. The correlation makes practical sense as well because the easier it is for consumers to shop online for groceries, the more efficient it will be to use this service.

The perceived ease of use variable also correlates with the perceived service variable. This value represents a positive correlation ($r = 0.195$). Again this correlation is not surprisingly since a higher level of service around online grocery shopping, will lead to a more user friendly system.

Another correlation is represented by the ICT skill variable on the dependent variable likelihood to shop at an online supermarket. This correlation represents a negative correlation between the two variables ($r = -0.166$). The relationship can be explained because the better the ICT skills of a consumer are, the more likely he will be to use the online supermarket service and the higher the likelihood will be the consumer is genuinely going to adopt the service.

4.2 Analysis Data per Hypothesis

4.2.1 Linear Regression Hypothesis One

H1 – Consumer demographics influence the internal beliefs of consumers in the online grocery shopping adoption process.

To test hypothesis one, the relationship between the ‘consumer lifestyle’ and the ‘perceived usefulness’ of this consumer in the online grocery shopping adoption process and also the relationship between the ‘degree of urbanization’ of the habitual surrounding and the perceived usefulness of this consumer in the online grocery shopping adoption process will be analyzed. Perceived usefulness will be the dependent variable in this analysis where lifestyle and degree of urbanization will be the independent variables. Two separate linear regressions were runned to test the models. In the table below the results of the regressions are presented.

H1A – Time constraint lifestyle positively influences the perceived usefulness of consumers in the online grocery shopping adoption process.

Table 8: Output Linear Regression Hypothesis 1A

	β	Standard Error	Beta	t	Significance
Constant	3.194	0.146		21.928	0.000
Consumer Lifestyle	0.558	0.246	0.194	2.391	0.018

This linear regression was runned to determine whether the consumer lifestyle could statistically significantly predict his perceived usefulness. The adjusted R square of the model is 0.031, so only 3.1% of the variance of perceived usefulness is explained by the consumer lifestyle. The regression equation for this model is presented below:

$$\text{Perceived Usefulness} = 3.194 + 0.558 * \text{Consumer Lifestyle}$$

Since the result of the regression is significant, it can be concluded that there is a positive relationship between the lifestyle of a consumer and the perceived usefulness of a consumer in the online grocery shopping adoption process. Hypothesis 1A therefore is confirmed.

H1B – The degree of urbanization negatively influences the perceived usefulness of consumers in the online grocery shopping adoption process.

Table 9: Output Linear Regression Hypothesis 1B

	β	Standard Error	Beta	t	Significance
Constant	2.626	0.320		8.208	0.000
Habitual Surrounding	0.271	0.104	0.211	2.604	0.010

This linear regression was runned to determine whether the degree of urbanization in the habitual surrounding of a consumer could statistically significantly predict perceived usefulness of this consumer in the online grocery shopping adoption process. The adjusted R square of the model is 0.038, so only 3.8% of the variance of perceived usefulness is explained by the habitual surrounding of this consumer. The regression equation for this model is presented below:

$$\text{Perceived Usefulness} = 2.626 + 0.271 * \text{Habitual Surrounding}$$

Since the result of the regression is significant, it can be concluded there is a positive relationship between the habitual surrounding of a consumer and the perceived usefulness of a consumer in the online grocery shopping adoption process. Hypothesis number 1B however states there is a negative relationship between these two variables. This would mean consumers who live in a more urbanized environment would be more likely to adopt online grocery shopping. Hypothesis 1B therefore is only partially confirmed.

4.2.2 Linear Regression Hypothesis Two

H2 – Price of product and service positively influences the internal beliefs of consumers in the online grocery shopping adoption process.

H2A – Price of product and service negatively influences the perceived risk of consumers in the online grocery shopping adoption process.

H2B – Price of product and service positively influences the perceived usefulness of consumers in the online grocery shopping adoption process.

In the factor analysis which is performed to prepare the data for the regression analyses, it was concluded the questions in the survey did not measure the price perception of product and service of the online grocery shopping services. Therefore this variable has not been a part of the analyses of the variables and therefore the hypotheses that involve price cannot be confirmed.

4.2.3 Linear Regression Hypothesis Three

H3 – Consumer characteristics influence the internal beliefs of consumers in the online grocery shopping adoption process.

To test hypothesis three, the relationship between the ICT skills of a consumer and the perceived risk and the relationship between the ICT skills of a consumer and the perceived ease of use will be analyzed. Perceived risk and perceived usefulness will be the dependent variables in this analysis where the ICT skills of a consumer will be the independent variable. Two separate linear regressions were runned to test the models. In table ten the results of the regressions are presented.

H3A – ICT skills negatively influence the perceived risk of consumers in the online grocery shopping adoption process.

Table 10: Output Linear Regression Hypothesis 3A

	β	Standard Error	Beta	t	Significance
Constant	3.266	0.365		8.953	0.000
ICT Skill	-0.19	0.221	-0.007	-0.085	0.932

This linear regression was runned to determine whether the ICT skills of a consumer could statistically significantly predict perceived risk of this consumer in the online grocery shopping adoption process. The adjusted R square of the model is very low: 0.007. This means the variance of perceived risk is not properly explained by the ICT skills of a consumer. The model is also not significant so no regression model will be presented. This also means there is no significant relationship between the ICT skill variable and the perceived risk, so hypothesis 3A will not be confirmed.

H3B – ICT skills positively influence the perceived ease of use of consumers in the online grocery shopping adoption process.

