

What factors influence a consumer's intention to use a mobile device in the grocery shopping process?

A quantitative study of Swedish grocery shoppers



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Abstract

The worldwide exponential increase in smartphone penetration has changed the way in which many consumers shop, as their personal device is more frequently used as a shopping tool. Retailers now have to consider the integration of this technology in their omnichannel strategy. While some industries, such as customer electronics, have been highly affected by this trend, m-commerce has not received the same attention within the grocery sector. One country where m-shopping within the grocery sector has remained at an infant stage is Sweden, despite having a population that is characterized by a high willingness to adopt new technology.

As m-commerce research is lacking within the grocery industry and has mainly been conducted in the USA and East Asia, this study will be of both practical and theoretical relevance, focusing on the research question: *What factors influence the Swedish consumer's intention to use a mobile device in the grocery shopping process?*

In order to answer the research question, a quantitative study has been conducted in cooperation with Coop Online, the e-commerce division of Sweden's second largest retailing group. The data was collected from a large sample, which enabled the researchers to test hypotheses regarding different factors that influence an individual's intention to use m-commerce services.

The data analysis provided a valuable theoretical contribution, reinforcing the validity of Davis' (1986) Technology Acceptance Model (TAM) in the empirical context of this study. Moreover, the significance of additional factors were tested, which revealed a strong influence of Subjective Norm and Trust on a the shopper's intention to use m-commerce services. A factor that was found to be less relevant was Hedonic Motivation, since its influence could not be supported by the analysis. The results indicated that the consumers' intentions were strongly influenced by utilitarian motivations, as they sought efficiency and convenience in the shopping process. These practical implications should be considered by retailers for the future integration of m-commerce services.

The main limitation of this thesis is that the generated results are not representative for individuals who did not take part in the survey, as a convenience sampling was used. It also has to be considered that due to the sampling method, some demographic groups were overrepresented, introducing a bias to the study results. The stated limitation can be addressed in future research by applying a non-probability sampling method, which would provide generalizable results.

Keywords: m-shopping, m-commerce, m-commerce adoption, Technology Acceptance Model, TAM, Sweden, Grocery Retailing, Sweden



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1. Introduction

1.1 Practical Background

In the past few years there has been an exponential growth in the development of modern technologies affecting businesses across all industries, including the retailing sector. The retailers now find themselves in a so-called *Omnichannel* environment, which has been discussed extensively by academic researchers as well as acknowledged and considered by many companies. The Omnichannel concept implies that it is no longer sufficient to merely focus on physical stores (Bell, Galliano & Moreno, 2014), because consumers “expect [a] consistent, uniform and integrated service and experience” (Piotrowicz & Cuthbertson, 2014, p.8) across all the different touchpoints that have been created by new technologies. These touchpoints include the ‘traditional’ online store as well as the customers’ mobile device. The latter has gained significant momentum over the last few years, triggered by an increased usage of Web-enabled smartphones (Hathaway, 2014). A study by eMarketer (2014a) showed that the global number of individuals using a smartphone reached 1.76 billion by the end of 2014, with a penetration of more than 50% of the population in countries like the UK, USA and Sweden.

According to Barnard (2013), Sweden is one of the countries that rank the highest in smartphone penetration, as 73% of the population owns such a portable device. Scandinavian consumers are found to value Internet and digital media, as all these countries rank high in smartphone penetration and show enthusiasm for using these devices. Dibs Payment Services (2014) identified the year 2011 as an important milestone for the Swedish adoption of mobile shopping solutions, because “early adopters” and “innovators” on the Swedish market started to embrace the new concept. According to Statistiska Centralbyrån (2014), 92% of the Swedish population in the age range 16-85 have Internet access in their homes. These Internet users most often surf the Web through their laptops or smartphones, indicating that the Internet access is not only restricted to their homes. The Internet users are already familiar with e-commerce, and mobile is expected to be next in line. More and more time is spent on mobile devices (i.e. smartphone and tablet), as 40% of the total time spent online was through these platforms (The Boston Consulting Group, 2013).

Smartphones serve as personal companions that are always at hand and enable their owners to gather product information and purchase goods from wherever they are. For the retailer, the



personal and portable nature of smartphones holds the opportunity to build an intimate relationship with the customer, in which an interaction is no longer limited to the physical store. Shankar, Venkatesh, Hofacker and Naik (2010) stress that this development changes the essence of traditional retailing, because the physical store is no longer the origin of competitive advantage.

The terms *m-commerce*, *m-shopping* and *mobile shopping* are used interchangeably and are frequently associated with the use of mobile devices for shopping purposes. However, it is crucial to clearly define what exactly these concepts entail. Many definitions fail to include the entire range of possibilities that mobile devices offer in the retailer-customer relationship. For instance, Wong, Lee, Lim, Chua and Tan (2012, p.25) merely refer to m-commerce as “any monetary transactions related to purchases of goods or services through Internet-enabled mobile phones or over the wireless telecommunication network”. For this master thesis the concept of m-commerce will not be limited to the actual purchase of goods and services, but will include a number of different applications and functionalities. A description by Yang (2010) is, therefore, more appropriate for the context of this thesis. It refers to the mobile device as a personal assistant in the shopping process, which serves to improve the holistic shopping experience in a physical store by “creating a real-time interaction between consumer and retailer, assisting a consumer in making smart purchasing decisions [...] and delivering non-intrusive mobile marketing to consumer that is based on consumer preferences and priorities” (Yang, 2010, p.262).

In order to illustrate what functionalities a m-shopping channel can include besides the mere transactional function of purchasing a product, Groß (2015) describes three different categories of m-shopping assistant systems:

- *Decision support systems (DSS)* are services that support the consumer’s decision making process by providing relevant information. For instance, these services can be used to obtain additional product information, compare prices and explore customer reviews.
- *Mobile recommender systems (MRS)* provide consumers with relevant shopping suggestion, which can be based on personal preferences, past purchases or current promotions and special offers.



- *Navigation systems* facilitate the shopping process by helping the consumer to quickly reach the desired destination. For instance, in-store navigation could optimize a consumer's shopping route.

The Swedish market is characterized by a high willingness to adopt new Internet shopping solutions, and mobile is expected to become an increasingly important channel (The Boston Consulting Group, 2013). While 72% of the Swedish population engaged in e-commerce (i.e. traditional online shopping) in 2012, 20% of these customers already made their purchase using a mobile device. Mobile has stretched further and different age groups are incorporating their mobile devices into the shopping process. The Swedish market experienced a large increase of new mobile consumers in 2013, where 733 000 new consumers turned to their mobile devices to shop (Dibs Payment Services, 2014). Moreover, mobile in the Swedish market is expected to experience continued growth. In 2013, the Nordic countries increased the cumulative amount of purchases made through mobile devices by 61%, and a third of the new consumers state that they are likely to increase the amount of purchases made through mobile devices during 2014 (Dibs Payment Services, 2014).

However, when looking at the consumers' willingness to use their mobile device for obtaining product information, it becomes clear that not all categories are affected by this trend to the same extent. The category that is most notably affected is consumer electronics, in which 60% of the shoppers would rather use their smartphones to obtain product information, instead of talking to a salesperson (eMarketer, 2015). On the contrary, due to the lower product involvement, mobile usage is less considered by consumers in the grocery environment (eMarketer, 2014b). As consumers tend to make habitual purchases while shopping for groceries, they are not likely to use m-commerce services (e.g. to search for product information) (Groß, 2015). Rather, they turn to a fast and frugal decision making, where they base their purchasing decisions on attributes such as price of the product (Kalnikaitė, Bird & Rogers, 2013). Gaining an understanding of why this is the case is an essential part of answering the research question of this thesis and will be further discussed in chapter 7.

1.2 Theoretical Background

Even though m-shopping is increasingly gaining momentum and studies underline its potential to grow in the future, several authors have pointed out that the academic literature in this field is



still limited (Holmes, Byrne & Rowley, 2014; Taylor & Levin, 2014; Groß, 2015). In their study about the purchase intention on m-shopping websites, Lu and Su (2009, p.443) point out that “what is needed is a much better understanding of the factors that influence the adoption of m-shopping”. In order to be able to obtain an even better overview of the literature in the field of m-commerce, categorizations of the already existing research, presented by Groß (2015), Ström, Vendel and Bredican (2014) and AlHinai, Kurnia and Johnston (2007), have been examined. These categorizations serve as a starting point, which helped to identify two highly relevant areas of previous research that will be examined in chapter 3.

First, established literature about human behavior formation and acceptance of new technologies will be reviewed as it builds the foundation and core assumption for any research about customers’ attitudes towards a novel technology like m-shopping. There are a number of different traditional theories that are especially well established among academic practitioners and that will, therefore, be described in chapter 3.1: The Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Theory of Planned Behavior, (Ajzen, 1985), the Technology Acceptance Model (Davis, 1986), the extension of the Technology Acceptance Model (Venkatesh & Davis 2000) and the Diffusion of Innovations Theory (Rogers, 1962).

Second, more recently, researchers have specifically focused on factors that influence the consumers’ usage intention in the field of m-commerce and other mobile services. Due to the number of factor research that has been found in the field of mobile usage intention, it is necessary to approach the literature review in a structured manner.

In order to do so, a framework by Pedersen, Methlie and Thorbjørnsen (2002) was considered which describes three different roles a m-commerce user holds: First, he or she is a user of a technology, influenced by the adoption factors that are related to the technological characteristics of the m-commerce service. Second, he or she is a member of a social network, in which recommendations and opinion of friends, family members and other important persons influence the decision whether or not to use a mobile service. Third, the person who uses m-commerce is also a customer of a company that either sells a product via the mobile channel or that offers a mobile service without including a monetary transaction (e.g. offering product information). Therefore, the individual’s intention to use a mobile service is also influenced by transaction related factors, such as trust and perceived risk (AlHinai et al., 2007).



Besides the factors that are related to these three roles, a number of authors identified a distinction between hedonic factors (e.g. aesthetics, escapism, and enjoyment) and utilitarian factors (e.g. perceived performance expectancy, functionality) that both impact the consumer's intention to use m-commerce (Ko, Kim, & Lee, 2009; Lu & Su, 2009; Li et al., 2012).

The literature review in chapter 3 will consider all the previously mentioned categories of factors: technology related factors, social influences, transaction related factors, hedonic factors and utilitarian factors.

1.3 Objectives and Purpose

By considering the practical and theoretical background, two main objectives of this thesis have been identified. First, studies about customers' mobile usage in different shopping environments have shown that this channel is not as developed in the grocery sector as it is in other sectors, such as fashion or consumer electronics. However, considering the characteristics of the Swedish market it can be expected that the increasing importance of the mobile channel will also affect the grocery environment, as Sweden exhibits a high smartphone penetration with enthusiastic users of mobile technology. Therefore, the first objective of this thesis is to focus on the intention to use mobile devices within the grocery industry in order to comprehend its current status and future development. To be more specific, this research will investigate what factors influence grocery shoppers, when they make the decision to incorporate their mobile device in their path to purchase. From a practical point of view, the results of this study will help grocery retailers to understand their customers' needs and expectations for the mobile channel, which enables the companies to develop and promote a service that is appreciated by their customers.

Second, it has to be noted that recent research on m-shopping adoption has mainly "been conducted in the USA and in different parts of East Asia (e.g. China, South Korea, and Taiwan) [and] studies from other parts of the world are still rare" (Groß, 2015, p.227). Moreover, it is often neglected that the shopper's decision making process varies across the different product categories (Holmes et al., 2014). Therefore, this thesis intends to produce results which will contribute to the existing studies about m-commerce adoption, specifically in the Swedish grocery industry. In addition to a theoretical contribution in the specific field of m-commerce research, the traditional theories about human behavior and technology acceptance will also be applied to the empirical context of Swedish grocery retailing industry. The researchers will be



able to assess the concepts presented in the established models in a new empirical context and will, therefore, be able to contribute to the established understanding of these theories.

1.4 Research Question and Research Approach

In order to fulfill the two main objectives stated in the previous chapter, the central question which will guide the research is;

What factors influence the Swedish consumer's intention to use a mobile device in the grocery shopping process?

The research question will be answered, using a quantitative study with the customers of the Swedish retailer Coop Online, which will be based on previous m-commerce research. In order to develop the study, chapter 2 will provide an overview of the empirical background, which includes the Swedish grocery retailing market as well as the status quo of m-commerce services in the industry. Second, chapter 3 will present a theoretical review of already existing literature about formation of human behavior, acceptance of novel technologies and an individual's intention to use m-commerce services. The fourth chapter will discuss the hypotheses postulated for this study and introduce the research model. In the fifth chapter, the research design of this master thesis will be described, including the method of data collection and the sampling technique. The collected data will be analyzed in the following chapter 6, using the statistical software SPSS. Chapter 7 will discuss and interpret the findings in the context of the Swedish grocery retailing industry. Chapter 8 will conclude the study with a presentation of the practical and theoretical contributions as well as the associated limitations, which will be used to suggest future research ideas.

2. Empirical Context

2.1 Characteristics of Grocery Retailing and the Swedish Market

The way in which consumers buy groceries differs from purchases made in other industries. The grocery sector is characterized by habitual and routine purchases conducted on a regular basis, where many consumers visit the store every week (Park, Iyer & Smith, 1989). There are many factors affecting the consumer's path to purchase while engaging in in-store grocery shopping, such as prior knowledge of product placement and time pressure. These factors influence if



consumers are able to go through with their intended purchases or if they make purchases they have not planned prior to their shopping trip (Park et al., 1989). As people engage in grocery shopping with an intention to buy, rather than to browse, it can be considered a utilitarian process. In contrast, a hedonic experience is one that has a higher focus on the browse part, and is not directly linked to making an actual purchase (To, Liao & Lin, 2007).

As this research is conducted in the Swedish market, the grocery environment in this specific country should be defined. The Swedish grocery industry holds only a few big retailers that capture the main portion of the overall market. The biggest actor on the market, taking up 50,7% in 2013, is the retailer ICA. The second largest retailer is Coop, with a smaller market share of 20,9%. The third biggest is Axfood, covering 15,9% of the Swedish market. Thus, 87,5% of the market is controlled by three retailers (DLF, 2014). A study conducted by DLF (2014) has shown that the shopper spend less than half of the total time spent in the store on actually choosing a product and taking it off the shelf, while the remaining time is spent locating shelves, waiting in line and checking out. The Swedish consumers spend on average 14 minutes in the store, and only 5% spend more than 30 minutes.

E-commerce within the Swedish grocery sector has experienced an increase, however it still only consisted of roughly 1% of the total purchases made in 2013 (Svensk Digital Handel, 2014). The main reason the Swedes turn to the digital way of shopping is convenience, while a better assortment and saving time are also considered being advantageous. As previously mentioned, Swedish consumers are technologically advanced and are positive towards implementing new technologies to shop (Svensk Digital Handel, 2014).

2.2 Current M-Commerce Services of the Swedish Grocery Retailers

As previously mentioned, the retailer ICA holds the biggest share of the Swedish grocery market. It is also the retailer that has embraced m-commerce to the greatest extent, with eight different mobile apps offering their consumers various services, such as banking services and a video streaming service for the retailer's commercials. The mobile app that is most relevant for this study, is the retailer's *ICA Handla app*, that entails the functions; checking one's balance on the customer's ICA account, searching for the weekly discounts from the stores, finding and saving recipes, as well as creating shopping lists that can be shared with others. On the retailer's website, the mobile app is described as a tool, enabling the customer to save time and



money. However, despite including many functions, the app does not allow customers to purchase goods. Moreover, the app allows the customers to use a mobile device to pay in only one single store so far,, where the system has been implemented as a pilot trial in 2014. The retailer is expecting to launch the system in more stores in 2015 (ICA, 2015).

Being the second biggest retailer on the Swedish grocery market, Coop has also developed a mobile app. The app enables the customers to create shopping lists, search for weekly deals, get inspiration through recipes and provides an overview of their loyalty program points. As the retailer cooperates with other companies, such as Scandinavian Airline Systems, the customers are also able to see how they could use their points with one of the partners. However, the app does not offer the possibility to pay for the goods with a mobile device (Coop, 2015).

Axfood is the third largest retail group on the Swedish grocery market and includes, besides a wholesale branch, two independent grocery retailers; Hemköp and Willys. Both chains have their own app, which offer the same functions; obtaining information about weekly deals, getting an overview of loyalty program points as well as finding information about store locations (Hemköp, 2015; Willys, 2015). While the app does not offer a function to pay for the products, the retailers do offer the customers to pay through an external mobile payment service, called SEQR. This service enables the customers to scan a barcode at the register and receive a bill to their home address, rather than swiping their credit card or paying by cash (SEQR, 2015).

3. Previous Research

The theoretical review will be divided into two sections that present different fields of previous research. The first section will discuss traditional theories about the formation of human behavior, as well as an individual's acceptance of novel technologies. These theories represent well established concepts, which frequently have been applied in subsequent and more recent studies about technology adoption. The second section will focus on research in the more specific field of m-commerce adoption, in which different factors that influence a user's intention to use a m-commerce service are discussed. At the end of each section a table will provide an overview of the constructs and factors that have been presented in the previous research.



