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REPLACING PHYSICAL WALLETS

A study expanding UTAUT2 to examine m-payment adoption among Dutch consumers.

Elise Taselaar

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1st Supervisor: dr. PhD A.D. Beldad
2nd Supervisor: dr. PhD R.S. Jacobs

Faculty of Behavioral, Management and Social sciences
University of Twente, Enschede, The Netherlands
Specialization: Technical Communication
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Abstract

The rise of mobile devices and FinTech (financial technology) solutions has an impact on consumer payment methods. Physical wallets make way for mobile banking and other innovative payment alternatives. These developments might offer opportunities for organizations to gain competitive advantage. Nowadays the Dutch market is showing a positive trendline towards mobile banking. However, while the adoption of mobile payment (m-payment) is seen as one of the most promising mobile banking services, acceptance among Dutch consumers falls short of expectations.

Aim of the study According to literature, cultural differences and the challenging process of the adoption of m-payment technologies could be predictors for low m-payment adoption. Although m-payment services are technically developed and accessible in the Netherlands, adoption is not forthcoming. This study examined the factors influencing the adoption of m-payment among Dutch consumers using the UTAUT2 model. Even though the model is widely used for research, it also has its limitations of focusing on technologies in general. The addition of constructs related to the adoption of m-payment among Dutch consumers is never examined. Dutch financial institutions are nowadays most important players on the m-payment market. However, worldwide operating non-financial companies as Apple and Google become important entrants in the field. Considering the promising opportunities of the m-payment technology and the fast developments of non-financial multinationals, it is of critical importance for practitioners and scholars in the Netherlands to get an understanding of the discrepancies between the opportunities and adoption efforts. The aim of this study is to examine the factors influencing m-payment adoption among Dutch consumers.

Method In order to investigate the factors influencing m-payment adoption, a survey was conducted collecting 376 Dutch respondents via snowball sampling. Participants were exposed to an online questionnaire examining the effect of the independent variables; performance expectancy, effort expectancy, facilitating conditions, habit, injunctive social norms, descriptive social norms, trust perception, risk perception, attractiveness of alternatives and personal innovativeness on behavioral intention to use m-payment. In addition, the moderating effect of gender was investigated.

Results Results of the study show that performance expectancy, injunctive social norms, trust perception and personal innovativeness have a significant impact on the intention to use m-payment among Dutch consumers. Also, it was found that gender is causing differences in trust perception influencing m-payment adoption.

Contribution This study contributes academically by breaking up social influence into injunctive social norms and descriptive social norms, finding only injunctive social norms to have a significant effect on m-payment adoption. In addition, examining cultural differences and prior knowledge of consumers is a contribution to the research field. Besides, it contributes practically showing the importance to improve trust by providing clear and transparent communication. Implementing advanced verification technologies for instance, could help increase trust in the m-payment technology. Furthermore, consumers' personal networks can be used to promote m-payment. In addition, marketers can convince consumers of m-payment adoption by providing consumers examples or numbers of people who have adopted m-payment already, showing that the technology is not that new anymore. In this way, anxiety for adopting new and innovative technologies can be reduced. Future research can improve this study by considering the statements for performance expectancy, attractiveness of alternatives and facilitating conditions more carefully. Also, research examining continues usage of m-payment could be a relevant future field of study.

Keywords: remote mobile payment, behavioral intention, FinTech, mobile banking, UTAUT2, injunctive social norms, trust, personal innovativeness.

Table of contents

1. Introduction

The use of mobile devices has been increasing over the years. Because of the worldwide adoption of mobile devices and their ability to store and transmit data, mobile devices appear to be a proper substitution for a physical wallet (Slade, Dwivedi, Piercy, & Williams, 2015). The Dutch market shows a growing trendline on the use of mobile devices for payment purposes (Banken.nl, 2019). However, performing payments with a mobile phone at a physical location (m-payment) is still lagging, despite the availability (Nieuwsuur, 2019). M-payment is described by de Luna (2017, p. 85) as "a type of financial process of a private or business nature, in which an electronic mobile communication device is used to initiate, authorize and carry out a financial transaction".