Table 11: Output Linear Regression Hypothesis 3B

	β	Standard Error	Beta	t	Significance
Constant	1.756	0.166		10.557	0.000
ICT Skill	0.273	0.101	0.219	2.717	0.007

This linear regression was runned to determine whether the ICT skills of a consumer could statistically significantly predict perceived ease of use of this consumer in the online grocery shopping adoption process. The adjusted R square of the model is 0.042, so only 4.2% of the variance of perceived ease of use is explained by the ICT skills of this consumer. The regression equation for this model is presented below:

$$\text{Perceived Ease of Use} = 1.756 + 0.273 * \text{ICT Skills}$$

Since the result of the regression is significant, it can be concluded there is a positive relationship between the ICT skills of a consumer and the perceived usefulness of a consumer in the online grocery shopping adoption process. The relationship is positive so hypothesis 3B therefore is confirmed.

4.2.4 Linear Regression Hypothesis Four

H4 – Perceived risk negatively influences the likelihood of consumers to adopt the online grocery shopping process.

To test hypothesis four, the relationship between the perceived risk of an online consumer and the likelihood of consumers to adopt online grocery shopping will be analyzed. The likelihood to adopt will be the dependent variable in this analysis where the perceived risk of an online consumer will be the independent variable. A linear regression was runned to test the model. In the table below the results of the regression are presented.

Table 12: Output Linear Regression Hypothesis 4

	β	Standard Error	Beta	t	Significance
Constant	4.246	0.184		23.027	0.000
Perceived Risk	0.043	0.053	0.067	0.812	0.418

This linear regression was runned to determine whether the perceived risk of an online consumer could statistically significantly predict the likelihood of consumers to adopt online grocery shopping. The adjusted R square of the model is very low, namely 0.002. This means the variance of likelihood to adopt is not properly explained by the perceived risk of a consumer in the online grocery shopping adoption process. The model is also not significant, so no regression model will be presented. This also means there is no significant relationship between the perceived risk variable and the likelihood to adopt online grocery shopping variable, so hypothesis 4 cannot be confirmed.

4.2.5 Linear Regression Hypothesis Five

H5 – Perceived ease of use positively influences the likelihood of consumers to adopt the online grocery shopping process.

To test hypothesis five, the relationship between the perceived ease of use of an online consumer and the likelihood of consumers to adopt online grocery shopping will be analyzed. The likelihood to adopt will be the dependent variable in this analysis where the perceived ease of use will be the independent variable. A linear regression was runned to test the model. In the table below the result of the regression is presented.

Table 13: Output Linear Regression Hypothesis 5

	β	Standard Error	Beta	t	Significance
Constant	4.398	0.257		17.101	0.000
Perceived Ease of Use	-0.006	0.113	-0.004	-0.051	0.960

This linear regression was runned to determine whether the perceived ease of use of an online consumer could statistically significantly predict the likelihood of consumers to adopt online grocery shopping. The adjusted R square of the model is very low, namely 0.007. This means the variance of likelihood to adopt is not properly explained by the perceived ease of use of a consumer in the online grocery shopping adoption process. The model is also not significant so no regression model will be presented. This also means there is no significant relationship between the perceived ease of use variable and the likelihood to adopt online grocery shopping variable, so hypothesis 5 cannot be confirmed.

4.2.6 Linear Regression Hypothesis Six

H6 – Perceived usefulness positively influences the likelihood of consumers to adopt the online grocery shopping process.

To test hypothesis six, the relationship between the perceived usefulness of an online consumer and the likelihood of consumers to adopt online grocery shopping will be analyzed. The likelihood to adopt will be the dependent variable in this analysis where the perceived usefulness will be the independent variable. A linear regression was runned to test the model. In table 14 the result of the regression is presented.

Table 14: Output Linear Regression Hypothesis 6

	β	Standard Error	Beta	t	Significance
Constant	4.194	0.182		23.050	0.000
Perceived Ease of Use	0.057	0.050	0.094	1.136	0.258

This linear regression was runned to determine whether the perceived usefulness of an online consumer could statistically significantly predict the likelihood of consumers to adopt online grocery shopping. The adjusted R square of the model is very low, namely 0.002. This means the variance of likelihood to adopt is not properly explained by the perceived usefulness of a consumer in the online grocery shopping adoption process. The model is also not significant so no regression model will be presented. This also means there is no significant relationship between the perceived usefulness variable and the likelihood to adopt online grocery shopping variable, so hypothesis 6 cannot be confirmed.

4.2.7 Mediation test Perceived Usefulness

H7 – Perceived usefulness mediates the perceived ease of use of consumers in the online grocery shopping process.

The literature in chapter two showed there is a possible mediating relationship between the perceived ease of use and the perceived usefulness. According to the literature ease of use has a direct effect on the likelihood to adopt, but this relationship is also mediated by the perceived usefulness variable. Therefore this is tested, the outcome of the regressions are presented in the table below.

Table 15: Results Regression Analyses Mediation Test Online Grocery Shopping

	β	Standard Error	Beta	t	Significance	VIF value
Regression 1	-0.006	0.113	-0.004	-0.051	0.960	1.000
Regression 2	0.356	0.192	0.152	1.858	0.065	1.000
Regression 3	0.071	0.048	0.121	1.474	0.143	1.000
Regression 4	0.073	0.049	0.125	1.494	0.137	1.024
	-0.032	0.114	-0.023	-0.277	0.782	

To test a mediating relationship first all relationships between the dependent variable, independent variable and potentially mediating variable must be examined (Kenny, 2014). In this mediation test the independent variable is 'perceived ease of use', the mediating variable is 'perceived usefulness' and the dependent variable is 'consumers' likelihood to adopt online grocery shopping'. Four regressions were runned to test the relationships:

1. Relationship between independent variable perceived ease of use and dependent variable consumers' likelihood to buy groceries online
2. Relationship between independent variable perceived ease of use and potential mediator perceived usefulness
3. Relationship between potential mediator perceived usefulness and dependent variable consumers' likelihood to buy groceries online
4. Relationship between independent variable perceived ease of use, potential mediator perceived usefulness and dependent variable consumers' likelihood to buy groceries online

In the output of the regression is shown no regression is significant. Therefore can be concluded there is no significant mediating relationship between perceived ease of use and perceived usefulness in a model where consumers' likelihood to buy groceries online is the dependent variable. Hypothesis 7 cannot be confirmed by this analysis.