3.1 Established Intention Models

3.1.1 Theory of Reasoned Action

The Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1975) is one of the most established intention-models, which is used “to explain virtually any human behavior” (Ajzen & Fishbein, 1980, p.4). The model has its roots in Social Psychology, and with its generic nature it has successfully been applied in a variety of different domains (Davis, Bagozzi & Warshaw, 1989). According to the TRA, the actual execution of a specific behavior is always preceded by the Behavioral Intention, which is, in turn, formed by the individual’s attitude towards the behavior and influenced by the factor Subjective Norm. While the Attitude construct is defined as “an individual’s positive or negative feelings (evaluative affect) about performing the target behavior” (Fishbein & Ajzen, 1975, p.216), Subjective Norm can be described as “the person’s perception that most people who are important to him think he should or should not perform the behavior in question” (Fishbein & Ajzen, 1975, p.302). In the context of technology adoption, this basic construct of the TRA for explaining human behavior can be found in several different models, as many authors in the field of Information System research made use of Fishbein’s and Ajzen’s (1975) idea.

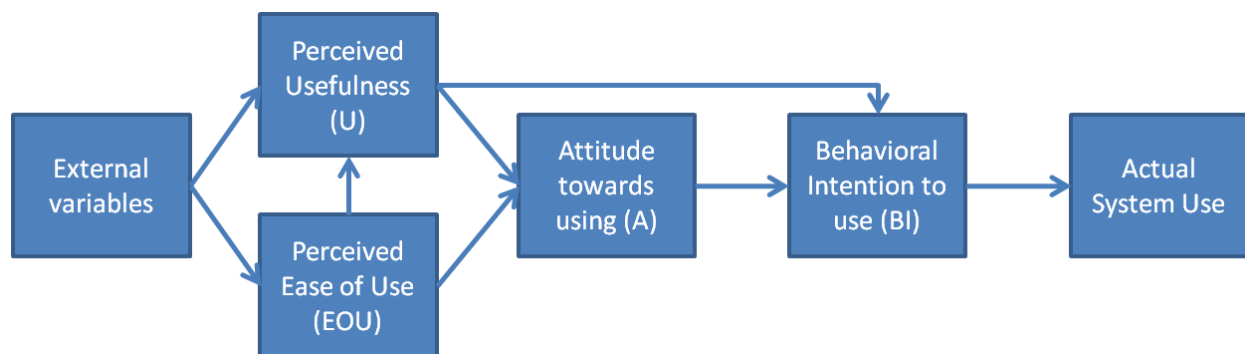
3.1.2 Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis in 1986, represents an early adaption of Fishbein’s and Ajzen’s TRA (1975), in which the basic construct is tailored to the Information Systems context, in order to not only explain but also predict the acceptance and usage of information technologies on the job (Davis, 1986). The purpose of the TAM was to provide researchers and practitioners with a model that enables them to understand why a technology is not accepted, and gives an indication for corrective measures. Therefore, the TAM provides “a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions” (Davis et al., 1989, p.985). Compared to the TRA, within the TAM, two beliefs are of particular interest in order to explain technology acceptance behavior: Perceived Usefulness and Perceived Ease of Use. In the original study, Perceived Usefulness is usefulness is defined here as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320). On the contrary, Perceived Ease of Use refers to “the degree to which a person believes that using a particular system would be free of effort (Davis, 1989, p. 320). As it can be seen in Figure 1, TAM adopts the connection between

attitude, intention and actual behavior from the TRA, and additionally includes a direct relationship between Perceived Usefulness and Behavioral Intention, which has been theoretically justified and empirically proven by a number of different intention models (Davis et al., 1989).

Perceived Usefulness and Perceived Ease of Use have been accepted by many researchers as two important and valid constructs for describing a person's intention to adopt a new information technology. Yet, even though "numerous studies have found that TAM explains a substantial proportion of variance, typically 40%, in usage intentions and behavior" (Zhang, Zhu & Liu, 2012, p.1903) in subsequent research additional exploratory beliefs were integrated, in order to take the specific contexts of different technologies into account.

Figure 1 - Technology Acceptance Model



3.1.3 Extension of the Technology Acceptance Model

In 2000, Venkatesh and Davis developed an extension of the original TAM, with the purpose of describing the drivers that influence the Perceived Usefulness construct, and how their impact changes with an increased familiarity of the used technology. The extension of the TAM, also referred to as TAM2, included additional drivers as antecedents for Perceived Usefulness, categorizing them in social influence processes and cognitive instrumental influences (Venkatesh & Davis, 2000).



First, three social influence processes describe the effect of interrelated social factors that influence a person when deciding whether to use a new technology or not: Subjective Norm, Image and Voluntariness. Second, TAM2 considered four cognitive factors that also influence the Perceived Usefulness belief: Job Relevance, Output Quality, Result Demonstrability and Perceived Ease of Use (Venkatesh & Davis, 2000). A definition of the additional factors will be presented in Table 1. Moreover, the effect of the added factors were tested, depending on the experience an individual has with the use of a particular technology and also took into account if the technology adoption was mandatory or voluntary (Venkatesh & Davis, 2000).

3.1.4 Theory of Planned Behavior

One of the limitations of the TRA was that individuals might not always have the opportunity or the resources to perform an intended behavior, which is why a mere intention might not be sufficient to predict an individual's action. To address this limitation, Ajzen (1991) refined and expanded his TRA into the Theory of Planned Behavior (TPB). He introduced the idea “that behavioral achievement depends jointly on motivation (intention) and ability (behavioral control)” (Ajzen, 1991, p. 182) by including the construct of Perceived Behavioral Control. While it is obvious that the actual behavioral control is most important for predicting behavior, as a person cannot perform an action if the necessary resources are not available, the author argues that it is more interesting to investigate how the individual's perception of behavioral control influences his or her actions. In the TBP the Perceived Behavioral Control factor is referred to as “people's perception of the ease or difficulty of performing the behavior of interest” (Ajzen, 1991, p.183) and influences Behavioral Intention, as well as the actual behavior.

To conclude, in the TPB the Behavioral Intention is determined by the attitude towards the behavior and the Subjective Norm, as well as the newly incorporated concept of Perceived Behavioral Control. Thus, when comparing it to the TAM, which only focused on internal perceptions for predicting Behavioral Intention, the TPB also considers external factors (Zhang et al., 2012).

3.1.5 Diffusion of Innovation Theory

The Diffusions of Innovations Theory was developed by Rogers (1962) and focuses on how innovations are accepted and implemented in a social system. An innovation is described as “an idea, practice, or object perceived as new by an individual or other unit of adoption” (Rogers,



1962, p.12). Innovations hold different characteristics that affect the adoption rate. The first characteristic is relative advantage, stressing that an innovation that holds advantages compared to the existing system, is more likely to be implemented. Thus, people's perceptions of the innovation's advantages guide at what pace the implementation occurs. The second characteristic, compatibility, considers whether the innovation is compatible with the potential adopters' way of life. A compatible innovation (i.e. that aligns with the adopters values) is more likely to be implemented, than an incompatible innovation. The third characteristic, complexity, evaluates whether the potential adopters find the innovation hard to understand and use. Thus, the less complex an innovation is, the more likely it is to be implemented. The fourth characteristic, trialability, stresses that an innovation that can be tested, before it is fully implemented, is likely to spread at a faster pace. As a potential adopter is faced with the option to try an innovation first, the perceived uncertainty of that individual is reduced. The last and fifth characteristic is observability, which refers to the visibility of an innovation, with a higher exposure of an innovation leading to a higher rate of adoption. Thus, the more individuals are able to observe the innovation, the more individuals will adopt it. These five qualities are considered being the most influential attributes to explain the rate at which an innovation is adopted. However, personal innovativeness of the possible adopters should also be taken into consideration when looking at the rate of adoption, as individuals differ in the pace in which they adopt new ideas (Rogers, 1962).



Table 1 – Overview of Constructs Presented in Established Intention Models

Model	Authors	Construct	Definition
Theory of Reasoned Action (TRA)	Fishbein & Ajzen(1975)	Behavioral Intention	How likely one is to perform a certain behavior (in his or her own perception)
		Attitude	An individual's positive or negative feelings (evaluative affect) about performing the target behavior (p.216)
		Subjective Norm	A person's perception that most people who are important to him think he should or should not perform the behavior (p.302)
Technology Acceptance Model (TAM)	Davis (1989)	Perceived Usefulness (U)	The degree to which a person believes that using a particular system would enhance his or her job Performance (p.320)
		Perceives Ease of Use (EOU)	The degree to which a person believes that using a particular system would be free of effort (p.320)
Extension of Technology Acceptance Model (TAM2)	Moore & Benbasat (1991)	Image	The degree to which use of an innovation is perceived to enhance one's [...] status in one's social system (p.195)
	Venkatesh & Davis (2000)	Job relevance	Individual's perception regarding the degree to which the target system is applicable to his or her job. (p.191)
		Output quality	Consideration of what tasks a system is capable of performing and the degree to which those tasks match their job goals (p.191)
		Result demonstrability	Tangibility of the results of using the technology (p.192)
Theory of Planned Behavior (TPB)	Ajzen (1991)	Perceived Behavioral Control	People's perception of the ease or difficulty of performing the behavior of interest (p.188)
Innovation Diffusion Theory (IDT)	Rogers (1962)	Relative Advantage	The degree to which an innovation is perceived as better than the idea it supersedes (p.15)
		Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters (p.15)
		Complexity	The degree to which an innovation is perceived as difficult to understand and use (p.16)
		Trialability	The degree to which an innovation may be experimented with on a limited basis (p.16)
		Observability	The degree to which the results of an innovation are visible to others (p.16)

3.2 Factors Influencing M-Commerce Adoption

This section will provide an overview of different factors that influence an individual's usage intention of m-commerce services. Five different categories of factors will be examined. Three categories are based on the different role a user of m-commerce services holds, and the



remaining two consider a utilitarian and hedonic perspective. At the end of the chapter, Table 2 will illustrate an overview of the different factors.

3.2.1 Hedonic Factors

Mobile devices are not only playing a functional part of an individual's life, but are also commonly used to stimulate hedonic needs. Arnold and Reynolds (2003) presented six hedonic factors that influence a customer while shopping. Ono, Nakamura, Okuno and Sumikawa (2012) applied them to a m-shopping perspective, when investigating what factors contribute to a customer's intention to browse on a mobile device.

The first motivation, value motivation, entails the perceived pleasure customers receive through hunting for deals and bargains with their mobile device. The mobile device enables the customers to easily fulfill this need, as they do not have to visit different physical stores to compare prices and make the best deal, rather they can open a browser with a few clicks (Ono et al., 2012).

The second motivation for mobile shopping is the role motivation, which is the perceived satisfaction consumers feel while shopping for others. It is the enjoyment the consumers attach to, for example, buying a gift for a relative (Ono et al., 2012).

Adventure motivation is the third motivation, which is the customers' perception of shopping being an exciting experience. The enjoyment is not only obtained through physical interaction with the store, but can also be experienced when customers visit a website or application not used before (Webster, Trevino & Ryan, 1993). However, the customers may not experience the same stimuli in a store as they do through a mobile device. While in-store experiences provide the customer with sensory attributes, mobile shopping offers enjoyment through the use of technology (Ono et al., 2012).

The fourth motivation, social motivation, focuses on shopping as a social activity, conducted with, for instance, family or friends. Mobile shopping enables consumers to share content and discuss different types of products or services with a community. Social motivation in m-commerce encourages electronic word-of-mouth, however, it does not cater for the need of physical social interaction with friends and family which can only be experienced in the traditional way of shopping (Ono et al., 2012).

The fifth motivation, gratification motivation, is when shopping is used as a function to aid a physical condition and serves as a therapeutic activity. The mobile device and its portable



nature enables the customer to browse and shop for items whenever they have the emotional need to do so (Ono et al., 2012).

The last and sixth motivation is idea motivation, which focuses on the desire to stay up to date. In this case, the mobile device is used as a tool to obtain information about the latest trends at high speed, which saves the user time compared to learning about trending products in a physical store (Ono et al, 2012).

Another factor, that exhibits both hedonic and utilitarian ideas and is considered by many researchers in the field of technology acceptance, is media richness (Daft & Lengel, 1986; Brunelle, 2009) which takes customers feelings and emotions into account (Li, Dong and Chen, 2012). Media richness is the extent to which a medium is able to provide immediate feedback, deliver personalized content, convey emotional messages from the communicator and to deliver feedback cues (Brunelle, 2009; Li, Dong & Chen, 2012).

3.2.2 Utilitarian Factors

Utilitarian factors also need to be taken into account, since mobile users do not merely use their cellular devices for fun, but also in order to solve problems (Yang, 2010). Utilitarian performance expectancy is a factor that considers to what extent a person believes that the usage of a technological service will aid and simplify the process (Venkatesh, Thong & Xu, 2012). Another utilitarian factor is time convenience, which influences the perceived value of using a mobile device and explores whether the service can be conducted in a timely manner. Time convenience means that the user assesses whether the value derived from using the service is appropriate compared to the time invested (Kleijnen, Ruyter & Wetzels, 2007). A factor that accounts for the interactive nature of novel technologies is user control, which is defined as “the extent to which consumers can determine the timing, content and sequence of a transaction” (Kleijnen et al., 2007, p.36). If consumers feel that they have more control of the process, the outcome and the channel is perceived to be of higher value.

Perceived Usefulness focuses on the question if using a technology will enhance the individual's performance (Davis, 1989), and can, therefore, be considered as a utilitarian factor. It evaluates whether or not the user believes that the system is advantageous to use, thus if the technology increases the user's productivity and efficiency. As mentioned before, Perceived Usefulness was traditionally introduced in the TAM model, focusing on performance in an organizational



setting (Davis, 1986). Zhang et al. (2012) conducted a meta-analysis of m-commerce adoption studies. The authors found that in the specific context of m-commerce, the influence of Perceived Usefulness on Behavioral Intention was examined in 38 out of 58 studies, and proved to be particularly strong compared to other inter-variable relationships that were tested. This result not only underlines the popularity of the Perceived Usefulness construct among m-commerce researchers, but also confirms the validity of its influence on an individual's intention to use a m-commerce service (Zhang et al., 2012).

3.2.3 Technological Factors

Before m-commerce technology was developed, Thompson, Higgins and Howell (1991) created a framework describing factors that determine whether an employee will start using a personal computer or not. One of the influencing determinants the authors postulated was facilitating conditions, which was originally presented in Triandis' Theory of Interpersonal Behavior. In its original meaning, facilitating conditions take into consideration that a behavior will not be performed if certain environmental circumstances prevent it. Triandis' (1979) definition of the construct was cited by Thompson et al. (1991) as "objective factors, 'out there' in the environment, that several judges or observers can agree make an act easy to do" (p.205). Schultz and Slevin (1975) suggested that managerial as well as technical support to use a system in an organizational context is one possible manifestation of a facilitating condition and Robey (1979) supported this idea with empirical evidence suggesting a positive relationship between system usage and support/resistance (Robey, 1979).

In the context of mobile service adoption, Rao and Troshani (2007, p.68) argue that facilitating conditions include "handset subsidies, free content, mass advertising campaigns and active promotion aimed at increasing awareness about mobile services". Moreover, Yang (2010) provides empirical support that facilitating conditions have a positive influence on the Behavioral Intention to use mobile shopping services and points out that especially a well designed user-interface will encourage an individual to use m-commerce services. Even though several authors include the factor Facilitating Conditions in their Information System adoption models, it is striking that in each research, different manifestations of that construct are emphasized.

Another construct that can be considered as a type of facilitating condition is Perceived Ease of Use, introduced in the TAM and defined in the previous chapter. In the context of m-commerce



adoption the relationship between Perceived Ease of Use and Behavioral Intention, or Perceived Ease of Use and attitude towards m-commerce has been investigated many times. The meta-analysis of m-commerce adoption literature by Zhang et al. (2012) showed that out of 58 studies, which examined factors that influence the individual's willingness to use m-commerce services, 30 articles included the relationship between Perceived Ease of Use and Behavioral Intention and 16 articles considered the relationship between Perceived Ease of Use and Attitude. For both relationships a significant correlation was identified, which shows that the construct, introduced in the TAM, plays an important role in the context of m-commerce. Moreover, the meta-analysis revealed that the factor Perceived Ease of Use has an especially strong influence on Perceived Usefulness (Zhang et al., 2012). For m-commerce services that means: the easier it is to use a service the more useful this service is for the individual, and consequently the higher is the individual's willingness to use the service. Rao and Troshani (2007) point out that, for instance, the limited screen size of a mobile device is a critical characteristics of m-shopping that might harm the ease of use.

Other authors have described the concept Perceived Ease of Use with different terms, such as complexity (Rogers, 1962) and effort expectancy (Venkatesh et al., 2012). The latter has been included in Yang's (2010) model to explain determinants of m-shopping adoption in the United States, where it showed a significant influence on the utilitarian and hedonic performance expectancy.

There are more technical factors mentioned in the academic literature, which can facilitate the usage of m-commerce services. For instance, Kim, Chan and Gupta (2007) argue that the technicality, which is described as the technical quality of the service, is an important factor for the adoption of mobile Internet. Technicality is influenced by the "system reliability (whether the system is error-free, consistently available and secure), connectivity (whether connection is instant and straightforward), and efficiency (whether loading and response time is short)" (Kim et al., 2007, p.116). Additionally, Hung, Ku and Chang (2003), found empirical indication for a positive relationship between the connection speed of wireless application protocol (WAP) services and an individual's attitude towards these services.