Although m-payment being one of the most promising mobile services, acceptance in developed countries falls short of expectations (Liébana-Cabanillas, Ramos de Luna & Montoro-Ríos, 2015; Talwar, Dhir, Khalil, Mohan, & Islam, 2020; Zhou, 2014). Reasons for the low adoption of mobile payment systems in Europe vary from the competition between different companies involved in the financial ecosystem and the challenging process of adoption of new FinTech's (financial technologies) among consumers (De Luna, Liébana-Cabanillas, Sánchez-Fernández & Muñoz-Leiva, 2019). Liébana-Cabanillas (2015) mentions that limited awareness and experience with the systems as well as the complexity and privacy concerns might offer an explanation. For this reason, this study aims to examine the adoption of m-payment.

To describe the adoption of technologies, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is used. This theory is widely used to get an understanding of technology adoption based on independent variables such as performance expectancy, effort expectancy and habit (Venkatesh, Thong, & Xu, 2012). Even though the UTAUT2 model is widely used for research (Alalwan, Dwivedi & Rana, 2017; Oliviera et al., 2016; Palau-Saumell, Forgas-Coll, Sánchez-García, & Robres, 2019), it also has its limitations. According to Venkatesh et al., (2012) and Williams, Rana, Dwivedi & Lal (2011) expanding the model with constructs related to a certain task or context is highly recommended since UTAUT2 is focused on technologies in general instead of focusing on the specific context. For this reason, utilizing an explanatory research adding constructs makes this research more valuable to the field of m-payment. According to Oliviera et al. (2016), m-payment is a new research area in

comparison to internet banking and mobile banking where research using the UTAUT2-model has been widely conducted. Additional research of Abrahão Moriguchi & Andrade (2016), Liébana-Cabanillas et al. (2015) & Oliviera et al (2016), states that examining European countries is one of the most important directions for future research since differences between cultures can have a major impact on the adoption of m-payment by improving the explanatory strength of the model. Since the Dutch culture differs from the Southern European countries (such as Italy and Spain) and m-payment adoption in the Netherlands is still lagging while using mobile phones for payment purposes is widely adopted (Banken.nl, 2019), examining the Dutch market is of high relevance.

This research contributes academically by conceptualizing and understanding the effect of different variables on the adoption of m-payment. Furthermore, this study can provide organizations with practical implications that can be used for developing or improving the adoption of m-payment technology. In this research, the main focus is on the Dutch market, the influence of the UTAUT2 constructs and additional constructs on the adoption of m-payment. This leads to the following research question:

RQ: Which factors influence the adoption of m-payment technology among Dutch consumers?

Although several studies have already investigated the adoption of technologies using the UTAUT2 model, the addition of the constructs descriptive social norms, injunctive social norms, trust perception, risk perception, personal innovativeness, and attractiveness of alternatives related to the adoption of m-payment among Dutch consumers is never examined. Therefore, this research is of high relevance to the field. The following section of this report describes the theoretical framework (chapter 2) followed by a description of the research methods in chapter 3. After a description of the research methods, the results of this study will be presented in chapter 4 followed by chapter 5 presenting the discussion. After that, future recommendations and limitations will be discussed in chapter 6.

2. Theoretical Framework

Using a mobile device for payment purposes is seen as a promising alternative for physical wallets. M-payment helps to perform in-store payments in a quick and easy manner. However, several factors seem to influence the decision to adopt m-payment. In this chapter, these factors will be explained. Ten independent variables and one dependent variable will be defined based on previous research concerning this theoretical framework. The independent variables are referred to as; (1) performance expectancy, (2) effort expectancy, (3) facilitating conditions, (4) habit, (5) injunctive social norms, (6) descriptive social norms, (7) trust perception, (8) risk perception, (9) attractiveness of alternatives, and (10) personal innovativeness. The dependent variable is defined as the adoption of m-payment. Additionally, the impact of the independent variables on the dependent variable is described. Besides, the moderating role of gender is defined which leads to the hypotheses of this research.