4.3 Conclusion of Analysis

Table 16 below shows an overview of the hypotheses confirmed and not confirmed.

Table 16: Hypotheses and conclusions

Hypothesis	Description	Conclusion
H1A	<i>Time constraint lifestyle positively influences the perceived usefulness of consumers in the online grocery shopping adoption process.</i>	Confirmed
H1B	<i>The degree of urbanization negatively influences the perceived usefulness of consumers in the online grocery shopping adoption process.</i>	Partially Confirmed
H2A	<i>Price of product and service negatively influences the perceived risk of consumers in the online grocery shopping adoption process.</i>	Not Confirmed
H2B	<i>Price of product and service positively influences the perceived usefulness of consumers in the online grocery shopping adoption process.</i>	Not Confirmed
H3A	<i>ICT skills negatively influence the perceived risk of consumers in the online grocery shopping adoption process.</i>	Not Confirmed
H3B	<i>ICT skills positively influence the perceived ease of use of consumers in the online grocery shopping adoption process.</i>	Confirmed
H4	<i>Perceived risk negatively influences the likelihood of consumers to adopt the online grocery shopping process.</i>	Not Confirmed
H5	<i>Perceived ease of use positively influences the likelihood of consumers to adopt the online grocery shopping process.</i>	Not Confirmed
H6	<i>Perceived usefulness positively influences the likelihood of consumers to adopt the online grocery shopping process.</i>	Not Confirmed
H7	<i>Perceived usefulness mediates the perceived ease of use of consumers in the online grocery shopping process.</i>	Not Confirmed

4.4 Further Exploration Data

Because only three out of ten hypotheses were confirmed or partially confirmed, a further exploratory analysis of the data is performed. In this analysis the entire online grocery shopping model will be evaluated with help of a multiple regression analysis.

Dependent Variable ‘Consumers’ Likelihood to Adopt Online Grocery Shopping’

The first multiple regression analysis will be performed to test the entire conceptual model as presented in chapter two, minus the internal beliefs which have not turned out to be useful in the factor analysis (perceived quality and perceived privacy). This model is based on the influence of internal beliefs of consumers on the likelihood to use an online grocery shopping service. The regression equation for the likelihood to use an online supermarket service is presented below:

$$\text{Likelihood to Buy Groceries Online} = \beta_0 + \beta_1 * \text{Perceived Service} + \beta_2 * \text{Perceived Ease of Use} + \beta_3 * \text{Perceived Usefulness} + \varepsilon$$

In the table below the results of the multiple regression analysis are presented with the dependent variable ‘consumers’ likelihood to adopt online grocery shopping’. The adjusted R square of the model presented before is 0.01, this means only 1% of the variance of the dependent variable is explained by this model. In the table all VIF values are under ten so no multicollinearity was included in the items. The probability plot in the SPSS output also shows the model is not normally distributed. The total model however is not significant since none of the variables in the table are significant.

Table 17: Results Further Exploration Regression Analysis

	β	Standard Error	Beta	t	Significance	VIF value
Constant	4.084	0.315		12.951	0.000	
Perceived Service	0.050	0.054	0.078	0.929	0.355	1.043
Perceived Ease of Use	0.075	0.049	0.129	1.545	0.124	1.027
Perceived Usefulness	-0.053	0.116	-0.039	-0.459	0.647	1.067

B *Coefficient (B)*
Standard Error *Standard Error of B*
Beta *Standardized Coefficient*
Significance *Level of Significance*

Because the previous regression shows no significant output, the model will be extended by adding the demographic variables as mentioned in the descriptive statistics. This extra step is taken as an attempt to improve the significance and the adjusted R square of the existing model. This regression does not test a hypothesis and there is no literature supporting this model. In table 18 the results of the regression is showed added with the demographic variables, and the ‘consumers’ likelihood to adopt online grocery shopping’ as the dependent variable.

Table 18: Results Further Exploration Regression Analysis

	β	Standard Error	Beta	t	Significance	VIF value
Constant	5.190	0.530		9.797	0.000	
Perceived Service	-0.014	0.052	-0.023	-0.277	0.782	1.116
Perceived Ease of Use	-0.016	0.112	-0.011	-0.138	0.890	1.157
Perceived Usefulness	0.013	0.048	0.023	0.273	0.785	1.162
Gender	-0.080	0.143	-0.045	-0.558	0.578	1.105
Age	-0.195	0.060	-0.314	-3.222	0.002	1.609
Education	0.001	0.057	0.001	0.001	0.999	1.252
Habitual Surrounding	0.066	0.069	0.088	0.955	0.341	1.430
Transportation	-0.100	0.085	-0.100	-1.143	0.255	1.297
ICT Skill	-0.066	0.146	-0.39	-0.455	0.650	1.238
Lifestyle	0.063	0.142	0.036	0.442	0.659	1.100

The adjusted R square of the entire model increased from 0.074 to 0.135 meaning more of the variance of the dependent variable is explained by the model, 13.5%. However, this percentage still remains low, because the adjusted R square also goes up when adding extra variables. Again there is no multicollinearity present according to the VIF scores.