3.2.4 Social Factors

As already mentioned in chapter 3.1.3, Venkatesh and Davis (2000) added social influence processes to the original TAM, in order to draw a more complete picture of the factors that influence an individual's usage intention. The authors included the determinant Subjective Norm which was already presented in the TRA and is defined in Table 1. In their research, Venkatesh and Davis (2000) found that Subjective Norm has a significant impact on the intention to use as well as on the Perceived Usefulness of the technology in question. However, their results also revealed that this influence is mediated by the individual's experience with the technology, meaning that an increased level of experience decreases the influence of Subjective Norm. Yang (2010; 2012) confirmed the influence of Subjective Norm on the Behavioral Intention for the context of m-commerce adoption. The author argues that because of the technological complexity of m-shopping services, and the personal nature of mobile devices, users are likely to "be cautious about adopting mobile shopping and show a strong tendency to rely on significant others' opinions in making the decision to adopt" (Yang, 2012, p.485). The meta-analysis of m-commerce adoption literature by Zhang et al. (2012) underlines the importance and validity of the Subjective Norm construct in mobile shopping research, stating that its impact on Behavioral Intention was analyzed in 21 out of 58 studies. Subjective Norm was found to have a significant effect on Behavioral Intention as well as Perceived Usefulness.

The impact of Subjective Norm on Perceived Usefulness can be explained with the image construct, which was also included in the TAM2. People might start using a mobile commerce service because it helps them "create, alter or preserve a positive image and social status for themselves within their social setting" (Rao & Troshani, 2007, p.65). Thus, the usefulness of a service is not only created by addressing a necessity but also by contributing to the creation of an aspired image.

Finally, Nysveen, Pedersen and Thorbjørnsen (2005) point out that normative pressure, which the author uses interchangeably with Subjective Norm, has only a significant impact on the Behavioral Intention to use a mobile service, if the service includes an opportunity to interact with other users. On the contrary, users are not influenced by their social environment if the considered mobile service is used in isolation.



3.2.5 Transactional Factors

The person who uses a m-commerce service is not only a user of a new technology, but also enters a relationship with a service provider or business. For instance, mobile users buy apps from app-developing companies for which they pay a small amount of money. Another option is that a business provides a mobile app which is supposed to improve the company's customer service. Regardless of the type of service that is being offered, there are a number of factors discussed in the field of m-commerce adoption, which are based on the relationship a user has with the service provider.

Rao and Troshani (2007) point out that trust is a vital factor in every mobile environment, because there are uncertainty and risks present, which are caused by an information asymmetry between user and provider. Researchers who investigated different mobile services have all agreed that there are two important elements that create trust: privacy and security (Lu, Yu, Liu & Yao, 2003; Wei, Marthandan, Chong, Ooi & Arumugam, 2009; Rao & Troshani, 2007). Therefore, one possible definition for the Trust factor is "the extent to which an individual believes that using m-commerce is secure and has no privacy threats" (Wei et al., 2009, p.376). According to Zhang et al. (2012) many researchers have found a significant relationship between Trust and Behavioral Intention, arguing that this factor is not to be neglected in this field of m-commerce research. Wang (2003) and Wang, Ling and Luarn (2006) use the concept of perceived credibility in a similar manner to the Trust construct, also by basing it on the elements security and privacy.

Based on early studies about human decision making and the role of risk (Taylor, 1974), some researchers have incorporated the construct of perceived risk in their m-commerce adoption model. Wu and Wang (2005) state that people who are conducting some kind of online transaction are always anxious about different types of risks that could be of a psychological, social, financial or physical nature. A typical example is the concern about product quality, if the product has only be examined on a computer or mobile screen prior to the purchase.



Table 2 - Overview of Constructs Presented in M-Commerce Adoption Research

Construct		Definition	Influenced Variable	Authors
Hedonic Factors	Role motivation	The enjoyment that consumers acquire in the process of shopping for others and the excitement and intrinsic joy felt by shoppers when they find suitable items for others (p.158)	Behavioral Intention	Ono et al. (2012)
	Value motivation	Shopping for sales, looking for discounts, and hunting for bargains (p. 157)		
	Adventure motivation	Stimulation, adventure, and the feeling of being in another world when in shopping places (p. 157)		
	Social motivation	Shopping for enjoyment with friends and family [3]. Consumers enjoy socializing with others while shopping, an activity that provides an opportunity to bond with other shoppers. Thus, consumers are likely to browse physical stores because of social motivation (p. 159)		
	Gratification motivation	Shopping for stress relief, shopping to relieve a negative mood, or shopping as a special treat to oneself (p. 160)		
	Idea motivation	A motivation to keep up with trends and new fashions and to see new products and innovations (p. 161)		
	Media richness	a medium's ability to convey certain types of information and is determined by its capacity for immediate feedback, the multiple cues and senses involved, language variety, and personalization (p.224)	Behavioral Intention	Brunelle (2009)
		Emotion	Li, Dong & Chen (2012)	
Utilitarian Factors	Performance expectancy	Considers to what extent a person believes that the usage of a technological service will aid and simplify the process (p.159)	Behavioral Intention	Venkatesh, Thong & Xu (2012)
	Time convenience	How the mobile channel can deliver time-related benefits (p. 44)	Behavioral Intention	Kleijnen et al. (2007)
	User control	The extent to which consumers can determine the timing, content, and sequence of a transaction (p.36)	Behavioral Intention	
	Perceived usefulness	See TAM Table 1		



Social F.	Subjective norm	See TRA Table 1		
	Image	See TAM2 Table 1		
	Normative pressure	Used interchangeably with subjective norm	Behavioral Intention	Nysveen et al. (2005)
Technological Factors	Facilitating conditions	Objective factors, 'out there' in the environment, that several judges or observers can agree make an act easy to do (p.205)	Behavioral Intention	Triandis (1979)
	Support / resistance	The implementation of the systems is supported by the organization	-	Robey (1979)
	Perceived ease of use	See TAM Table 1		
	Complexity	See IDT Table 1		
	Effort expectancy	Degree of ease associated with consumer' use of the system (p.159)	Behavioral Intention	Venkatesh et al. (2012)
	Technicality	The degree to which M-Internet is perceived as being technically excellent in the process of providing services (p.116)	Perceived Value	Kim et al. (2007)
	Connection speed	Connection speed of browser (WAP services)	Attitude	Hung et al. (2003)
Transactional Factors	Trust	The extent to which an individual believes that using m-commerce is secure and has no privacy threats (p.376)	Behavioral Intention	Wei et al. (2009)
	Perceived credibility	Refers to the two important dimensions – security and privacy – that are identified in most studies as affecting the users' intention to adopt the online transaction systems		Wang (2003)
	Perceived Risk	The user's subjective expectation of suffering a loss in pursuit of the desired outcome (p.A3)		Pavlou (2002)

4. Research Model and Hypotheses

The theoretical framework that serves as a basis for the quantitative data collection and analysis of this study considers factors from the five previously presented categories. Including factors from all categories will draw a broad picture of how an individual's decision to adopt m-commerce services is influenced. The following section will explain the composition of the theoretical framework and state the hypotheses that will be tested. The research model will be presented at the end of the chapter in Figure 2.

4.1 Technological and Utilitarian Factor

AlHinai et al. (2007) point out that the common concept that is incorporated in many technology adoption and diffusion studies is the influence of an individual's attitude towards the new



technology on the intention to use this particular technology. Among many other theories about the acceptance of novel technologies, the TAM is a well-established model that picks up on this connection between attitude, intention and behavior. In addition to this connection, the TAM presents Perceived Ease of Use and the Perceived Usefulness as the constructs that precede the attitude formation.

The TAM was chosen to constitute the basis of the theoretical model developed in this study, as “it consistently explains a substantial proportion of the variance in usage intentions and behavior [and] has become well-established as a robust and powerful model for predicting user acceptance” (Zhang et al., 2012, p.1903). Since no study could be found in which the TAM was applied to the m-commerce technology within the Swedish grocery industry, this thesis will further contribute to the validation of this established model, testing it in an environment which represents a new empirical context. Based on Davis’ (1986) TAM, the first five hypotheses for this study are:

H1. Attitude towards mobile shopping for groceries has a positive influence on intention to adopt mobile shopping.

H2. Perceived Ease of Use has a positive influence on Attitude towards mobile shopping for groceries.

H3. Perceived Ease of Use has a positive influence on Perceived Usefulness.

H4. Perceived Usefulness has a positive influence on Attitude towards mobile shopping for groceries.

H5. Perceived Usefulness has a positive influence on intention to adopt mobile shopping for groceries.

Bearing in mind how the different influential factors were categorized in chapter 3.2, the Perceived Usefulness construct can be considered as a representation of the utilitarian factors, whereas the Perceived Ease of Use construct can be regarded as a technology related factor.

4.2 Social Factor

One important limitation of the TAM is that it only focuses on internal perceptions in order to explain the acceptance of a new technology. It becomes clear that this established model lacks the ability to describe the role of external factors such as social influences or the impact of a



user's relationship towards the business that is providing the technology. Therefore, the theoretical framework needs to be extended, by including additional factors that consider all different categories, mentioned in chapter 3.2.

One of these important categories is social influence, which becomes relevant because a user of a mobile technology is also a member of a social network (AlHinai et al., 2007). A popular and frequently used construct that considers the influence of important persons in a social environment is Subjective Norm, which was included in the extension of the TAM (TAM2) as well as the TPB (Ajzen, 1991) and the TRA (Fishbein & Ajzen, 1975). Zhang et al. (2012) found that the influence of Subjective Norm on Behavioral Intention was investigated in 21 out of 58 studies about m-commerce adoption, confirming its importance in this particular research domain. The opinions and recommendations of important others are especially relevant when the technology in question is highly interactive (Nysveen et al., 2005). Because it is questionable to what extent a m-commerce technology in the grocery sector is perceived as being interactive, it is necessary to examine what role social influence plays in this study. The hypothesis under examination is:

H6. Subjective Norm has a positive influence on intention to adopt mobile shopping for groceries.

4.3 Transactional Factor

Since most of the m-commerce services require the user of the technology to enter into a relationship with a service provider, the influence of transaction related factors should not be neglected. The screening of previous m-commerce literature revealed that the Trust construct is frequently used to account for the relationship a user has with the service provider in question. Several authors found that users of mobile shopping services are “highly sensitive to issues of cost, risk, privacy, network security, transaction protection, and trust” (Groß, 2015, p.226). Wei et al. (2009) point out that trust is especially important in an m-commerce environment, because transactions are conducted through an impersonal technology, whereas a face-to-face contact is absent. Therefore, the Trust construct will be incorporated into the theoretical framework, defined as “the extent to which an individual believes that using m-commerce is secure and has no privacy threats” (Wei et al., 2009, p.376). The following hypothesis will be examined:



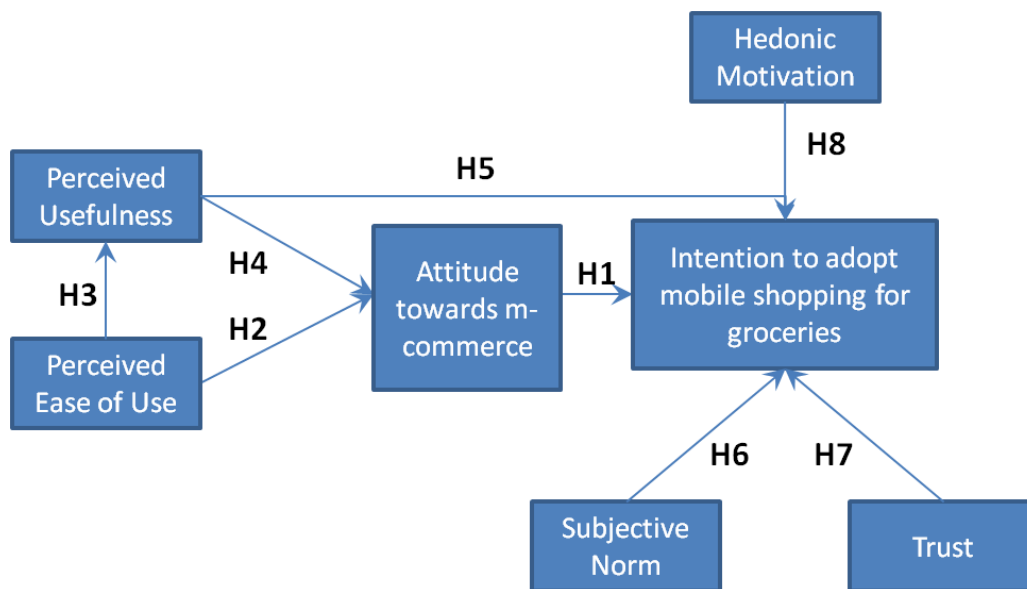
H7. *Trust has a positive influence on intention to adopt mobile shopping for groceries.*

4.4 Hedonic Factor

As previously mentioned, mobile devices do not merely play a functional role in people's lives, but also satisfy certain hedonic needs. By screening previous research that considers hedonic factors in a m-commerce context, six different concepts from a study by Ono et al. (2009) were identified as relevant in the field of m-commerce. However, as grocery shopping is a rather functional process, not all of the hedonic factors were considered being relevant when applying them to this study. For instance, one of the neglected factors was *Adventure Motivation*, as it included questions such as "I feel like I am in my own universe while shopping" (Ono et al., 2009, p.175), which the authors did not find being entirely applicable to the grocery sector. Another factor that was excluded was *Social Motivation*, as it was found to be overlapping with the factor Subjective Norm. Moreover, the *Gratification Motivation* and *Role Motivation* were also neglected in this study, due to their emotional and social nature, which were not found to be suitable in a grocery shopping setting (Ono et al., 2009). Finally, two of the six factors presented by Ono et al. were found to be relevant for the specific setting of m-commerce in the grocery industry; *Idea Motivation* and *Value Motivation*. They focus on the customer's perception of incorporating their mobile device into the shopping process (e.g. I would like to use my mobile device to stay updated to the latest trends) and what value can be derived from using it (e.g. I would like to use my cellular device to compare the price of goods). In this study, both of these factors will be combined to the concept Hedonic Motivation and the following hypothesis will be examined:

H8. *Hedonic Motivation has a positive influence on intention to adopt mobile shopping for groceries.*

Figure 2 - Research Model and Hypotheses



5. Methodology

In this chapter the research methodology will be thoroughly explained in order to provide an understanding of how the study was conducted and how the results were obtained. This information is valuable when comparing the study to previous research or interpreting the results of the analysis.

In order to gain a general understanding of the nature of the study, chapter 4.1 and 4.2 will define its boundaries along with the research objective and research design. The following chapter 4.3 will discuss and justify how the empirical data was collected, thus argue for the choice of method and reasoning for the chosen questionnaire design. Following the data collection, chapter 4.4 will present information about the sampling technique, which also includes a brief profile of the Swedish retailer who distributed the questionnaire to its customers, and a description of the individuals who were invited to participate in the survey. As soon as the targeted sample had been defined, the researchers were able to conduct pre-tests, which will be discussed in chapter 4.5. Based on the results of the pre-tests, the operationalization of the measured concepts will be explained in chapter 4.6. Lastly, chapter 4.7 elaborates on the



response quality, meaning that the validity and reliability, the response rate as well as the quality of the received data will be discussed.

5.1 Research Objectives

The research question, *What factors influence the Swedish consumer's intention to use a mobile device in the grocery shopping process?*, determines the nature of this study as it holds three different indications about the boundaries of the conducted research.

First, this thesis focused on the factors that influence the decision making process of an individual to adopt a relatively new technology. A number of previous studies have investigated these influencing factors from different perspectives and in different environments, which enabled the authors to consider the factors that are most relevant in the specific context of grocery retailing. Second, the technology examined in this thesis is referred to as m-commerce. As previously mentioned, m-commerce is not restricted to the mere purchase of goods, but also includes other functions, such as the collection of product information, searching for discounts and creating shopping lists. Third, the research question indicates that the present study was conducted in the specific context of the Swedish grocery retailing sector. This decision was based on the geographic location of the two authors, as well as the objective to contribute to the limited academic research about m-commerce adoption in the Swedish grocery industry.

5.2 Research Design

In order to answer the stated research question, a conclusive research design was chosen. While an exploratory research aims at providing insights about a topic that is not well investigated yet, a conclusive research design is used when prior knowledge about a topic already exists and the information that is needed is clearly identified (Malhotra, 2010). In a conclusive research design, the researcher typically specifies and tests hypotheses that have been introduced in previous studies and examines the relationships between different variables (Bryman & Bell, 2011).