Out of the result of the regression can be concluded only the independent variable age ($\beta = -0.195$; $p = 0.002$) has a significant relationship with 'consumers' likelihood to use an online grocery shopping service'. This is surprisingly since the literature predicts the adopters of an online supermarket service are younger and higher educated. Since only one variable is significant, it can be said the model presented below does not explain the dependent variable 'consumers' likelihood to adopt online grocery shopping' properly.

$$\begin{aligned} \text{Likelihood to Buy Groceries Online} = & 5.190 - 0.014 * \text{Perceived Service} - 0.016 * \\ & \text{Perceived Ease of Use} + 0.013 * \text{Perceived Usefulness} - 0.080 * \text{Gender} - 0.195 * \text{Age} - \\ & 0.001 * \text{Education} + 0.066 * \text{Habitual Surrounding} - 0.100 * \text{Transportation} - 0.066 * \\ & \text{ICT Skill} + 0.063 * \text{Lifestyle} + \varepsilon \end{aligned}$$

Dependent Variable 'Consumers' Likelihood to Shop Online'

The first two extra analyses showed no significant output. Therefore another analysis will be done with the 'consumers' likelihood to shop online' as a dependent variable. This analysis will be conducted since some of the literature used to design this study is based on online shopping in general. Maybe the dependent variable online grocery shopping is proven too specific to find significant output.

In this regression the dependent variable is 'consumers' likelihood to shop online', measured in the survey by questioning the experience of the respondents in the use of an online shopping service in general. The general equation of the model remains the same except for the dependent variable that changes into: 'Likelihood to Shop Online'.

$$\begin{aligned} \text{Likelihood to Shop Online} = & \beta_0 + \beta_1 * \text{Perceived Service} + \beta_2 * \\ & \text{Perceived Ease of Use} + \beta_3 * \text{Perceived Usefulness} + \varepsilon \end{aligned}$$

The table below shows the results of the regression analysis with dependent variable ‘consumers’ likelihood to shop online’. The adjusted R square of the model is 0.074 which means 7.4% of the variance of the dependent variable is explained by the model. This number is higher compared to the previous model (with dependent variable ‘consumers’ likelihood to adopt online grocery shopping) meaning a higher percentage of variance is explained. Again there is no multicollinearity included in the items since all variation inflation factors are under ten. The probability plot shows the distribution is approximately normally distributed.

Table 19: Results Further Exploration Regression Analysis

	β	Standard Error	Beta	t	Significance	VIF value
Constant	2.057	0.240		8.586	0.000	
Perceived Service	0.053	0.041	0.106	1.297	0.197	1.043
Perceived Ease of Use	0.111	0.037	0.243	2.990	0.003	1.027
Perceived Usefulness	0.036	0.088	0.033	0.401	0.689	1.067

$$\text{Likelihood to Shop Online} = 2.057 + 0.053 * \text{Perceived Service} + 0.111 * \text{Perceived Ease of Use} + 0.036 * \text{Perceived Usefulness} + \varepsilon$$

The coefficient of the constant is 4.084 in the first model and 2.057 in the second model. The scale used to measure ‘likelihood of online grocery shopping adoption’ and ‘likelihood of online shopping’ in the survey was equal: always, a lot, sometimes, rarely or never. The mean of the ‘likelihood of online grocery shopping adoption’ and ‘online shopping’ is 4.39 (standard deviation 0.845) and 2.68 (standard deviation 0.660). This means consumers are more likely to ‘shop online’ (sometimes) than they are likely to ‘shop online for groceries’ (rarely).

Because the previous regression shows little significant output, the model will be extended by adding the demographic variables as mentioned in the descriptive statistics. This extra step is taken as an attempt to improve the significance and the adjusted R square of the existing model. This regression does not test a hypothesis and there is no literature supporting this model. In table 20 the results of the regression is showed with the demographic variables added, and the ‘consumers’ likelihood to shop online’ as the dependent variable. In the table below the output of the regression is shown.

Table 20: Results Further Exploration Regression Analysis

	β	Standard Error	Beta	t	Significance	VIF value
Constant	0.799	0.405		1.972	0.051	
Perceived Service	0.052	0.040	0.104	1.304	0.194	1.116
Perceived Ease of Use	-0.038	0.087	-0.036	-0.443	0.659	1.157
Perceived Usefulness	0.090	0.037	0.199	2.447	0.016	1.162
Gender	0.001	0.109	0.001	0.005	0.996	1.105
Age	0.127	0.046	0.263	2.752	0.007	1.609
Education	0.070	0.044	0.135	1.598	0.112	1.252
Habitual Surrounding	0.175	0.053	0.300	3.326	0.001	1.430
Transportation	-0.059	0.065	-0.078	-0.914	0.362	1.297
ICT Skill	0.287	0.112	0.216	2.575	0.011	1.238
Lifestyle	0.112	0.109	0.081	1.027	0.306	1.100

The adjusted R square of the entire model increased from 0.074 to 0.166 which means more of the variance of the dependent variable is explained by the model: 16.6%. Again there is no multicollinearity present according to the VIF scores.

The variables perceived usefulness ($\beta = 0.090$; $p = 0.016$), age ($\beta = 0.127$; $p = 0.007$), habitual surrounding ($\beta = 0.175$; $p = 0.001$) and ICT skill ($\beta = 0.287$; $p = 0.011$) all show a positive significant relationship with the dependent variable 'consumers' likelihood to shop online'. These numbers are more in line with the general notes in the literature about the likelihood of adoption of online shopping.