The decision to use a conclusive research design was made, since there is already a significant amount of knowledge about an individual's intention to use a novel technology. Not only have well established models about technology acceptance, such as the TAM and the IDT already



been introduced at the end of the last century, but they have also recently been applied to the specific field of m-commerce adoption. Deducing hypotheses “on the basis of what is known about a particular domain and of theoretical considerations in relation to that domain” (Bryman & Bell, 2011, p.11) can be referred to as the process of deduction. The hypotheses developed in this study are based on a number of different previous studies. For instance, five of the hypotheses were incorporated from the TAM, which was developed by Davis already in 1986. These hypotheses represent the assumption that Perceived Usefulness and Perceived Ease of Use have a significant influence on the attitude towards a certain technology and consequently a person’s intention to use this technology. While originally these hypotheses were tested in an organizational context, they have later been applied to various environments such as the fashion (Kim, Ma & Park, 2009) or banking industry (Lin, 2010). In this master thesis they will be applied to the Swedish grocery environment. The rejection or confirmation of these hypotheses will contribute to the existing literature, as so far no research has investigated if they hold true in this specific context.

Hypotheses are tested with quantitative methods that collect a large amount of data from large samples. By using a quantitative research design, the researchers followed a positivist ontology, which is based on the idea that “the social world exists externally, and that its properties should be measured through objective methods, rather than being inferred subjectively through sensation, reflection or intuition” (Easterby-Smith, Thorpe & Jackson, 2008, p.57). The term *objective* indicates that positivist researchers assume that the world consist of only one single reality, leaving no freedom for different interpretations. This research philosophy entails a quantitative data collection which aims at confirming or rejecting certain predetermined ideas about the reality, the hypotheses. In this study, hypotheses about factors that influence an individual’s intention to use a mobile device for grocery shopping will be formulated. It has to be considered that this very narrow research is associated with the limitation that no insights will be gathered about factors that are not included in this study, and no deeper understanding of the factors that are included in this study is sought. The research focuses on the strength of the factors’ influence on an individual's decision making process and the factors’ relationship to each other.



5.3 Data Collection

Due to the quantitative nature of the research design, the collection of data was conducted in a structured manner, using a formal Web-questionnaire that contained mostly fixed-alternative questions (Malhotra, 2010). A more detailed explanation of why a Web-survey was chosen and the structure of the questionnaire will be presented in this chapter.

5.3.1 Method of Data Collection

The validation of the posed hypotheses aims at examining the relationship between different factors that influence an individual's decision to adopt mobile shopping. According to Easterby-Smith et al. (2008, p.90), this research objective can be described as the attempt to build a "close approximation of the reality", which is typically achieved by using surveys as the method of data collection. Surveys allow the researcher to measure the underlying factors simultaneously and to identify possible relationships between the examined variables. The most popular form of data collection are structures surveys that make use of a questionnaire in which respondents chose their answers from a predetermined set of options, because they entail many advantages; the acquired data is reliable as the variety of possible answers is limited, the questionnaire is easy to administer and the interpretation of the data does not require transcribing the responses (Malhotra, 2010).

There are a number of different survey methods that can be taken into consideration for collecting data; telephone interviewing, personal interviewing, mail interviewing and electronic interviewing (Malhotra, 2010). For this master thesis, a Web-based questionnaire was chosen for the process of data collection. This method appeared to be most appropriate, as the predetermined time frame and the financial budget of the project were limited and a Web-based questionnaire is considered to be the fastest and cheapest option to collect data from large sample (Malhotra, 2010; Bryman & Bell, 2011). Google forms was used as a questionnaire software, which has the advantages that it is cost-free, it collects the answers of an unlimited number of respondents and saves the responses directly in an Excel spreadsheet which can easily be imported in the statistical analysis software SPSS. The respondents, all of which were Coop Online customers, were invited to the Web-questionnaire with an email that was sent out by the company on 23rd of April, 2015. From that day on, the survey was accessible online for 10 days. The authors made an agreement with Coop Online that the Web-questionnaire was



sent out to the customer database only once, in order not to exceed the regular amount of emails a customer receives from the company.

However, there are also disadvantages associated with the use of a Web-questionnaire. The most severe disadvantage is the risk that only a small amount of people will complete the questionnaire, resulting in a low response rate (Bryman & Bell, 2011). Malhotra (2010) points out that several measures can be taken in order to increase a respondent's willingness to complete a questionnaire. Many of these measures are associated with the questionnaire design, which will be examined further in the next chapter.

5.3.2 Questionnaire Design

The survey was designed as a self-completion questionnaire (see appendix 1), meaning that the respondents accessed the Web-survey and answered the questions by themselves, without being in direct contact with the researchers. One main advantage of this type of study is that there is no interviewer effect that could possibly bias the results. For instance, respondents who are asked a question directly by an interviewer, over the phone or face-to-face, might answer based on social desirability (Bryman & Bell, 2011).

Despite the advantages associated with self-completion questionnaires, certain drawbacks of this kind of data collection should not be neglected. Firstly, the researcher is not able to aid the respondent if there are any difficulties or misunderstandings while filling out the questionnaire. Secondly, many respondents do not want to put much effort into answering the questions, especially when they do not have any incentive to do so. Both of these arguments are possible reasons for a low response rate or a large number of missing data resulting from only partially answered questionnaires (Bryman & Bell, 2011). Taking these dangers into consideration, the questionnaire design follows a few basic principles.

First, the respondents should be able to answer all questions by indicating their personal opinion, without requiring any prior knowledge regarding m-commerce. Therefore, all the questions were formulated as simple as possible and in a hypothetical context, so respondents who have not used a mobile device for their grocery shopping would still be able to state their opinion. Secondly, Bryman and Bell (2011) emphasize that clear instructions for answering the questions are needed, to ensure that the respondents understand what is expected from them



and do not get confused while completing the questionnaire. Therefore, a clear and simplistic design for the Web-questionnaire was chosen and detailed explanations on how to answer the different kinds of questions were included. Lastly, in order to avoid the respondent's fatigue, which can be a result of answering too many questions (Bryman & Bell, 2011), the questionnaire was kept as brief as possible, while still including as many questions as needed to test the stated hypotheses. Chapter 5.6 will further discuss how the examined concepts were operationalized.

Moreover, a well planned questionnaire structure can further increase the respondent's willingness to answer, as it can minimize the required effort and increase the motivation to respond (Malhotra, 2010). To start with, an appropriate invitation to the questionnaire is essential for increasing the response rate, as it influences an individual's decision whether to take part in the survey or not. Following the recommendation provided by Malhotra (2010) and Bryman and Bell (2011) for formulating the invitation, the email that was sent out by Coop Online contained information about the topic and purpose of the study, an explanation about why the respondent was invited, and the guarantee that the data will be treated confidentially and anonymously. Furthermore, the cooperation between Coop Online and Lund University was emphasized, in order to add credibility and integrity to the study.

It was important to the authors that all respondents had a clear understanding of the purpose of the study. However, since m-commerce in the Swedish grocery industry is not yet widespread, and grocery m-commerce can take various shapes including a number of different functions, it was likely that a large portion of the respondents did not hold a common understanding of this topic. Consequently, a precise yet brief introduction was added in the beginning of the questionnaire that aimed at further explaining the m-commerce concept. The introduction to the questionnaire is attached in appendix 1, along with all the questions that were asked.

The questions were divided into three different sections. The first section contained three opening questions that aimed at making the respondents more familiar with the topic and generated valuable, practical insights for Coop Online (Malhotra, 2010). For instance, the first question listed eight different functions of m-commerce in the grocery sector and asked the respondents to choose which three would be most appealing if Coop Online would introduce a m-commerce service in the future. The predetermined alternatives to answer this question were based on a grocery m-commerce study conducted by eMarketer (2014b) in the United States.



Following the opening questions, on the third and fourth page of the Web-questionnaire, the basic information was obtained. According to Malhotra (2010, p.350) the basic information “relates directly to the research problem”, which in this case is represented by 24 questions that are used to measure the different concepts illustrated in the research model. Questions that obtain basic information should be asked in the beginning, since they are highly relevant for the research objective. Moreover, these questions were asked in a logical order, meaning that all questions regarding one construct (e.g. Subjective Norm) were grouped and asked before introducing a new construct (Malhotra, 2010).

To conclude, the third section contained seven classifying questions about the respondents’ demographic and socioeconomic characteristics. The information obtained through these questions enabled the authors to analyze if the results differ based on personal characteristics, such as gender, age, or educational background. These questions were asked at the end of the questionnaire, because the respondents will have built trust in the survey and are less likely to refuse to answer personal questions (Malhotra, 2010). In order to ensure that these questions were asked in an appropriate and previously tested manner, they were drawn from Statistiska Centralbyrån (2014).

5.4 Sampling

5.4.1 Profile of Partner Company – Coop Online

In order to obtain valuable insights about the mobile shopping behavior of the consumers in the Swedish grocery industry, the authors sought a cooperation with a retailing company in this industry that could grant access to its customers. After contacting and introducing Claes Hessel, CEO at Coop Online, to the research idea, he agreed to such a cooperation in which he would distribute the survey to his customers. Coop Online is the e-commerce division of Sweden’s second largest retailing groups, Coop Sweden AB. The e-commerce business operates from the website, www.cooponline.se, on which the customers have access to a broad assortment of products including all different kinds of groceries, as well as hygiene and household items. After the customer has placed an order, the goods are delivered to the customer’s doorstep, Monday through Friday. However, not all customers in Sweden are able to order via Coop Online, as the



company offers this service only in larger cities. A ZIP-Code-Check allows the customers to check if the retailer delivers to their area.

Within the scope of the cooperation between Lund University and Coop Online, the researchers were responsible for developing and designing the questionnaire, whereas Coop Online agreed to distribute the questionnaire to a portion of their registered customers who had previously used their service. However, before the questionnaire was sent out, Coop Online was able to review it and suggest changes, if required.

5.4.2 Sampling Technique

According to Easterby-Smith et al. (2008), the two basic principles that influence the researcher's decision regarding the sampling design are representativeness and precision.

First, representativeness means that the results obtained from the sample can be generalized for the whole population from which the sample was drawn, since the sample has the same characteristics as the population. Representativeness can be achieved by ensuring that every entity of the population has an equal chance of being selected, and the entities included in the sample are randomly chosen. On the contrary, bias can be introduced to the sample and decrease its representativeness through several reasons, such as the intentional exclusion of certain entities or a low response rate. The latter is a potential source of bias, because non-respondents might differ regarding certain characteristics compared to the people who responded (Easterby-Smith et al., 2008).

Secondly, precision means that the results of a sample are credible, because the "margin of error in the claims that are made will be low" (Easterby-Smith et al., 2008, p.215). The precision of a sample highly depends on the absolute sample size, while many different factors influence the minimum number of entities that should be included in the sample. For instance, high importance of the research, a large number of variables that are being investigated and a sophisticated analysis are all reasons favoring a large sample size (Malhotra, 2010). Easterby-Smith et al. (2008, p.215) stress that "small samples will always be less precise than larger samples".

There is typically a trade-off between a large sample size and having an unbiased sample, which forces the researcher to decide whether precision or representativeness is more important. Particularly in student projects, which have to be completed within a limited time



frame and under a restricted budget, a compromise has to be made (Easterby-Smith et al., 2008). For this research, the decision was made to maximize the sample size by sending out the questionnaire to all Coop Online customers who had ordered between 01.01.2014 and 23.04.2015. This approach was taken due to two reasons. Firstly, due to time constraints Coop Online was not able to draw a random sample, as it would have required more effort than sending it to every customer in the database. Secondly, because Web-surveys typically show small response rates, sending the invitation to a large number of customers ensured that the absolute sample size still reaches a decent level.

The approach that was taken can be described as a census, since every person of the population of active Coop Online customers was invited to take part in the Web-questionnaire (Malhotra, 2010). The results obtained from a census are valid for the entire population, however, the response rate has to be taken into consideration as a large number of non-responses can decrease the representativeness of the results. Therefore, the response rate for this survey will be discussed more detailed in chapter 5.7.2.

5.5 Pre-Testing the Questionnaire

Pre-testing the questionnaire prior to sending it out to the respondents is considered being a crucial step in the process of generating valuable data (Malhotra, 2010; Bryman & Bell, 2011). The pre-testing is conducted in order to identify problems that the respondents might have while completing the questionnaire, but also to improve the quality in order to get the best output (Malhotra, 2010). As the interviewers were not present when the respondents completed the self-administered questionnaire, the pilot study was important in order to ensure that the respondents fully comprehend the questions asked in the survey (Bryman & Bell, 2011). Accordingly, it is recommended that all parts of the questionnaire are tested. This includes, for instance, the wording of the questions, the questions' difficultness and answer options, as well as the instructions on how to complete the survey (Malhotra, 2010). In order to ensure that the Web-based questionnaire meets these standards, two pre-tests were conducted.

5.5.1 First Pre-study

According to Malhotra (2010), it is important to pre-test the questionnaire on respondents that are similar to those of the actual population. The Coop Online customers who received the questionnaire were familiar with e-commerce and included individuals of both genders from a



broad age group and different educational backgrounds, which can be observed in Table 4. Therefore, when the participants of the pre-study were selected, it was ensured that individuals with various different personal characteristics were included, and all of them were familiar with the concept of e-commerce. An overview of the participants of the first pre-study is illustrated in appendix 2.

Malhotra (2010) also suggests that the first pre-study is conducted through personal interviews, in order to observe any reaction that the respondent might have while completing the questionnaire. A debriefing method was used, where the respondents took the questionnaire and were asked to thoroughly explain how they interpreted each statement or question. Moreover, the participants had the opportunity to state any questions, comments or concerns they encountered while completing the questionnaire (Malhotra, 2010).

The first pre-study revealed valuable insights that were considered to further adopt and improve the established questions. Most of the changes that were made were based on wording and grammatical errors that affected the respondent's ability to answer the questions. In addition, the first pre-study resulted in the reduction of the number of questions that were included in the survey, as many participants pointed out the repetitive nature of the original measurements that led to a high frustration while answering the questions. Chapter 5.6 will further discuss the questions that were included in the final study.

5.5.2 Second Pre-study

After the initial pre-study, which included face-to-face interviews with the participants, a second pre-study was conducted in order to test the edited questionnaire when no interviewer was present. The respondents consisted of 15 individuals from different age groups (see overview in appendix 3) in order to finalize a questionnaire that is easy to understand and answer, yet still adheres to the academic standards needed to compare it to prior studies. Again, a debriefing method was used, where respondents were asked to describe their experience and understanding of the questions asked in the questionnaire (Malhotra, 2010). The second stage of pre-testing was conducted until the respondents had no further problems answering the questionnaire. The second pre-test identified minor issues, such as wording errors that were changed in order to finalize the questionnaire. The respondents did not find any difficulties with the actual items of the questionnaire, thus no further questions were excluded.



5.6 Operationalization of Theoretical Concepts

The theoretical model presented in chapter 4 holds a total of seven different concepts that are investigated in this study. The questionnaire distributed to Coop Online customers quantifies these constructs with the use of multiple-indicator measures, meaning that more than one question is asked for each concept. According to Bryman and Bell (2011) measuring a concept with more than one question is advantageous, as a single question can easily be misinterpreted and lead to a false classification of an individual. In this chapter, it will be elaborated on how the different concepts are measured. Table 3 provides an overview of the items that were included to measure each construct.

Table 3 – Overview of Questionnaire Items

Construct	Question	Code	Author
Perceived Usefulness	I believe that the use of a mobile device would make my grocery shopping process more effective	PU1	Davis (1989)
	I believe that the use of a mobile device would make my grocery shopping process more convenient	PU2	
	I think that I would save time by using a mobile device while shopping for groceries	PU3	
	I believe that, in general, using a mobile device in my grocery shopping process would have been useful	PU4	
Perceived Ease of Use	I believe that it would be easy for me to learn how to use a mobile device when shopping for groceries	PEOU1	Davis, (1989)
	I believe that I would understand how to use a mobile device to buy groceries	PEOU2	
	I believe it would be easy for me to become a competent user of a mobile device in the grocery shopping process	PEOU3	
	I think it would be easy to use a mobile device in the grocery shopping process	PEOU4	
Trust	I believe that the payment of goods would be secure when buying groceries through a mobile device	T1	Hung et al. (2012)
	I think the security policy would be trustworthy when buying groceries	T2	
	I consider the risk of abuse of confidential information (for example credit card number, bank account information) would be high when using mobile payments within FMCG	T3	



Subjective Norm	If people in my surrounding would recommend me to use my cellular devices in my grocery shopping process I would have used it	SN1	Fishbein & Ajzen (1975)
	I would use a mobile device when shopping for groceries if my friends were already using it	SN2	
	If the technology would be available, my friends would recommend me to use a mobile device in the grocery shopping process	SN3	
Hedonic Motivation	I would want to use my mobile device to see what new products are available	H1	Ono et al. (2012)
	I would want to use my mobile device to stay up to date with the latest trends	H2	
	I like to use my mobile device to compare goods in order to get the best value for my money	H3	
	I like looking for low priced goods through my mobile device	H4	
	I like using my mobile device to look for discounted goods	H5	
Attitude	I believe it would be advantageous to use my mobile device in my grocery shopping process	A1	Davis et al. (1989); Fishbein & Ajzen (1975)
	I think it would be a good idea to use a mobile device when shopping within FMCG	A2	
	I think it would be positive to be able to use my mobile device when shopping for groceries	A3	
Behavioral Intention	If the technology was available, I would use my mobile device to shop for groceries	BI1	Wang, Lin & Luarn (2006)
	If mobile shopping within FMCG was developed, I would prefer this way of shopping over the way I shop today	BI2	Barker et al. (2003)

5.6.1 Items Measuring the Concept

Perceived Usefulness (1-4)

The original construct Perceived Usefulness, drawn from the established TAM model, contained six questions testing individual's perception of the degree they perceive a technology to enhance their behavior (Davis, 1989). As these questions have already been tested on mobile shopping, they also had already been adjusted to this context to a certain extent (Wei et al., 2009; Wang et al., 2006; Lu & Su, 2009). However, the adjustments had neither been made in the context of the grocery industry, nor had they been translated into Swedish. Therefore, the questions were adapted to this specific research context. The first pre-test included translations of all six original items. However, the respondents faced difficulties telling two of the questions apart, due to the translation of the words effective and efficient into Swedish, where the two



words are most often used interchangeably by one term. Accordingly, one of the questions were taken out in the final questionnaire. Another question was also removed after conducting the pre-study, as the respondents found it being too repetitive which decreased their willingness to continue the completion of the questionnaire.