If the perceived usefulness is higher, consumers will value the efficiency of using an online service, like online shopping. In combination with the positive relationship of ICT skill consumers are more likely to rate an online service as easier and more efficient. Therefore is more likely they will be using such a service. Again the positive relationship between age and likelihood to shop online is a surprising outcome, since literature states adopters of an online shopping are younger and higher educated in general. The positive relationship with habitual surrounding is somewhat surprising, since this means the more consumers live in a relatively urbanized surrounding the more they are likely to use an online shopping service. The corresponding formula of the results of the regression analysis is presented below.

$$\begin{aligned} \text{Likelihood to Shop Online} = & 0.799 + 0.052 * \text{Perceived Service} - 0.038 * \\ & \text{Perceived Ease of Use} + 0.090 * \text{Perceived Usefulness} + 0.001 * \text{Gender} + 0.127 * \text{Age} + \\ & 0.070 * \text{Education} + 0.175 * \text{Habitual Surrounding} - 0.059 * \text{Transportation} + 0.287 * \\ & \text{ICT Skill} + 0.112 * \text{Lifestyle} + \varepsilon \end{aligned}$$

Chapter 5 – Discussion and Conclusion

5.1 Academic and Managerial Implications

The implications of this research are both academic and managerial. For the academic implications at first must be concluded this study is one of the first studies to focus specifically on the adoption process of online grocery shopping. The adoption process is studied with the help of the dependent variable 'consumers' likelihood to buy groceries online'. In former research studying the adoption process of online shopping in general, the traditional technology acceptance model was always used as basic conceptual model. Therefore most of the research focuses on the influence of the internal beliefs of a consumer, the perceived ease of use and the perceived usefulness, on the attitude towards using a new technology. This is the first study that tests a direct relationship between the internal beliefs of consumers and the likelihood to buy groceries online. Because this study shows no significant direct relationship between the internal beliefs and the likelihood to adopt online grocery shopping, it contributes to the existing literature that existing models do not always apply in specific markets. This study can be referred to as a foundation to study this specific market and the consumer behavior in this market more extensively.

The main findings of this study are a valuable source of information for marketers that operate in this specific environment. To better understand consumer shopping behavior in a relatively new and still evolving market, theoretical models are a solid foundation to rely on when developing marketing strategies. The most important actions marketers should undertake based on this research is getting to know why customers use an online grocery shopping service in the first place and what the main differences are between online grocery shopping and online shopping in general out of a consumers' point of view. Because this study shows that a reliable online shopping model does not necessarily apply to online grocery shopping, it is important for marketers to find consumer motives that influence the likelihood to use the service. Apart from the motives it is also important to find out whether there is a difference in likelihood to buy groceries online for different product categories. When consumers for instance only want to buy perishable products online, there is no need to promote the quality of the fresh product within the online assortment.

One of the conclusions of this study is: consumer lifestyle has a positive significant relationship with the consumer perceived usefulness of an online grocery shopping service. This information can be used by marketers to categorize the customers of a supermarket and to use this categorization as a ranking system. This ranking system allows a marketer to rank customers based on their theoretical likelihood to use the online grocery shopping service. The more time constraint a consumer is, the more he will find it useful to shop online for groceries. When marketers know which consumers have a time constraint lifestyle, they will be able to target this specific consumers with promotions to increase the use of online grocery shopping.

Another conclusion of this study helpful for marketers is the positive significant relationship between the ICT skill of a consumer and the perceived ease of use of an online grocery shopping service. This relationship tells a marketer the better the ICT skills of a consumer are, the easier he will find it to use an online grocery shopping service. An important action for marketers based on this conclusion is to make the online shopping service as user friendly as possible. When the service is easy to use, less developed ICT skills will be needed to make proper use of the service. Therefore it would be likely a larger target group would buy groceries online.

5.2 Limitations and Future Research Recommendations

The findings of this study learn the reader more about the factors that influence the likelihood of consumers to buy groceries online. Within the study however, some limitations and shortcomings have influenced the research. First of all the likelihood of consumers to buy groceries online in general knows more factors and can be measured in more ways than performed within this study. The traditional 'technology acceptance model' shows the behavior (likelihood) of consumers to buy groceries online is also influenced by the attitude towards this use. This study only focusses on the direct effect of internal beliefs on the consumers' likelihood to buy groceries online and left out the attitude towards using of the existing model, where it acts as a moderating variable between these variables. Therefore future research can focus on the role of attitude towards using within this specific market. Another shortcoming of this study is the way the consumers' likelihood to buy groceries online is measured. This study only focused on the likelihood in general and how this relates to other variables within the model, where there might be a difference in likelihood for different product categories. This difference will be present specifically in fresh and perishable products. Future research can test this by studying the needs of consumers when buying fresh and perishable products and the differences between this needs.

In this research the perceived risk is integrated in the model. The literature however states there are several types of perceived risk because the consumer operates in an online environment. These different types of risk are harder to measure and therefore not all types of perceived risk tested in the survey were proven useful, since some of the variables were not significant. This study therefore failed to test what the relative influence of each type of perceived risk is, and what the underlying coherence of these variables is. In general there are several fundamentals in the existing literature to implement perceived risk in the technology acceptance model as done in this study, but future research should focus on the role of this variable and the behavior of this variable within this model. Future researchers can prohibit this problem by first test their study before performing all research. If on beforehand it is clear the questions cannot be reduced to one factor, the conceptual model can be modified or the survey questions can still be changed.

An important shortcoming of this study is the external variable 'price' could not take part in the data analysis, since the questions about price in the survey were not consistent in measuring consumer price perception about the online grocery shopping market. Literature states price plays a part in consumer adoption of new technology so this should be included in research about the likelihood of adoption of this new technology. Future researchers should test their survey questions extensively before collecting the data, so they can make sure the quality of the survey is sufficient.

In the model tested the variables show very little correlation. The strongest correlation only has a value of 0.219 which is very little. Therefore it must be questioned whether the dependent variable consumers' likelihood to buy groceries online can be tested in the same way as consumers' likelihood to shop online in general, as is done so in this study. Because the online grocery shopping market is a relatively new market which is still evolving, almost all theory is based on existing literature about online shopping in general. The researcher tested whether this theory is also applicable to online grocery shopping adoption. Since there are significant differences when testing the entire model for both dependent variables as done in the further exploration of data, it can be concluded online grocery shopping may be a too specific market to apply general theories to. Therefore it must be said this study can still function as a solid foundation to test this model more extensively within this specific environment, but future research should focus more on the specific factors and their relative influence on this specific dependent variable. Another explanation for the differences between the models within this study can be that the test with online shopping was added later. Therefore the dependent variable online shopping as used in the model in the further exploration of data is only based on one question. This might have influenced results and has had consequences for the reliability of this variable.

Finally it should be mentioned the sample of respondents participating in this study is based on a convenience sample. Only 148 respondents were part of the survey and most of these respondents were relatively young, relatively high educated and lived in relatively urbanized environments. An example within this study the influence of the convenience sample has led to different outcome is in the conclusion of hypothesis 1B. The expected outcome was a negative relationship between the degree of urbanization of the habitual surrounding of consumers and the perceived usefulness of the online grocery shopping service. The result of the regression however, showed a positive relationship between these variables. A possible explanation for this inconsistency of expectant outcome is that the younger respondents that took part in the survey also lived in a more urbanized surrounding. So the conclusion is: age outweighs the importance of habitual environment. Future researchers should take more random samples so better dispersion of subgroups is represented in the study. This group will then be more representative for the population and the results will be more generalizable.

Appendix

Appendix 1 - Factors influencing online shopping

Positive factors for consumers of online shopping

Lower prices of commodities

One important positive factor of online shopping is that prices of the products that are sold online are generally lower than customers have to pay for the same brand and product in a physical store. Because online stores save money on floor space and offline marketing of a physical store, these stores are able to offer products for a lower price than stores with an offline retail location. Web stores also often use direct sales because this strategy skips a lot of links, and therefore keeps the costs down (Lokken et al., 2003). Since price is an important trigger for a customer to choose a certain retail channel, the stores also use this tool to drive the customer to use this channel for buying products (Tang & Lv, 2011).

More convenience in shopping

Over the past years, the lifestyle of customers has become more and more time constraint. Therefore they seek more convenience when shopping for products, customers prefer to do so at the time they want and for the price they desire. Online stores are not limited to opening hours of retail locations. Customers can visit the online store and order the products sold in the store every hour of the day, and have them delivered in their home at a time they prefer.

Because competition between brands is strong for a lot of product categories, customers prefer to compare products before they order. In the online environment is very easy for customers to compare products and prices of several retailers. Because location is not a limitation, consumers have access to all products varieties available on the market, just from their own computer (Tang & Lv, 2011).

Communication in shopping process more convenient

Because of fierce competition within several product branches, more product brands and varieties find their way to the market. For consumers it can be very hard to make buying decisions because of the large amount of varieties. In the online environment it is very easy for customers to find opinions and experiences of other consumers who have already used the product. Besides this, it is also easy when they have a positive product experience their selves, to contact friends and share the positive experience with them (Tang & Lv, 2011).

Negative factors for consumers of online shopping

Quality of the products not guaranteed

As mentioned before, an important reason for consumers to buy products online is that in general the prices are lower at an internet retailer. Because of this argument, consumers focus more on finding a product for the lowest price possible rather than looking for a professional website with positive user feedback. Unfortunately not all internet retailers are professional and it is always hard to determine the quality of the products they sell because customers cannot touch and feel the product before they buy it. Apart from this, websites are not obligate to guarantee the quality of the products so it is the customer's responsibility to decide whether they trust the retailer enough to order the product. (Tang & Lv, 2011)

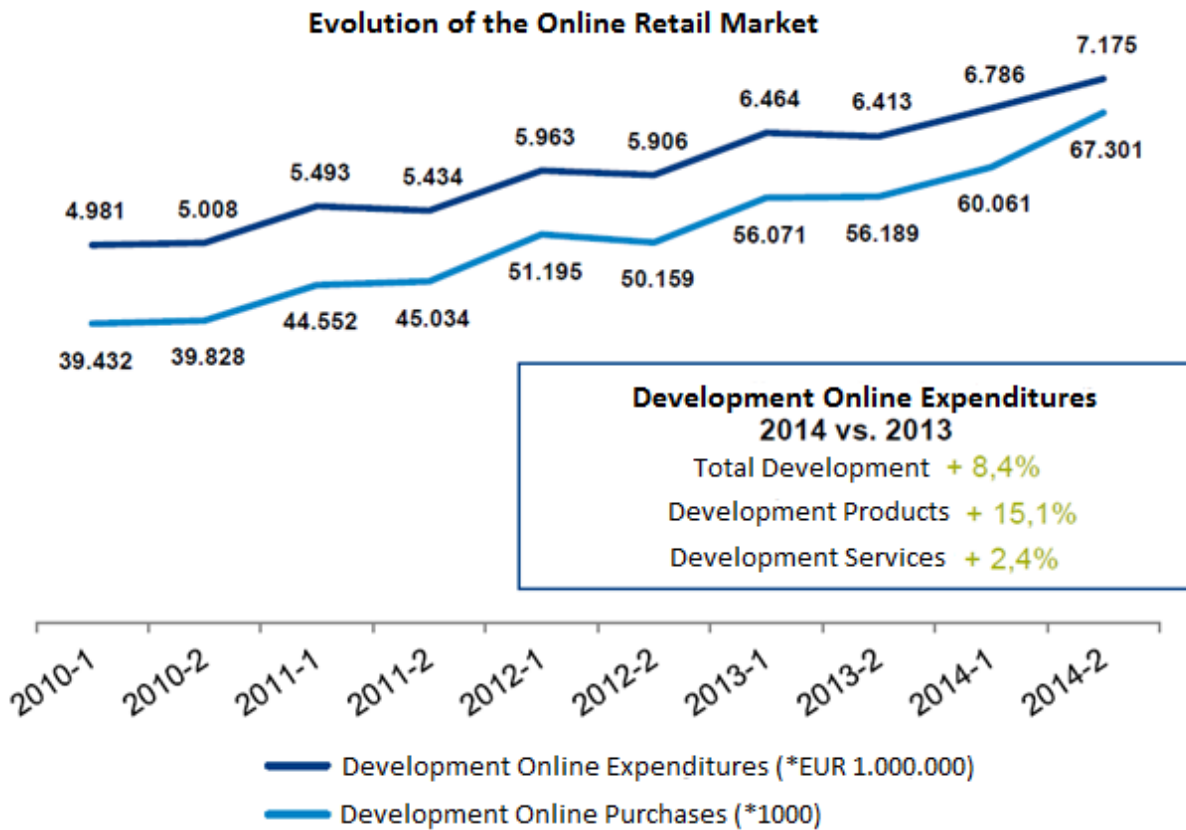
Service after sales more expensive and harder to realize