Perceived Ease of Use (5-8)

The second construct tested in the questionnaire, Perceived Ease of Use, was also drawn from Davis' TAM model (1989) and applied to the research context. The first pre-study included the six original items applied to the research context, however only four questions proceeded to the second pre-study, as the respondents were confused and bored by answering the questions. Respondents who had not used mobile commerce services for their grocery shopping found some of the questions not appropriate because they were not able to answer them due to their lacking experience. For instance, one of the original items posed by Davis states "I would find technology X to be flexible to interact with" (Davis, 1989, p.340). The participants were not able to answer this question, because they have not used a mobile shopping service yet and did also not understand what is meant by the word flexible. Thus, this item and one other item were excluded from the final questionnaire, ensuring that the respondents' confusion is eliminated.

Trust (9-11)

The third construct included questions regarding the respondent's level of trust towards the mobile device as a shopping tool in their path to purchase. The four items used to test the trust factors were drawn from a study conducted by Hung, Yang and Hsieh (2012), and modified to fit the purpose of this study. In the first pre-test, the respondents identified a couple of problems with these questions. One of the issues was related to the questions being perceived as too similar, thus before the second pre-study only three items were included. The second issue that arose during the first pre-study included lingual barriers, where the respondents were not able to easily comprehend what the questions were asking, thus changes were made to the phrasing and wording of the questions. As a consequence the improved questions were approved by the respondents in the second pre-study.

Subjective Norm (12-14)

Five questions testing Subjective Norm were chosen prior to the pre-test and applied to the research context, but only three were incorporated into the final questionnaire as the



respondents did not clearly comprehend the other two, or found them being too similar. The three questions included were drawn from Venkatesh and Davis (2000) and Yang (2010) and modified and written in a hypothetical context, as it was unknown if the respondents have any family or friends who have used the technology.

Hedonic Motivation (15-19)

In order to test the respondents hedonic motives for their willingness to incorporate a mobile device into their grocery shopping process, two different factors were accounted for in the Hedonic Motivation; idea motivation and value motivation (Ono et al., 2012). While these constructs together contained 12 questions in the original context, these were reduced to five questions after conducting the pre-testing, as the respondents found some of them being hard to understand and repetitive. Also, the original questions were reduced because not all of them seemed to fit the context of this study. For instance, participants of the first pre-study stated that the question “I go shopping to experience new things” (Ono et al., 2012, p.176) caused confusion, because the connection to mobile shopping services was not clear.

Attitude (20-22)

While translating the questions from the original English constructs into Swedish, it showed that words overlapped in Swedish and questions were hard to separate from each other. Accordingly, the original four questions of the construct (Yang, 2012) were reduced into three questions testing the Attitude concept. After completing the two pre-tests, the final questionnaire contained three questions, one investigating if the respondent believes the way of shopping is advantageous, the second asking if the respondent believes it is a wise idea to use m-commerce, and the third asking if the respondent perceived it as being positive.

Behavioral Intention (23,24)

The last construct tested in the questionnaire was the respondents' intention to use mobile shopping in the grocery environment. While formatting the first questionnaire, two questions from a study by Wang, Lin, and Luarn (2006) were included and translated into Swedish. The respondents of the first pre-test identified these questions being too similar, causing confusion while completing the questionnaire. Due to the disturbance for the respondents, the least preferred question was removed and replaced with another question from (Barker, Van Schaik,



Simpson & Corbett, 2003). The added question focused on the preference for using a novel m-commerce technology in comparison to the traditional way of shopping.

5.6.2 Rating Scale

The respondents of the questionnaire were instructed to answer the questions regarding the different concepts using a Likert scale. A Likert scale is a commonly used itemized rating scale, which asks the respondents to rate objects on either a five- or seven-point scale (Malhotra, 2010). A seven-point scale will be used in this study, as it is believed to optimize reliability (Colman, Norris & Preston, 1997). The Likert scale allows the respondents to rate to what extent they agree with a certain statement by rating their level of agreement (Bryman & Bell, 2011). The scales used in the Likert scale are bipolar, thus asking the respondents to rate their level of agreement from 1 (a negative statement such as *completely disagree*) to 7 (a positive statement such as *completely agree*). The Likert scale always contains a neutral number (i.e. the middle number of the rating scale), which allows the respondents to leave a neutral response towards a statement (Easterby-Smith et al., 2008).

5.7 Response Quality Evaluation

In this chapter the quality of the responses will be assessed. The first section will discuss how the validity and reliability of the generated responses was ensured, by basing the data collection on questions from established previous research. Second, the response rate of this study will be evaluated and to conclude, the third section will assess the quality of the obtained dataset, focusing on the rate of missing responses.

5.7.1 Validity and Reliability

Reliability and validity are two important characteristics of quantitative studies that need to be considered when deciding how to measure the concepts tested in the survey.

The reliability of a study refers to the question whether the measurement of a concept generates consistent results. Consistency in the results is achieved when (Bryman & Bell, 2011):

1. Stability: The results do not fluctuate over time if a study is conducted more than once
 2. Inter-observer consistency: The results do not differ depending on the interviewer who is involved in the analysis
 3. Internal Reliability: All questions that are asked for one concept are coherent as they all relate to the same concept
-



The internal reliability plays the most important role in this study, as the results of a self-completion questionnaire are not directly influenced by the researcher and the survey is only conducted once. By measuring the concepts with sets of questions that were already used in previous studies, the authors aimed at ensuring a high reliability in this study. The internal reliability of the measured concepts was investigated prior to the data analysis, by calculating Cronbach's Alpha coefficient. Malhotra (2010) points out that this coefficient is a commonly used method to determine the internal reliability of a concept.

The validity "is concerned with the integrity of the conclusions that are generated from a piece of research" (Bryman & Bell, 2011, p.42). This integrity can be created by ensuring different types of validity, which are found in different types of research designs. While for experimental research the internal and external validity plays a salient role, the measurement or construct validity is most important for quantitative research designs (Bryman & Bell, 2011). The measurement validity refers to the issue whether the stated questions really measure the concepts they are supposed to measure. For instance in this study, it had to be determined what questions should be included in the questionnaire to most appropriately measure a respondent's attitude towards mobile shopping services. In order to ensure measurement validity, already established questions from previous academic research have been used to measure the different concepts. However, as explained in chapter 5.6, the established questions were adopted to the context of grocery m-commerce in Sweden, and some questions were not included in the questionnaire, in order to keep the survey as short as possible. An overview of the included questions can be found in Table 3.

5.7.2 Response Rate

As previously mentioned, the response rate is an important indicator when interpreting the results and deriving general conclusions for the investigated population. When evaluating response rates of Web-questionnaires it has to be considered that typically fewer people are willing to take part in this type of data collection compared to traditional paper based surveys. Possible explanations are the large number of surveys and spam-mails an Internet user receives, concerns regarding data confidentiality, and the infrequent computer usage by less technology-affine persons (Manfreda, Bosnjak, Berzelak, Haas & Vehovar, 2008). For the calculation of response rates in Web-surveys it is appropriate to consider the net response rate,



which is calculated based on the number of respondents who have actually received and open the email invitation, since survey invitations can easily be sorted out by spam filters or might be sent to an outdated email address (Deutskens, Ruyter, Wetzels & Oosterveld, 2004). In this study, out of all 12.415 recipients, merely 4.494 persons opened the email invitation. Therefore, with a total of 591 respondents the resulting net response rate accounts for 13,2%. Shih and Fan (2009) compared the response rates of different survey methods and found that they are typically around 20% lower for email surveys (33%) than for traditional mail surveys (53%). Thus, a response rate of 13,2% can be considered as rather low, which can arguably be explained with the fact that neither a reminder was sent out, nor an incentive was provided for participating in the survey.

The high number of non-responses might have introduced a bias into the research, resulting in a questionable representativeness for the overall population of active Coop Online customers. Therefore, the sampling design should not be regarded as a census but rather as a form of convenience sampling, in which only respondents are considered that are easily accessible to the researcher or are especially cooperative (Malhotra, 2010). It has to be acknowledged that this form of sampling entails a limitation when it comes to the generalization of the research results. All findings that are based on the convenience sample can just be applied to the entities included in the sample, since it is not guaranteed that the sample is representative for the population of all Coop Online customers. Consequently, the convenience sample will simultaneously be treated as the population, which is investigated in this study.

5.7.3 Data Quality

The response rate is not the only indicator that has to be considered when evaluating the research results. The data quality is another important measure that determines a survey's quality as it influences the validity of the conducted analyses. The level of data quality can be examined, using several different variables, such as amount of missing data, time used for questionnaire completion, or lengths of answers for open questions (Sánchez-Fernández, Muñoz-Leiva & Montoro-Ríos, 2012). In this study, the amount of missing data plays the most important role, since the questionnaire did not include any open questions and Google forms did not provide the time a respondent spent for completing the questionnaire.



In order to calculate the rate of missing data, the authors followed an approach taken by Rada and Dominguez-Alvarez (2014), who calculated the ratio between the number of questions that were not answered and the total number of questions that were asked across all respondents. They found that the average non-response rate accounts for 9,3% in mail surveys and 4,9% in Web-surveys. In this study, out of 20.094 asked questions only 372 were not answered, which results in an even lower missing data rate of 1,9%. However, to further increase the quality of the dataset, all respondents who left more than 10 questions blank, were excluded from the subsequent analyses. This threshold applied to six respondents, so that 585 cases were further examined in the data analyses.

6. Data Analysis

6.1 Demographic Characteristics of the Respondents

In Table 4, an overview of the respondents is provided. The total number of respondents who answered the Web-based questionnaire was 585. In the population, 418 of the respondents (71,5%) were women, and 163 of the respondents (27,9%) were men. These numbers indicate that a bigger proportion of the respondents were women, which needs to be taken into consideration when conducting the analysis. The age of the respondents varied, where the biggest portion of respondents (31,5%) were in the age group 40-49 years old. The second biggest age group was found to be between 30-39 years old (25,6%). As all of the respondents were registered Coop Online customers, they were familiar with e-commerce and had already purchased groceries online. When looking at the household size, 58,4% of all the respondents lived in a household with three or more persons, indicating that they most likely have children, leading to a higher weekly purchase and the need to save time. The remaining 41,2% consisted of households with one or two individuals, which were interpreted as being single or couples.



Table 4 - Demographic Characteristics of the Respondents

Question	Criteria	Frequencies	Percentage
Gender	Male	163	27,9%
	Female	418	71,5%
	Total	585	100%
Age	20 - 29	23	3,9%
	30 - 39	150	25,6%
	40 - 49	184	31,5%
	50 - 59	95	16,2%
	60 - 69	68	11,6%
	> 70	64	10,9%
	Total	585	100%
Geographic Location	Stockholm	340	60,3%
	Malmö	19	3,4%
	Göteborg	34	6,0%
	Suburban	56	9,9%
	Rural	115	20,4%
	Total	564	100%
Education	Middle School	33	5,6%
	High School	135	23,1%
	University	413	70,6%
	Total	585	100%
Household Size	1 person	120	20,5%
	2 persons	121	20,7%
	3 persons	104	17,8%
	4 persons	164	28,0%
	5 or more persons	74	12,6%
	Total	585	100%
Last Ordered	Within last two weeks	238	40,7%
	Within one month	104	17,8%
	Within last three months	145	24,8%
	More than 6 month ago	90	15,4%
	I have never ordered with Coop Online	7	1,2%
	Total	585	100%
Used mobile device	Yes	299	51,1%
	No	283	48,4%
	Total	585	100%



A big proportion of the respondents were found to have a high educational level, where 413 individuals (70,6%) held a university- or college degree. Thus, the sample consisted of well educated individuals. The majority of the respondents, 60,3%, were residents of Stockholm, whereas 6,0% were residents of Göteborg and 3,4% were residents of Malmö. The geographical distribution reflects the fact that the sample was drawn from Coop Online's database, as the retailer's online division mainly operates in urban areas. Many of the respondents stated that they had ordered products from Coop Online recently, where 40,7% had ordered within the last two weeks. A cumulative portion of 83,3% of the respondents had ordered within the last three months, indicating that the majority of the respondents were relatively frequent users of Coops Online's service.

When asking the respondents what m-commerce functions in a grocery context they would have valued the most, there were some predominant answers. The four most frequently chosen functions were; to be able to order products (57,5%), to receive digital coupons (45%), to get access to loyalty program points (43,8%) and to create digital shopping lists (35,4%). These functions indicate that the respondents seek efficiency, as they wish to order products via their mobile device, instead of visiting a traditional brick-and-mortar store. The results also indicated the respondents were concerned with making good deals and saving money, by utilizing the loyalty program and receiving digital coupons.

The respondents were also asked to identify what pros they associate with m-shopping in a grocery context. One advantage that appeared to be significantly important to the respondents was to save time, with a frequency rate of 74,2%. This indicates that the majority of the respondents associated m-shopping with an opportunity to save time. Other pros associated with m-shopping in the grocery context were; to access product information (38,3%), to get coupons (35,7%) and to create shopping lists (34,9%). These different advantages indicate that the respondents held a perception that m-shopping would make their shopping more efficient. One of the options to this questions was if the respondents did not associate any advantages with shopping, and the frequency rate of this option was only 7,2%, indicating that the majority of the respondents were positive to the service. Looking at the disadvantages associated with grocery m-commerce, the majority of the respondents did not associate these services with any cons, as this option had a frequency rate of 58,6%.



6.2 Assessment of the Concepts' Reliability

The chapter about the operationalization of the measured concepts showed that each concept consisted of several different items. Whenever multiple-item measurements are used it is crucial that the included questions correlate to each other, meaning they are all referring to the same concept. This internal consistency is important in order to evaluate whether the questions that were included in the questionnaire were appropriate measures (Bryman & Bell, 2011). The most commonly used internal consistency coefficient is Cronbach's Alpha, which is particularly popular among researchers who used a Likert scale in their data collection (Gliem & Gliem, 2003). Cronbach's Alpha is based on the split-half coefficient which is calculated by dividing the scale's items in two parts and correlating the summarized half-scores. In the next step, the alpha value makes use of these split-half coefficients as it generates an average score among all possible ways of splitting the scale items in half (Malhotra, 2010). The resulting index ranges from 0 to 1, where a value closer to 1 indicates a greater internal consistency of the items used in the concept. For the interpretation of the alpha value a number of researchers have stated that a value higher than 0,7 indicates an acceptable internal consistency, and an alpha value higher than 0,9 can be considered as an excellent internal consistency value (Lance, Butts & Michels, 2006). Table 5 displays the alpha values of the concepts investigated in this study.



Table 5 – Descriptive Analysis of Items and Cronbach's Alpha

Concept	Item	Valid	Missing	Mean	St Dev	Alpha
Perceived Usefulness	PU1	583	2	4,52	1,739	,971
	PU2	582	3	4,59	1,764	
	PU3	578	7	4,51	1,824	
	PU4	578	7	4,60	1,778	
Perceived Ease of Use	PEOU1	581	4	5,41	1,599	,947
	PEOU2	577	8	5,58	1,522	
	PEOU3	573	12	5,43	1,566	
	PEOU4	573	12	5,10	1,670	
Trust	T1	571	14	4,48	1,867	,702
	T2	577	8	4,49	1,811	
	T3	582	3	3,59	1,870	
Subjective Norm	SN1	582	3	4,14	1,728	,868
	SN2	573	12	3,56	1,810	
	SN3	568	17	3,76	1,743	
Hedonic Motivation	H1	580	5	4,67	1,856	,888
	H2	578	7	3,66	1,918	
	H3	574	11	4,11	1,796	
	H4	578	7	3,62	1,826	
	H5	580	5	3,85	1,902	
Attitude	A1	573	12	4,70	1,794	,978
	A2	574	11	4,81	1,779	
	A3	575	10	4,81	1,812	
Behavioral Intention	BI1	569	16	4,76	1,849	,895
	BI2	572	13	4,33	1,866	

It is striking that for the concepts Perceived Usefulness, Perceived Ease of Use and Attitude the alpha value was greater than 0,9, confirming that these concepts had an excellent reliability. The reasons for these positive results is that all these concepts included questions from well-established models such as the TAM and TPB, that have already been applied to many different research contexts. Therefore, the questions have been tested many times and proved to be reliable measurements for the examined concept. The same holds true for Subjective Norm and Behavioral Intention, both of which reached an alpha value greater than 0,8, indicating a good internal consistency. The Hedonic Motivation concept, which combined the factors idea



motivation and value motivation stated by Ono et al. (2012), also reached a good alpha value of 0,888. The Trust concept reached an alpha value of 0,7 and had, therefore, the lowest internal consistency out of all concepts. However, since it still exceeded the commonly used threshold of 0,7, it was still considered a reliable measure and could be used in the subsequent analyses.

In a next step the items of each concept were combined to a composite index, which was used for the correlation and regression analysis. The composite indices were formed by calculating the average scores a respondent gave across all items included in a concept. These averages were saved as new variables in SPSS.

6.3 Bivariate Correlations between Concepts

In order to examine the relationships between the investigated concepts, a correlation analysis was conducted. Two popular and established coefficients that are commonly used to measure the correlation between two variables are Pearson's product moment correlation (r) and Spearman's rho coefficient (r_s). Both coefficients reach values between -1 and +1, and provide an insight about the strength of the association between the variables, as well as the direction of the association. On the one hand, an absolute value closer to 1 indicates that there is a strong relationship between the variables, meaning that a change in one variable is associated with a change in the second variable. On the other hand, the direction of the relationship can be determined by checking whether the coefficient is positive or negative (Bryman & Bell, 2011).

However, there are some significant differences between the two types of correlation coefficients. While the Pearson coefficient measures the strength of the linear relationship between two metric variables, Spearman's rho does not require a linear relationship between the variables, as it describes the association based on an arbitrary monotonic function. Moreover, for the calculation of the Spearman coefficient it is not necessary to use variables that are measured on interval scales, and can therefore be used for data on an ordinal level (Hauke & Kossowski, 2011).

Research that makes use of statistical analyses is often criticized for not meeting the necessary requirements for parametric methods, which might generate inaccurate results. One point of criticism that is heavily emphasized by academic researchers in this field is whether it is appropriate to use variables measured on Likert scales in parametric analyses, such as



ANOVA, regression and correlation. For this thesis, the Pearson's product moment correlation will be used to examine the relationships between the different concepts, even though the underlying questions measured the respondent's scores on Likert scales. This decision was based on the position taken by Norman (2010), who opposes the mentioned limitation of Likert scale data. According to Norman (2010) the presented criticism is too short-sighted, due to following reasons:

1. It neglects the high robustness of parametric analyses, meaning that correct results are generated even if assumptions are not met.
2. Composite indices based on the average across a number of different items will generate interval data, even though the original items were based on Likert scales.
3. A number of researchers were already able to prove that the Pearson coefficient is robust regarding issues of non-normality and skewness.

Table 6 - Pearson Correlation Coefficients

		PEOU_avg	A_avg	T_avg	H_avg	SN_avg	BI_avg
PU_avg	Pearson Correlation	,721	,915	,536	,626	,657	,862
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000
	N	585	583	584	585	585	579
PEOU_avg	Pearson Correlation		,733	,531	,534	,515	,659
	Sig. (2-tailed)		,000	,000	,000	,000	,000
	N		583	584	585	585	579
A_avg	Pearson Correlation			,527	,687	,660	,894
	Sig. (2-tailed)			,000	,000	,000	,000
	N			582	583	583	578
T_avg	Pearson Correlation				,342	,400	,518
	Sig. (2-tailed)				,000	,000	,000
	N				584	584	578
H_avg	Pearson Correlation					,592	,647
	Sig. (2-tailed)					,000	,000
	N					585	579
SN_avg	Pearson Correlation						,659
	Sig. (2-tailed)						,000
	N						579



Table 6 presents Pearson's correlation coefficients for the eight inter-variable relationships that were considered in this study and outlined by the formulated hypotheses. It is striking that all relationships were found to be statistically significant with a p-value of 0,00, indicating a strong correlation between the investigated concepts. Moreover, all correlation values occurred to be higher than 0,5 which did not only confirm the strong association between the different variables, but also suggested a positive direction of the correlation.

The highest correlation values were identified for the five inter-variable relationships that were drawn from Davis' TAM (1986). While the associations between the variables PEOU-PU and PEOU-A reached values of 0,721 and 0,733, the relationships between PU-A, PU-BI and A-BI were even stronger, indicated by correlation values between 0,862 and 0,915. The fact that the highest correlations were found between the concepts that were originally introduced in the TAM, can be explained by the validity of this well-established model and verifies its hypotheses about technology acceptance for the Swedish grocery industry.

The relationships between the variables Trust, Subjective Norm and Hedonic Motivation, and the variable that represents the usage intention, were found to be weaker, reaching correlation values between 0,518 and 0,659. Out of all correlation coefficients, the relationship between Trust and Behavioral Intention was identified to be the weakest, indicated by a correlation value of 0,518. Considering that this finding contradicts some of the previous research about m-shopping adoption, for instance conducted by Hung et al. (2012) who found that trust has a higher influence on Behavioral Intention than Perceived Usefulness, a more detailed interpretation of the correlation results will be presented in chapter 7.

In order to either confirm or reject the hypotheses that have been formulated in this study, the relationships between the different concepts will be examined further by conducting a multiple regression analysis.

6.4 Multiple Regression Analysis

The correlation analysis presented in chapter 6.3 implies that only the relationship between two variables at a time is examined, and does not indicate the direction of the relationship. For instance, in the context of this study the correlation coefficient for the influence of Perceived Usefulness on Behavioral Intention is the same as for the influence of Behavioral Intention on Perceived Usefulness. However, the latter is not appropriate in this context, as the stated



hypothesis questions whether Perceived Usefulness influences the intention to use a m-commerce service, and not the other way around (Bryman & Bell, 2011).

In order to be able to determine the direction of the relationship, as well as to investigate more than one influencing variable simultaneously, a multiple regression analysis was conducted. The idea of conducting a multiple regression analysis is to generate a function that best explains the relationship between more than one predictor variable and a single dependent variable. However, it has to be taken into consideration that a regression analysis does not imply a causal relationship between the variables, rather the terms *dependent* and *independent* variables stem from the mathematical relationship described in the regression equation (Malhotra, 2010).

Considering that the correlation analysis identified a significant influence between all inter-variable relationships stated in the hypotheses, the multiple regression analysis was used to further assess which hypothesis can or cannot be supported. The analysis was conducted in the statistical software SPSS, which provided important indicators in the generated output. The following section will give an overview of these indicators and their meaning.

The first figure that will be analyzed in the SPSS output is the coefficient of multiple determination, R^2 , which summarizes the quality of the regression model. It reaches a value between 0 and 1, which is interpreted as the amount of variance in the dependent variable that is accounted for by all independent variables (predictors) that are included in the model (Easterby-Smith et al., 2008). Additionally, the Adjusted R^2 is calculated for a multiple regression, as it takes into account that with an increased number of included predictor variables, the amount of variance every additional predictor explains decreases (Malhotra, 2010).

Besides the combined influence of all predictors on the dependent variable, the multiple regression output also provides information about the explained variance in the dependent variable that is accounted for by every single predictor. This valuable insight is obtained by examining the partial regression coefficients, or standardized beta coefficient. Their values indicate how much the dependent variable changes when the examined predictor is changed by one unit and all other independent variables are held constant. For the interpretation of the



effect of every single independent variable, the standardized beta coefficient is calculated after all “variables have been standardized to a mean of 0 and a variance of 1” (Malhotra, 2010, p.579).

The significance of the generated results is computed in two different ways. On the one hand, a F-test statistic is used to assess whether the overall regression model is significant, testing the hypothesis if the R^2 value is not equal 0. The result is presented in the ANOVA table, which is part of the generated SPSS output. On the other hand, the hypothesis that every single predictor has a significant influence on the dependent variable is tested with a t-test, and the resulting p-value is displayed in the Coefficient table. The significance of the single predictor variables was investigated in order to support hypotheses stated in this study (Easterby-Smith et al., 2008).

The independent variables included in multiple regression models are typically to some extent correlated to each other. Therefore, when conducting this type of analysis it is important to also check for the issue of multicollinearity, which occurs when the intercorrelation between the independent variables are especially high (Malhotra, 2010). A commonly used indicator of multicollinearity, which will also be examined in the following analysis, is the Variance Inflation Factor (VIF). It is calculated by SPSS, and Olivia and Ilie (2013) pointed out that severe problems of multicollinearity exist if the VIF exceeds a threshold of 10.

Before the results of a regression model can be interpreted, it is important that certain basic assumptions regarding the error terms are met (Malhotra, 2010). In this study, the following assumptions have been checked graphically, which confirmed the appropriateness of conducting a regression analysis:

1. The error terms are normally distributed
2. The variance of the error term is constant
3. The error terms are uncorrelated

The error term histogram and scatter plots are illustrated in appendix 4 and 5.

6.4.1 Predictors Influence on Intention to Use M-Commerce

The first regression analysis measured the effects of the predictor variables Attitude, Perceived Usefulness, Subjective Norm, Trust and Hedonic Motivation on the dependent variable Behavioral Intention. Hypotheses H1, H5, H6, H7 and H8 state that all these factors have a positive influence on an individual's intention to use m-commerce in the Swedish grocery sector. These hypotheses will either be supported or not supported after observing the results of the regression analysis.

Figure 3 - SPSS Output: Model Summary and ANOVA - First Multiple Regression

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,905 ^a	,818	,817	,75579

a. Predictors: (Constant), SN_avg, T_avg, H_avg, PU_avg, A_avg
b. Dependent Variable: BI_avg

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1470,021	5	294,004	514,690	,000 ^a
	Residual	326,741	572	,571		
	Total	1796,762	577			

a. Predictors: (Constant), SN_avg, T_avg, H_avg, PU_avg, A_avg
b. Dependent Variable: BI_avg

The model summary presented in Figure 3, illustrates that approximately 82% of the variance in Behavioral Intention could be explained by the five predictor variables included in the analysis. On the contrary, that means that roughly 18% of the variance was explained by other variables, which have not been investigated in this model. Moreover, the ANOVA table provides an insight about the significance of the overall regression model. The F-value of 514,690 clearly exceeded the critical value, which based on the degrees of freedom and a probability level of 0,05, amounted to about 2,23. Consequently, the p-value was found to be at 0,00, indicating that the overall regression model is significant.



Figure 4 - SPSS Output: Coefficient Table - First Multiple Regression

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,095	,115		-,829	,408		
	PU_avg	,241	,047	,233	5,139	,000	,154	6,481
	A_avg	,576	,048	,572	11,959	,000	,139	7,202
	T_avg	,051	,026	,042	1,969	,049	,700	1,428
	H_avg	,048	,029	,042	1,654	,099	,491	2,037
	SN_avg	,097	,028	,086	3,444	,001	,508	1,970

a. Dependent Variable: BI_avg

Based on the coefficient table shown in Figure 4, the influence of every single independent variable on Behavioral usage Intention can be determined and the stated hypotheses can be tested. First, it has to be noted that four out of the five predictors were found to have a significant influence, with a probability level of $<0,05$. The remaining predictor, Hedonic Motivation, reached a p-value of 0,099 and is the only concept that was found to be not significant. Therefore, H8 is not supported by the presented results, while H1, H5, H6 and H7 are supported.

*H1. Attitude towards mobile shopping for groceries has positive influence on intention to adopt mobile shopping → **supported***

*H5. Perceived Usefulness has a positive influence on intention to adopt mobile shopping for groceries → **supported***

*H6. Subjective Norm has a positive influence on intention to adopt mobile shopping for groceries → **supported***

*H7. Trust has a positive influence on intention to adopt mobile shopping for groceries → **supported***

*H8. Hedonic Motivation has a positive influence on intention to adopt mobile shopping for groceries → **not supported***

By screening the standardized beta coefficients it became clear that the factors Perceived Usefulness and Attitude had a much higher influence on Usage Intention than the remaining variables. The standardized beta value for the Attitude construct indicated that an increase in



this factor by one unit, holding all other predictors constant, would result in an increase of 0,574 in Usage Intention. The second strongest influence on Behavioral Intention was found in the construct Perceived Usefulness, which reached a standardized beta coefficient of 0,233. The strong influence of Attitude and Perceived Usefulness found in this regression analysis aligns with the high correlation between these constructs and Behavioral Intention, already described in the previous chapter.

The influence of Trust and Subjective Norm was much lower with standardized beta values of 0,042, meaning these factors play only a minor role in a Swedish grocery shopper's intention to use a m-commerce service. A more detailed interpretation of these findings will be discussed in chapter 7.2.

To conclude the interpretation of the SPSS output of the first multiple regression analysis, it has to be questioned if a possible multicollinearity could have distorted the results. Even though the VIF showed a rather high value of 6,481 for the Perceived Usefulness construct, the previously stated threshold of 10 is not exceeded, which indicates that there is no severe problems of multicollinearity.

6.4.2 Predictors Influence on Attitude towards M-Commerce

The second regression analysis measured the effect of Perceived Usefulness and Perceived Ease of Use on Attitude, covering hypotheses H2 and H4. These stated hypotheses claim that the factors have a positive effect on an individual's attitude towards using a mobile device in the grocery shopping process. They will be either supported or not supported by observing the results of the regression analysis.



Figure 5 - SPSS Output: Model Summary and ANOVA - Second Multiple Regression

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,921 ^a	,848	,848	,68388

a. Predictors: (Constant), PU_avg, PEOU_avg

b. Dependent Variable: A_avg

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1515,292	2	757,646	1619,966	,000 ^a
	Residual	271,262	580	,468		
	Total	1786,554	582			

a. Predictors: (Constant), PU_avg, PEOU_avg

b. Dependent Variable: A_avg

The model summary presented in Figure 5 illustrates that approximately 85% of the variance in Attitude towards m-commerce in grocery shopping could be explained by the two predictor variables included in the analysis. Therefore, roughly 15% of the variance was accounted for by other variables, not considered in this model. The F-value of the second regression model reached 1619,966 and clearly exceeded the critical value of 3,10, which was again calculated with a probability level of 0,05. Hence, the p-value indicated that the overall regression model is significant, with a displayed value of 0,00.

Figure 6 - SPSS Output: Coefficient Table - Second Multiple Regression

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,038	,107		,357	,721		
	PEOU_avg	,181	,028	,153	6,551	,000	,481	2,080
	PU_avg	,826	,024	,805	34,481	,000	,481	2,080

a. Dependent Variable: A_avg



By observing the coefficient table illustrated in Figure 6, the influence of the independent variables, Perceived Ease of Use and Perceived Usefulness on the dependent variable Attitude could be determined and the hypotheses regarding the two relationships between the variables could be tested. Both predictors were found to have a significant effect, as their p-value is at 0,00. Therefore, both hypotheses are supported. Since the regression analysis did not answer the question whether the relationship between the two predictors, Perceived Ease of Use and Perceived Usefulness, is significant, H3 is supported based on the findings that were explained in the previously conducted correlation analysis.

*H2. Perceived Ease of Use has a positive influence on Attitude towards mobile shopping for groceries → **supported***

*H3. Perceived Ease of Use has a positive influence on Perceived Usefulness → **supported***

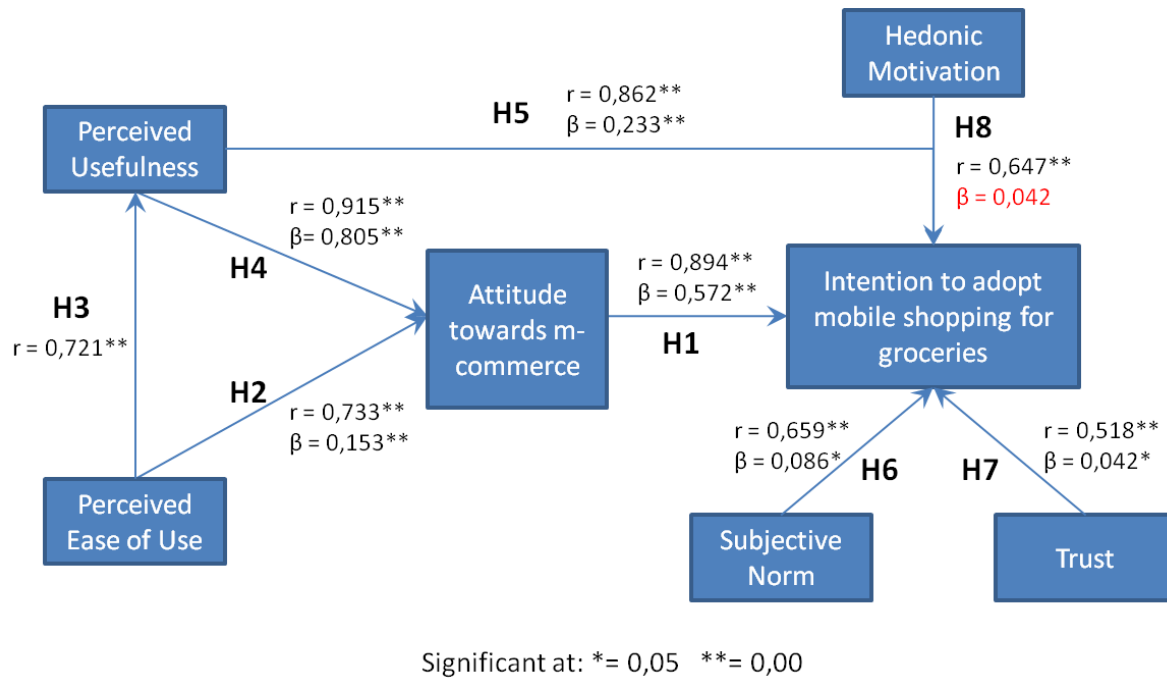
*H4. Perceived Usefulness has a positive influence on Attitude towards mobile shopping for groceries → **supported***

The standardized beta coefficients clarify that the factors Perceived Ease of Use and Perceived Usefulness have a high influence on Attitude towards using mobile devices in the grocery shopping process. The construct Perceived Ease of Use showed a standardized beta value of 0,153, which means that if increased by one unit while the other predictor is held constant, Attitude would rise by 0,153. Perceived Usefulness had a value of 0,805, indicating that the factor had a greater influence than Perceived Ease of Use. The correlation analysis already revealed that Perceived Usefulness has a stronger relationship with the Attitude variable than Perceived Ease of Use, while both proved to be significant. The relationships between Perceived Usefulness and Attitude and Perceived Ease of Use and Attitude were based on Davis' (1989) hypotheses stated in his TAM and have been investigated and confirmed in many subsequent studies about m-commerce adoption. The fact that the two predictors explained a large amount of variance in the Attitude variable reaffirms the validity of Davis' original claims. A more detailed discussion about the validity of the TAM in the empirical context of mobile commerce in the grocery retailing industry will be presented in chapter 7.2.