Some websites gain customers trust by ensuring reliable service when something is wrong with the product. This is much harder to realize than in a physical store because there is no physical contact between the customer and the retailer. Most of the time this process is also accompanied with a lot of extra costs for sending the product back to the retailer and possibly for extra installations (Lokken et al., 2003). This can add up and the benefit a customer gained by buying the product online can be nullified by all this extra effort. (Tang & Lv, 2011)

Security of the payment

Even though large internet retailers and banks are making huge efforts to ensure the security of online payment, this safety can never be completely guaranteed. In the past years internet transactions have become a lot safer but when something goes wrong in this process the results can be disastrous for a customer. Luckily consumers are being more informed about this problem so they know more about safe online transactions. Furthermore there are companies who professionalize the online security concerning the transaction in cooperation with online banking professionals. (Tang & Lv, 2011)

Appendix 2 - Overview of the online retail market



(<https://www.thuiswinkel.org/feiten-en-cijfers/41/Cijfers-Thuiswinkel-Markt-Monitor-2010-2014>)

Appendix 3 - Available online supermarket formats

Even though the Dutch supermarkets are somewhat behind compared to the rest of the industry, there has been made some changes to the existing concepts of supermarkets yet. Below an overview of the available concepts from supermarket chains at the moment in the Netherlands:

- Physical Store & Web shop: One of the largest supermarket retailers in the Netherlands started with a pilot of having an online web shop and physical stores in 2001 (Ahold N.V., 2014). In this format the customer orders his groceries online and the supermarket delivers the products at home in change for a small fee. Several smaller supermarket chains took over this format and still use this today.
- Physical Store & Web shop with Pick-Up Point: Dutch Supermarket chain Jumbo started with a web shop in fall 2014 (Boogert, 2014). Instead of delivering the groceries at home they save money by initiating pick-up points next to their physical stores in change for a small fee. This concept is inspired by French supermarkets who use this format for several years.

- Online Web shop only: In 2012 several online companies popped up, they want to stimulate people to eat healthy without it costing lots of effort. The service offers consumers who join weekly groceries delivered at home and corresponding recipes to prepare healthy meals (HelloFresh, 2012). In august 2015, the first full online supermarket was launched in the Netherlands. With a full online shopping experience and free delivery costs this shook the entire Dutch supermarket chain (Schaap, 2015).

- Online perishable products & Offline fresh products: In 2014 Dutch supermarket Hoogvliet initiated a new concept to the supermarket segment. They started a web shop where customers can order perishable products and can pick them up in the store. In the store are only sold fresh products, perishable products are only available if ordered on beforehand on the internet. This concept affected the entire supermarket chain and turned out to be the first change in the supermarket segment to make an effort to shift to ways to combine the physical supermarket with a web shop (Hoogvliet, 2014).

Appendix 4 - Overview existing literature and research adoption online shopping

Reference	TAM	Survey	Scale	# Respondents	PRisk in model	PEU in model	PU in model
Aghdaie et al. (2012)	Yes	Yes	5-point Likert Scale	69	No	Yes	Yes
Bhatnagar et al. (2000)	No	Yes	5-point Likert Scale	unknown	Yes	Convenience	No
Burton-Jones & Hubona (2006)	Yes	Yes	7-point Likert Scale	125	No	Yes	Yes
Chang et al. (2005)	Yes	No	-	-	Yes	Yes	Yes
Davis et al. (1989)	Yes	Yes	7-point Likert Scale	107	No	Yes	Yes
Forsythe et al. (2006)	No	Yes	7-point Likert Scale	598	Yes	Yes	No
Ha & Stoel (2008)	Yes	Yes	7-point Likert Scale	298	No	Yes	Yes
Hernandez et al. (2009)	Yes	Yes	7-point Likert Scale	805	No	Yes	Yes
Koufaris (2002)	Yes	Yes	7-point Likert Scale	280	No	Yes	Yes
Liu et al. (2011)	No	Yes	7-point Likert Scale	598	Yes	No	No
Pavlou (2003)	Yes	Yes	7-point Likert Scale	258	Yes	Yes	Yes
Im et al. (2008)	Yes	Yes	7-point Likert Scale	161	Yes	Yes	Yes
Lee et al. (2003)	Yes	Yes	-	32	No	Yes	Yes
Legris et al. (2003)	Yes	No	-	-	No	Yes	Yes
Porter & Donthu	Yes	Yes	5-point Likert Scale	539	No	Yes	Yes
Soopramanien & Robbertsen (2007)	Yes	Yes	5-point Likert Scale	894	Yes	Yes	Yes

Appendix 5 - Questionnaire Survey

Questions about Perceived Risk

Perceived Product Quality

Soopramanien & Robertson (2007), Pechtl (2010), Gong et al. (2013), Ha & Stoel (2009), Koufaris (2002), Pavlou (2003), Liu et al. (2011)

1. When I buy groceries at an online supermarket I know the quality of the products will meet my personal standards.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

2. All online supermarkets offer the same product quality online.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

3. The quality of the products I order online is better than equal products in the physical store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