Again it was examined if an issue of multicollinearity exists, by turning to the Variance Inflation Factor. The VIF reached a rather low value of 2,08 in this regression analysis, confirming that there was no problem of multicollinearity which could affect the calculated results.

In order to provide an overview of the analysis results that have been examined for testing the hypotheses, Figure 7 presents the research model, including the Pearson coefficients as well as the beta coefficients stated in the previous chapter.

Figure 7 - Research Model Including Analysis Results



6.5 Differences in Bivariate Correlations between Demographic Groups

In the last step of the data analysis it will be assessed if the strength of the relationships between the concepts varies across different demographic and socio-economic groups. For instance, it will be examined if female respondents attributed more importance to different variables, such as Trust or Subjective Norm, when forming the intention to use m-commerce services in the grocery shopping process. The statistical analysis that was used tested the significance of the difference between the Pearson correlation coefficients of two independent



groups, such as men and women. For this analysis, the Fisher transformation was applied, which converts the two r-correlation values in a z-statistic, thus enables the researcher to assess if a critical value is exceeded, which indicates a significant difference (Meng, Rosenthal & Rubin, 1992).

Table 7 only displays correlation coefficients for the inter-variable relationships that showed a significant difference depending on certain demographic characteristics of the respondents. The following classifying variables proved to influence the relationships between some of the investigated constructs:

- Education (middle school vs. college/university)
- Prior mobile usage of m-commerce for grocery shopping (yes vs. no)
- Gender (male vs. female)
- Geographical location (urban vs. rural)
- Size of household (less than 3 persons vs. 3 or more persons)



Table 7 – Correlation Coefficients for Different Demographic Groups

Education				
Pearson Coefficient		PEOU	T	SN
Middle school	BI	0,817	0,705	0,813
University / College		0,652	0,502	0,645
		Sig.	0,0295	0,048
				0,0294
Prior M-Commerce Usage				
Pearson Coefficient		PU	A	
No	PEOU	0,652	0,678	
Yes		0,775	0,785	
		Sig.	0,0012	0,0026
Gender				
Pearson Coefficient		PU	A	
Male	PEOU	0,620	0,906	
Female		0,757	0,770	
		Sig.	0,0023	0,0013
Geography				
Pearson Coefficient		BI	A	
Urban	PEOU	0,626	0,701	
Rural		0,763	0,802	
		Sig.	0,0065	0,0143
Urban	Trust	0,481		
Rural		0,609		
		Sig.	0,0452	
Size of Household				
Pearson Coefficient		BI		
Small (1 or 2 persons)	H	0,710		
Large (3 and more persons)		0,590		
		Sig.	0,0068	

When comparing the correlation coefficients for respondents from different educational backgrounds, i.e. people with a middle school degree and people with a university or college degree, the influence of Perceived Ease of Use, Trust and Subjective Norm was found to be significantly different. To be more specific, the correlations for all three influencing variables with Behavioral Intention were higher for people with a middle school degree, meaning that these variables have a larger impact on the respondent's intention to use a mobile device in the grocery shopping process. The significance of the difference was confirmed, based on the fact that for all relationships the p-value was lower than the threshold of 0,05.



Looking at the prior m-commerce usage of the respondents, it was found that individuals who had used this service before in the grocery industry, attached more importance to Perceived Ease of Use, as this concept had a stronger influence on the variables Perceived Usefulness and Attitude, compared to the individuals who did not have prior usage experience. A similar observation was made for the differentiation between men and women, as the latter also showed a higher correlation between Perceived Ease of Use, Perceived Usefulness and Attitude. All these relationships were found to be highly significant with a p-value below 0,00.

Differences were also found when comparing the geographic location of respondents who were either living in rural or urban areas. People living in rural areas recorded a higher influence of the variables Trust and Perceived Ease of Use on Behavioral Intention, indicating that these variables are more important for their decision to adopt m-shopping in the grocery sector. Moreover, inhabitants of rural areas also showed a higher correlation between Perceived Ease of Use and Attitude.

Prior to calculating the correlation coefficients for different household sizes, this classifying variable was re-coded into small households, consisting of less than three people, and larger households, consisting of three or more people. The analysis revealed that the influence of Hedonic Motivation on Behavioral Intention is significantly higher for the smaller households, with the z-test calculating the significance of the difference at a p-value of 0,0068.

While this chapter merely pointed out if a significant difference existed, in the next chapter these results will be interpreted more in detail.

7. Discussion of Results

The following discussion will pick up on the various findings that have been presented in the previous analysis chapter. These findings will be interpreted in the context of this study, which is the integration of m-commerce services in the Swedish grocery retailing sector. To start with, chapter 6.1 will discuss the implications of the analysis results for the theoretical background of the study, such as Davis' (1986) Technology Acceptance Model. After that, the stated research questions will be addressed by describing the influence the different examined factors have on a Swedish grocery shopper's intention to use m-commerce services. Lastly, the identified



differences between various demographic groups will be explained and interpreted against the background of the research question.

7.1 Validity of Theory Applied in Empirical Context

The conducted analyses were guided by a research model which displayed the different factors that influence a person when adapting to a novel technology. The model was mainly based on established views on the formation of human behavior and the acceptance of novel technologies, presented in Davis' (1986) Technology Acceptance Model, Fishbein's and Ajzen's (1975) Theory of Reasoned Action and Ajzen's (1991) Theory of Planned Behavior. For instance, the relationship between Attitude and Behavioral Intention is included in all three of these traditional models and the Davis' TAM particularly focuses on the influence of Perceived Ease of Use and Perceived Usefulness in the process of technology acceptance. However, since the constructs drawn from these models are originally presented in a different context, such as a job related technology adoption, it should be investigated if they hold true for the adoption of m-commerce technology in the Swedish retailing industry.

First, the Cronbach's alpha analysis revealed that the measurements for the concepts Perceived Usefulness, Perceived Ease of Use and Attitude reached an excellent internal consistency with values higher than 0,9. Hence, the use of established questions for these concepts was successful, as it contributed to a high reliability of the results. Moreover, this high reliability confirmed that the measurements originally used by Davis (1986), are appropriate for the usage in the context of m-commerce adoption in Sweden.

Additionally, the relationships between the established concepts of technology acceptance were verified in the conducted regression analyses. On the one hand, out of all included predictor variables Attitude and Perceived Usefulness proved to have the highest influence on Behavioral Intention in the first regression model, and on the other hand, Perceived Ease of Use and Perceived Usefulness were able to explain about 85% of the variance in Attitude in the second regression model. All these findings can be ascribed to the validity of Davis' (1986) TAM, and confirm Zhang's et al. (2012) observation that the TAM typically explains a large amount of the variance in usage intention. Therefore, it can be concluded that the TAM was found to be applicable to the empirical context of this master thesis.



Besides the constructs drawn from Davis' TAM, additional influencing factors that were found in similar m-commerce adoption studies were included in the conducted analyses. The influence of these additional factors, consisting of Subjective Norm, Trust and Hedonic Motivation, on the Swedish grocery shoppers' intention to use m-commerce services appeared to be weaker than the influence of Perceived Usefulness and Perceived Ease of Use. A possible explanation for this finding can be derived from the characteristics of the Swedish grocery retailing sector. In the next chapter, this thought will be developed further, as the influence of the single factors will be discussed.

7.2 Interpretation of Factors Influencing Usage Intention of M-Commerce

The stated research question, *What factors influence the Swedish consumer's intention to use a mobile devices in the grocery shopping process?*, can be answered by looking at the hypotheses that have been supported by the results presented in the analysis chapter. The five factors that seemed to influence a Swedish consumer's intention to use a mobile device in the grocery shopping process are; Perceived Usefulness, Perceived Ease of Use, Attitude, Subjective Norm, and Trust. On the contrary, a significant influence of the factor Hedonic Motivation could not be supported by the results. In the following, the factors will further be discussed.

While conducting the regression analysis, Hedonic Motivation was the only factor identified not being significant. Consequently, the hypothesis, *Hedonic Motivation has a positive influence on intention to adopt mobile shopping for groceries*, was not supported. The Hedonic Motivation construct was measured with questions examining the respondents' motivations to incorporate their mobile devices in a leisurely manner in the grocery shopping process. For instance, the questions examined to what extent the respondents wanted to use their mobile devices to find low priced goods or compare prices. The fact that the Hedonic Motivation did not prove to be significant, might appear ambiguous, as the respondents' answers to the first three questions revealed that they are willing to save money by using loyalty programs on their mobile devices. However, it has to be noted that the questions measuring the Hedonic Motivation specifically asked for the process of finding discounts and comparing prices. Therefore, a possible interpretation is that m-commerce users are indeed interested in saving money; however, they are not necessarily willing to receive this benefit by actively using a mobile device as a research tool. Instead, their interest in digital loyalty programs indicates that a convenient way of saving



money, which does not require the struggle of actively searching for discounts and comparing prices, might be of greater importance when adopting e-commerce services. Moreover, the Hedonic Motivation concept included questions about the importance the shopper attaches to new trends and innovative products when shopping for groceries. Considering that grocery shopping is mainly driven by habits and routines, it seems logical that Hedonic Motivation, based on the importance of innovative products, was found to have a non-significant influence in this empirical context.

As stated in chapter 2.1, utilitarian factors such as convenience, usefulness and saving time, typically play a more salient role in a person's grocery shopping process than Hedonic Motivations. This research revealed that this statement holds true not only for the traditional way of grocery shopping, but is also applicable to a more technologically advanced grocery shopping, including m-commerce services. The importance of Perceived Usefulness was not only supported by its high and significant beta coefficients in the two regression analyses, but also by the answers the respondents provided for the first and the second question. In the first question, respondents pointed out that functions satisfying a utilitarian need, such as being able to order goods or accessing the customer loyalty program via the phone, would provide the highest value. Additionally, the majority of the respondents stated in the second question that benefits, where functions allow them to save time and retrieve product information, are most important.

Based on the discussed importance of utilitarian motivation found in the research results, it can be assumed that the nature of the industry in which a m-commerce service is introduced, also effects the question which factors influence a person's adoption intention in that industry. For instance, for customers in the fashion industry, Hedonic Motivation might play a much more important role for m-commerce adoption intention than in the grocery industry. The importance that the customer attach to an efficient and convenient shopping experience is further underlined by the strong influence of the Perceived Ease of Use factor on Attitude, which is indicated by a Pearson correlation coefficient of 0,733 and a standardized beta value of 0,153. It can be assumed that a m-commerce service that is easy to use satisfies the utilitarian expectations of the customers as it facilitates their shopping process.

The influence of the factor Trust on Behavioral Intention proved to be statistically significant in the regression as well the correlation analysis. However, the factor's impact was lower than the



impact of the other factors, with a correlation coefficient of 0,518 and a standardized beta value of merely 0,42. This may be due to the characteristics of the Swedish customers, who can be described by a high willingness to incorporate technological advanced ways of purchasing goods, such as e-commerce and m-shopping (Dibs Payment Services, 2014), in their shopping routines. For these novel shopping methods, payment is a critical concern for the Swedes, who want to be able to save their credit card information in order to smoothly go through with their purchases. Thus, the customers generally trust the retailing companies, and are more concerned with the hassle to enter their payment information when they go through with a purchase, instead of fearing the abuse of their personal data (Dibs Payment Services, 2014). The factor trust has already in previous m-commerce studies proven to be an important predictor. Wei et al. (2009) not only confirmed a significant influence on usage intention as a result of their m-commerce adoption study in Malaysia, but also pointed to several other studies that have reinforced the factor's importance (Luarn & Lin, 2005; Cho, Kwon & Lee, 2007; Lin & Wang, 2005). In a study conducted in South Korea, Cho et al. (2007) found that trust has an even stronger influence on intended use than Perceived Usefulness and Perceived Ease of Use. However, this finding is not supported in the Swedish market where trust seemed to play only a subordinate role.

As described earlier, the level of peer-to-peer interaction associated with a technology can influence whether the Subjective Norm factor plays an important role or not. In their m-commerce adoption study, Nysveen et al. (2005) compared m-commerce services with different levels of peer-to-peer interaction and found that especially among older persons, normative pressure (i.e. Subjective Norm) has a stronger influence for services with a high level of interaction.

In this master thesis, Subjective Norm only had a weak, yet significant, influence on Behavioral Intention. Considering that grocery shopping is a habitual activity that is typically performed independently, one can assume that the level of interaction associated with m-commerce in the grocery industry is rather low. For instance, while shoppers who just purchased a new dress are likely to share this information with friends or family members, this behavior is rather uncommon if someone just bought a pack of cereal. Looking at the results presented by Nysveen et al. (2005), this low level of interaction might be the reason why Subjective Norm only plays a minor role regarding the usage intention of m-commerce services in the grocery sector.



7.3 Interpretation of Differences between Demographic Groups

When comparing the correlation coefficients for the inter-variable relationships between different demographic groups, it will be assumed that the respondents attach a greater importance to a factor, when it showed a high correlation with the measured concepts Attitude or Behavioral Intention. Moreover, only significant differences between demographic groups will be discussed.

To start with, the comparison between respondents with a university or college degree and the respondents who hold a middle school degree revealed significant differences regarding the influence of the factors Perceived Ease of Use, Trust and Subjective Norm on the Behavioral Intention variable. The group with the lower educational background exhibited a stronger correlation for all these relationships, indicating that they may attach a greater importance to the mentioned influencing factors. It has to be considered, that a service that is easy to use, recommended by friends or family members and provided by a trusted retailer, means that the shopper can save time and cognitive effort when adopting a new service. Consequently, one possible explanation of the stated findings is that respondents with a lower education might attach greater importance to Ease of Use, Subjective Norm and Trust, because they might be less confident when adopting to innovative and complex services that require practice and some form of research prior to using it.

The correlation analysis also suggested that the respondents who have used a m-commerce service for their grocery shopping before, attach greater importance to the Perceived Ease of Use, as it correlated stronger with the attitude towards the m-commerce service. This finding could indicate that someone who has already experienced using a m-commerce service might know how important the ease of use is when accessing a service like this via a mobile device. This knowledge could, for instance, be the result of a negative experience regarding the usability of a m-commerce service. Another group that seems to find the Perceived Ease of Use more important are the female respondents, also indicated by a stronger correlation with the Attitude concept. This may indicate that the women included in this study are less confident regarding the adoption of an unknown technology and value a service that is easy to use.

For the comparison of respondent groups that live in different geographical settings, the inhabitants of the metropolitan areas of Stockholm, Göteborg and Malmö were combined to the



urban group, while everyone whose ZIP code was classified by the Swedish postal service as belonging to a *landsbygd* area were included in the *rural* group. The respondents living in rural areas seemed to not only attach a greater importance to the Perceived Ease of Use factor but also to their level of Trust. One can assume that people who live in large and modern cities, such as the one included in this study, have a greater exposure to innovative technologies in their everyday life and are, therefore, more confident when it comes to adapting unknown technologies. For instance, in very remote areas of Sweden, e-commerce services might not be widely offered, as high shipping cost might make it more profitable for retailers to focus on densely populated areas.

Lastly, the correlation coefficients for people living in small and large households were compared. The results suggested that people living in household of one or two persons seem to attach more importance to the Hedonic Motivation when making the decision to use a m-commerce service for their grocery shopping. Considering this finding, it can be assumed that living in a small household is related to a less stressful grocery shopping, leaving more time for enjoyment during the process. This could mean that grocery m-commerce services are not only used to fulfill an utilitarian purpose, such as saving time or money, but people living in small household would also appreciate it if they offered some type of enjoyment; for instance, through an attractive graphical design, more playful functions, or the opportunity to interact with peers.