4. The quality of the products I order online is worse than equal products in a physical store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

Perceived Service

Pechtl (2010), Gong et al. (2013), Ha & Stoel (2009), Koufaris (2002), Pavlou (2003), Liu et al. (2011)

5. Online supermarkets don't offer a good service.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

6. When something went wrong in my online order I know what to do or where to go to.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

7. I know how to give feedback to an online supermarket about my purchase.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

Perceived Privacy

Soopramanien & Robertson (2007), Pechtl (2010), Gong et al. (2013), Ha & Stoel (2009), Koufaris (2002), Pavlou (2003), Liu et al. (2011)

8. I know an online supermarket won't use my personal information unless I give permission to do so.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

9. Online supermarkets will not use information about my personal shopping behavior.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

10. I would feel comfortable buying groceries online.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

Price

Pechtl (2010), Wang et al. (2015)

11. I would be willing to pay more for the products I buy at an online supermarket if the quality of the products is high.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

12. I would be willing to buy my groceries at an online supermarket if the prices of the products are the same as in the physical store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

13. The reason I would buy my groceries at an online supermarket is because the products are cheaper.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

14. I would be willing to pay a delivery fee if the prices of the products I buy at an online supermarket are the same as in the physical grocery store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

15. I would be willing to pay a delivery fee if the products are cheaper at an online supermarket compared to the physical store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

16. If the prices of the products at the online supermarket are lower than at a physical store, the quality of the products must be worse.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

Consumer Characteristics

Gong et al. (2013), Wang et al. (2015)

17. The distance I have to travel to go to the supermarket is about:

- | | |
|---|---|
| <input type="radio"/> 0 - 500 meters | <input type="radio"/> 2 - 5 kilometers |
| <input type="radio"/> 500 - 1000 meters | <input type="radio"/> 5 - 10 kilometers |
| <input type="radio"/> 1 - 2 kilometers | <input type="radio"/> > 10 kilometers |

18. How much time a week do you spend in the supermarket to shop for groceries?

- | | |
|-----------------------------------|-----------------------------------|
| <input type="radio"/> < 1 hour | <input type="radio"/> 3 - 4 hours |
| <input type="radio"/> 1 - 2 hours | <input type="radio"/> 4 - 5 hours |
| <input type="radio"/> 2 - 3 hours | <input type="radio"/> > 5 hours |

19. How often a week do you visit a supermarket to buy groceries?

- | | |
|---------------------------------------|--|
| <input type="radio"/> < 1 time a week | <input type="radio"/> 5 times a week |
| <input type="radio"/> 1 time a week | <input type="radio"/> 6 times a week |
| <input type="radio"/> 2 times a week | <input type="radio"/> 7 times a week |
| <input type="radio"/> 3 times a week | <input type="radio"/> > 7 times a week |
| <input type="radio"/> 4 times a week | |

Perceived Ease of Use

Soopramanien & Robertson (2007), Pechtl (2010), Gong et al. (2013), Ha & Stoel (2009), Koufaris (2002), Liu et al. (2011)

20. Ordering products online is easy.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

21. It is easy to navigate through the website of an online store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

22. Paying for the products I buy online is easy.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

Perceived Usefulness

Soopramanien & Robertson (2007), Pechtl (2010), Gong et al. (2013), Ha & Stoel (2009), Koufaris (2002), Liu et al. (2011)

23. Ordering groceries at an online supermarket would be more efficient for me.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

24. Ordering groceries at an online supermarket is more convenient for me than going to the physical store.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

25. I would save time if I ordered my groceries at an online supermarket.

- | | |
|--|---|
| <input type="radio"/> Strongly Agree | <input type="radio"/> Somewhat Disagree |
| <input type="radio"/> Agree | <input type="radio"/> Disagree |
| <input type="radio"/> Somewhat Agree | <input type="radio"/> Strongly Disagree |
| <input type="radio"/> Neither Agree nor Disagree | |

Demographics

Soopramanien & Robertson (2007), Gong et al. (2013), Wang et al. (2015), Ha & Stoel (2009), Koufaris (2002), Liu et al. (2011)

26. What is your gender?

- Male | Female

27. What is your age?

- < 18 | 45 - 54
 18 - 24 | 55 - 64
 25 - 34 | > 65
 35 - 44 |

28. What is your highest completed education?

- High School | BSc
 MBO | MSc
 HBO | Doctorate Degree

29. In what kind of habitual surrounding do you live?

- Small Village | City outside city center
 Larger Village | City central location

30. What kind of transportation do you use most often to visit the supermarket?

- Walking | By Car
 By Bike | By Public Transport

Consumer Characteristics

Gong et al. (2013), Wang et al. (2015), Koufaris (2002), Liu et al. (2011)

31. How would you describe your lifestyle?

- Time Constraint | Money Constraint

32. Did you ever buy groceries online?

- Always | Rarely
 A lot | Never
 Sometimes |

33. My ICT skills are:

- Very Good
- Good
- Fair
- Poor
- Very Poor

34. I feel comfortable using the Internet.

- Strongly Agree
- Agree
- Somewhat Agree
- Neither Agree nor Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

35. I use computers:

- Several hours a day
- Every Day
- Every week
- Little
- Never

36. I buy products online:

- Always
- A lot
- Sometimes
- Rarely
- Never

Appendix 6 - Overview Variables & Questions Factor Analysis

Factor	Questions Used	Questions Deleted
Price	Q11, Q14, Q15, Q16	Q12, Q13
ICT Skill	Q32, Q33, Q34	None
Perceived Quality	Q1, Q2	Q3, Q4
Perceived Service	Q6, Q7	Q5
Perceived Privacy	Q8, Q9	Q10
Perceived Ease of Use	Q20, Q21, Q22	Q17, Q18, Q19
Perceived Usefulness	Q23, Q24, Q25	None

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