8. Conclusion

The stated research question, *What factors influence the Swedish consumer's intention to use a mobile devices in the grocery shopping process?*, had two main underlying objectives, which have been described in the introduction of this master thesis. The first objective was to provide practical insights about important factors that Swedish grocery retailers should consider when implementing and promoting a new m-commerce service, and second objective was to contribute to the existing literature about m-commerce adoption, where a gap had been identified in the empirical context of the Swedish grocery retailing industry. This chapter will briefly pick up on these two objectives by describing the practical and theoretical contributions that have been made in this study. The last section, 8.3, will state the limitations of the results, while simultaneously providing suggestions for future research.



8.1 Practical Contribution

Although the results of this study cannot be generalized, it has generated valuable insights for Coop Online. These insights can also serve as managerial implications for other Swedish grocery retailers, as the implementation of m-commerce will affect the entire industry.

The questionnaire showed that 50% of the respondents had already used a mobile device for grocery shopping, which indicates a rather high willingness to use these services. The customers willingness to use innovative m-commerce services, contrasts the fact that technological potential for m-commerce services in the Swedish grocery industry have not yet been fully exhausted. While, for instance, the study results revealed that the most valued function by the customers is the possibility to order goods, this feature is currently not included in any of the retailer's mobile apps. Another example is that the results indicated that saving time is the most important benefit the respondents associated with using a m-commerce service. Considering that a large portion of the time spent in-store is spent waiting in line and checking out (DLF, 2014), functions that enable the customers to scan and pay the products with their phone would probably be appreciated as a time-saving service. It also has to be acknowledged that the retailers are not yet aggressively promoting their m-commerce services, which further underlines that the full potential of is not yet reached. The managerial implication for the retailers is that a first mover advantage can be achieved if the integration of the mobile channel is pursued more offensively, considering that the customers seem to be ready to incorporate this technology in their shopping routine.

The questionnaire generated valuable insights for the retailer when developing and designing, as well as promoting and implementing the new m-commerce service. The first three questions focused on what functions the respondents would find to be the most important and what advantages and disadvantages they would associate with the new technology. As the results showed that the respondents valued utilitarian functions; such as being able to order goods and saving money, it becomes clear that this should be considered by the retailers.

The biggest disadvantage the customers associated with the use of a m-commerce service, was that it would not be easy to use, thus, not resulting in a more efficient shopping experience. Therefore, the usability of the service is very important, in order to make the customers believe that it will aid and simplify their path to purchase, rather than requiring too much time and



cognitive effort. Bearing this in mind, promotional activities should strive to satisfy these expectations the customers have regarding m-commerce in the grocery sector.

8.2 Theoretical Contribution

The academic literature that served as a theoretical framework and background for this study can be categorized in two different fields of research. First, well established theories about formation of human behavior and the acceptance of a new technology in general, and second, research about specific factors that influence an individual when adopting m-commerce technology. The results of this master thesis can be considered as a contribution to both theoretical fields, as in neither one of them literature in the context of the Swedish grocery retailing industry has been found. According to Groß (2015, p.227), especially the m-commerce adoption research is predominant in “USA and in different parts of East Asia (e.g. China, South Korea, and Taiwan) [while] studies from other parts of the world are still rare”.

First, out of all the presented models that explains human behavior the Technology Acceptance Model served as the basis for this study and guided the researchers. In total, Davis’ TAM presents five relationships between the four concepts Perceived Usefulness, Perceived Ease of Use, Attitude, and Behavioral Intention. All of these relationships were investigated and confirmed in the context of m-commerce usage in the Swedish grocery retailing industry. The theoretical contribution for this field of research can, therefore, be regarded as a validation of the original theory in a new empirical context.

Considering the more specific factor research regarding a customer’s intention to adopt m-commerce, this study showed that in the context of the Swedish grocery retailing industry, some factors were more influential than others. More specifically, the factors Perceived Usefulness, Perceived Ease of Use and Attitude introduced in Davis’ (1986) TAM, were found to be highly influential in the given context. On the contrary, two other factors were found to have a weaker influence on the shoppers’ intentions to use m-commerce services. First, the factor Trust, suggested by Hung et al. (2012) in a m-commerce study among Taiwanese college students, and second the factor Subjective Norm, originally introduced in Fishbein’s and Ajzen’s (1975) TRA and also frequently considered for m-commerce adoption studies (Rao & Troshani, 2007; Nysveen et al., 2005; Hung et al., 2003).



One factor that did not reach a significant level of influence on the m-commerce usage intention was Hedonic Motivation, drawn from Ono et al. (2012). The original study investigated customers' intention to browse online stores on mobile devices, which had not yet been applied to the context of grocery shopping.

The results of this master thesis have shown that by applying established theories to an unexplored empirical context, valuable insights can be generated which further contributes to the existing literature.

8.3 Limitations and Future Research

The results of this master thesis are subject to a number of limitations, which have to be considered when assessing the validity and generalizability of the stated conclusions.

Firstly and most importantly, it has to be pointed out that, based on several reasons a non-probability sampling method was used when selecting the respondents that were included in the quantitative study. Therefore, the investigated group of respondents can only be considered as a convenience sample that is not representative for all Coop Online customers and the results cannot be generalized for any other individuals, not taking part in the survey. By looking at the demographic characteristics of the respondents that participated in the survey, it becomes clear that certain demographic groups were overrepresented, possibly introducing a bias in the study's results. For instance, 71,5% of the respondents were women, 69,7% of the respondents lived in a large city with over 300.000 inhabitants and 70,6% held an university or college degree. Due to a limited access to the retailer's customer database it cannot be confirmed if this demographic distribution of respondents represents the demographic distribution of all Coop Online customers.

Future research could build on the results found in this master thesis and investigate if they hold true for customers of other grocery retailers, or even the whole Swedish grocery industry. A subsequent study could make use of a probability sampling method, in order to ensure that no bias is introduced in the results and insights that are generalizable for individuals outside of the examined sample are provided. Since the model used in this thesis proved to be suitable for the m-commerce adoption in the Swedish grocery industry, it can be recommended that it is applied in similar studies in the future, which would enable the researcher to confirm, challenge or extend the stated results.



Another limitation of this study is the positivist nature of the research design, which implies that only a limited number of factors that influence m-commerce adoption were investigated. In reality, the grocery shopping environment is much more complex and holds a number of different stimuli that can affect an individual's behavior during the entire path to purchase. Even though the regression analysis suggested that about 85% of the dependent variable Attitude and 82% of the dependent variable Usage Intention can be explained by the factors included in the model, there is still a small amount of unexplained variance left, which is accounted for by unknown factors. Additional research could aim at providing an even better understanding of the factors that affect an individual's intention to use a m-commerce service in the Swedish grocery industry. Future research could not only investigate whether there are relevant factors that have not been included in this study, but it could also question what the stated factors represent. For instance, the concepts Perceived Usefulness and Perceived Ease of Use have exhibited a high impact on the grocery shopper's m-commerce adoption, but it remains unclear how the concepts are defined in this specific context. A qualitative research design, making use of in-depth interviews or focus groups, could examine how the optimal mobile shopping app should look like and what functions it should include in order to satisfy the shoppers expectations regarding the factors usefulness and ease of use.



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III. Appendix

Appendix 1 - Questionnaire

Användning av mobila enheter inom dagligvaruhandeln

Denna undersökning syftar till att kartlägga åsikter i samband med handel av dagligvaror via mobila enheter (smartphones eller surfplattor). En sådan handel omfattas bland annat av att beställa och betala varor eller tjänster, att söka efter produktinformation, att få tillgång till rabattkuponger eller andra erbjudande och att skapa digitala shoppinglistor. Dessa funktioner är ännu inte speciellt utvecklade på den svenska marknaden. Därför behöver du inte ha använt en sådan funktion för att besvara enkäten utan det viktigaste för oss är hur du ställer dig till detta sätt att handla.

Dina svar är anonyma och kommer att behandlas konfidentiellt. Undersökningen kommer att utgöra underlag för forskning på masternivå i marknadsföring på Lunds Universitet. Resultaten av undersökningen kommer att publiceras i form av en masteruppsats tillgänglig via Lunds Universitet.



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COOP ONLINE

Weiter »

20 % abgeschlossen



Shopping via mobila enheter kan omfatta många olika funktioner. Om Coop hade erbjudit en mobil shoppingtjänst, vilka funktioner hade du värdesatt?

Vänligen läs alla alternativ och välj max 3 alternativ

- Tillgång till poängerbjudande
- Mobila betalningar (t.ex. SEQR betalning)
- Kunna beställa dagligvaror
- Digitala rabattkuponger
- Kunna skanna streckkoder för information angående näringsinnehåll
- Skapa shoppinglistor
- Kunna skanna streckkoder för att jämföra priser
- Kartor på produktplacering i butik
- Sonstiges:

Om du hade använt dina mobila enheter för att handla eller leta efter dagligvaror, vilka fördelar hade du ansett vara viktigast?

Vänligen läs alla alternativ och välj max 3 alternativ

- Få rabattkuponger
- För att spara tid
- Kunna få produktinformation (såsom ursprung eller näringsvärde)
- För att det är roligt
- Skapa shoppinglistor
- Jag hade inte sett någon fördel med att använda min mobil
- För att spara pengar
- Sonstiges:

Vilka huvudsakliga hinder förväntar du dig med att använda dina mobila enheter när du handlar dagligvaror?

Vänligen läs alla alternativ och välj max 3 alternativ

- Jag tror inte min personliga information hade inte behandlats på ett säkert sätt
- Det hade inte varit enkelt att använda
- Det hade inte gett mig några specifika fördelar
- Användning av en mobil enhet hade gjort min inköpsprocess opersonlig
- Jag anser det vara för besvärligt
- Jag ser inga nackdelar med att använda mobila tjänster när jag handlar dagligvaror
- Min mobila enhet är inte tillräckligt modern
- Sonstiges:



I frågorna nedan innebär "handla dagligvaror" alla delar av inköpsprocessen (t.ex. att leta efter närmaste affär, göra shoppinglistor, jämföra priser och betala för varorna).

Vänligen kryssa för det alternativ du anser stämma överens med din åsikt. Om du inte vill eller kan svara på en fråga, vänligen lämna denna obesvarad.

1. Jag tycker att användning av en mobil enhet skulle göra min inhandling av dagligvaror mer effektiv.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

2. Jag anser att användning av en mobil enhet skulle göra det mer bekvämt för mig att handla dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

3. Jag tror att jag hade sparat tid genom att använda en mobil enhet när jag handlar dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

4. Jag tror att användning av en mobil enhet överlag hade varit användbart när jag handlar dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

5. Jag tror att jag enkelt skulle kunna lära mig att använda mobila enheter när jag handlar dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

6. Jag tror att jag skulle förstå hur man använder en mobil enhet för att handla dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt



7. Jag tror att det hade varit enkelt för mig att bli en kompetent användare av en mobil enhet för att handla dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

8. Jag tror att det skulle vara enkelt att använda en mobil enhet för att handla dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

9. Jag tror att betalningen hade varit säker vid inhandling av dagligvaror via en mobil enhet.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

10. Jag tror att det hade varit riskfritt att handla dagligvaror med min mobila enhet.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

11. Jag anser att risken för missbruk av konfidentiell information (t.ex. kreditkortsnummer, bankkontouppgifter) är hög vid användning av mobila betalningar inom dagligvaruhandeln.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

12. Om personer i min omgivning hade rekommenderat mig att använda mina mobila enheter när jag handlar dagligvaror så hade jag gjort det.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

13. Jag skulle använda mobila enheter när jag handlar dagligvaror om många av av mina vänner gjorde det.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt



14. Om tekniken hade funnits, hade mina vänner ansett att jag skulle använda min mobila enhet för att handla dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

15. Jag skulle vilja använda min mobila enhet för att se utbudet av nya produkter.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

16. Jag skulle använda min mobila enhet för att hålla mig uppdaterad om de senaste trenderna.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

17. Jag gillar att jämföra varor med min mobila enhet för att få bäst valuta för pengarna.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

18. Jag gillar att leta efter lågprisvaror genom min mobila enhet.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

19. Jag gillar att leta efter varor på extrapris via min mobila enhet.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

20. Jag tror att det skulle vara fördelaktigt att kunna använda min mobila enhet när jag handlar dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt



21. Jag tycker att det skulle vara en bra idé att använda en mobil enhet inom dagligvaruhandeln.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

22. Jag tycker att det skulle vara positivt att kunna använda min mobila enhet för att handla dagligvaror.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

23. Jag hade använt min mobila enhet för att handla dagligvaror om tekniken hade varit tillgänglig.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

24. Om mobil shopping inom dagligvaruhandeln hade varit väl utvecklad hade jag hellre handlat på detta sätt än hur jag handlar idag.

1 2 3 4 5 6 7

Instämmer inte alls Instämmer helt

Är du man eller kvinna?

- Man
- Kvinna

Ålder

- Under 20
- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- Över 70

Vänligen ange ditt postnummer.

Utan mellanslag.



Vilken är din högsta utbildning?

- Grundskola, folkskola, realskola eller liknande
- Gymnasieutbildning
- Universitets- eller högskoleutbildning

Hur många personer finns det i ditt hushåll?

- 1 person
- 2 personer
- 3 personer
- 4 personer
- 5 eller fler personer

När beställde du senast varor via Coop Online?

- Inom 2 veckor
- Inom 1 månad
- Inom 3 månader
- Mer än 6 månader sedan
- Jag har aldrig beställt varor ifrån Coop Online

Har du använt en mobil enhet för att handla dagligvaror?

Till exempel för att jämföra priser, betala för produkter eller hitta näringsinnehåll

- Ja
- Nej



Appendix 2 - Participants First Pre-Study

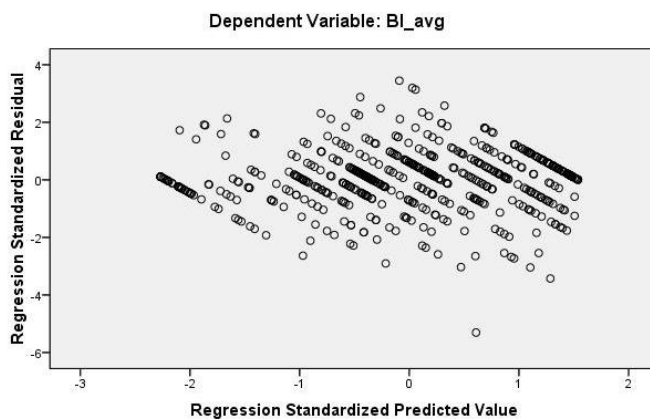
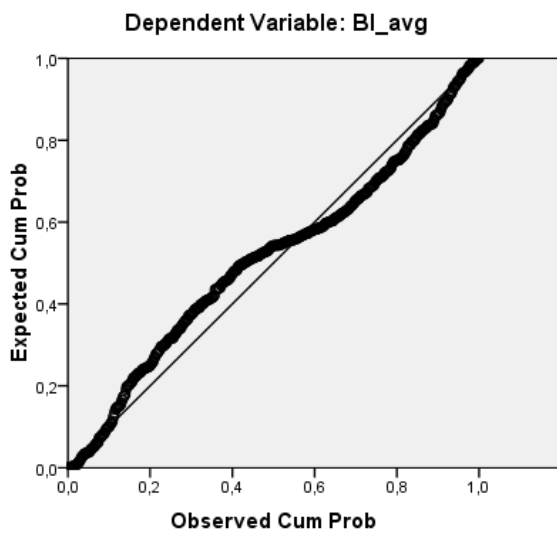
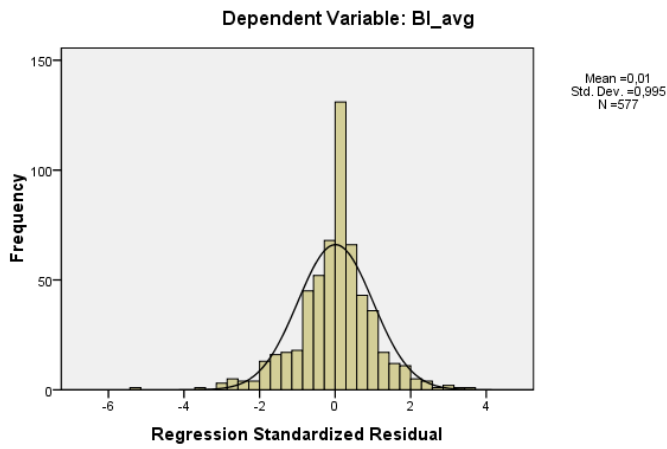
Respondent	Gender	Age	Occupation
1	Male	57	Working
2	Female	63	Housewife
3	Female	26	Student
4	Male	25	Student
5	Female	26	Student
6	Male	26	Working
7	Male	38	Working
8	Female	56	Working
9	Female	54	Housewife
10	Female	24	Student
11	Male	26	Student
12	Male	25	Working
13	Female	21	Student
14	Female	20	Working

Appendix 3 - Participants Second Pre-Study

Respondent	Gender	Age	Occupation
1	Female	62	Retired
2	Female	25	Student
3	Female	26	Student
4	Male	24	Working
5	Female	27	Working
6	Female	58	Housewife
7	Male	42	Working
8	Female	56	Working
9	Female	27	Unemployed
10	Female	43	Working
11	Male	49	Working
12	Male	25	Working
13	Female	21	Student
14	Male	33	Working
15	Female	22	Student



Appendix 4 - Assumptions First Regression





Appendix 5 - Assumptions Second Regression