2.1 Adoption of M-Payment

Users have developed close personal relationships with their mobile devices since the introduction of the smartphone (Abrahão, et al., 2016). Benefits as flexibility and efficiency help users with their daily needs or problems (Rao Hill & Ttoshani, 2007). Among all services mobile devices have to offer these days as online shopping, music streaming, or banking services, Abrahão et al. (2016) describe the technology of m-payment as one of the newest technologies. During the past years, payment systems have developed from cash payments to several types of m-payment systems. Changes in the technological environment, the economy, and the increased use of mobile devices are drivers of the transition (De Luna et al., 2019). With m-payment consumers can perform their payment by placing their mobile phone near a payment device (Leong, Hew, Tan, & Ooi, 2013). After that, the payment is completed. Because of this, it offers consumers convenience and speed in their payment process. Besides, it allows consumers to transfer secure information with organizations such as restaurants or retailers (Oliveira, Baptista, & Campos, 2016). Regardless of the advantages of m-payment, the widespread adoption among consumers is not in line with expectations (Zhou, 2014). The adoption seems, despite a small number of countries, much less successful in Europe than in Asian and developing countries (Schierz, Schilke, & Wirtz, 2010). According to Venkatesh, Morris, Davis, and Davis (2003), the adoption of technologies can be explained by behavioral intention. The role of intention is well established as a predictor of adoption and usage in prior studies (Ajzen, 1991; Sheppard, Hartwick, & Warshaw, 1988; Venkatesh et al., 2003). These

studies showed a direct significant effect of behavioral intention on technology usage. Since adoption of m-payment is still lagging in the Netherlands, behavioral intention is used as a predictor for m-payment adoption.

Also, within the research area technology adoption, mobile payment is relatively new. While most research explored commerce, mobile banking, or internet banking, only some studies (Featherman & Pavlou, 2003; Slade et al., 2020) examined m-payment adoption. Although mobile banking and m-payment have overlapping technological features (using a mobile device to perform payment), the difference lies within the customer-provider relationship. Mobile banking consists of a two-way relationship between bank and customer where m-payment is a three-way relationship between consumer, entrepreneur, and the bank (Oliviera et al., 2016). To further develop mobile payment technologies and reap the expected profits, large companies as Google and Nokia invested millions of dollars into the mobile payment market (Yang, Lu, Gupta, Cao, & Zhang, 2012). However, according to Yang et al., (2012) acceptance of the technology by users is seen as the most important driver for gaining the expected profits out of the m-payment technology.

2.2 Prediction of M-Payment Adoption

To understand user intentions to adopt a technology, UTAUT2 (Venkatesh et al., 2012) is utilized. UTAUT2 describes the adoption of technologies by examining seven variables, namely, performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit (Venkatesh et al., 2012). Although a lot of research sheds light on the adoption of m-payment in Asian and Southern European countries, the adoption of m-payment in Western European countries is not broadly examined (Abrahão et al., 2016; Liébana-Cabanillas et al., 2015; Oliviera et al., 2016; Talwar et al., 2020). Research by Ondrus et al. (2009) shows the importance of the influence of cultural differences on m-payment business models. Besides, research of Chai and Dibb (2013) proved that cultural differences highly influence constructs as trust. For this reason, it is of high importance to expand the UTAUT2 model and test the adoption of m-payment, particularly for the Dutch market since studies based on Western European countries and Asian countries are not representative for the Northern European countries. This in favor of expanding the m-payment market for Dutch providers and Fintech companies developing and investing in this technology.

2.2.1 Performance Expectancy.

The first independent variable is performance expectancy, which is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh, 2003, p. 447). For instance, when people consider technology to be more useful in their daily life, they are more likely to adopt and use that specific technology (Venkatesh et al., 2003; Davis, 1989). The UTAUT model established the relationship by showing a significant effect of performance expectancy on usage behavior (Venkatesh et al., 2003). When adopting a new technology is expected that consumers are concerned about performance-oriented constructs, for instance hurdles consumer experience when downloading m-payment. Previous research on mobile payment adoption has supported the effect of performance expectancy on the intention to use mobile payment (Abrahão et al., 2016; Alalwan et al., 2017; Patil, Tamilmani, Rana, & Raghavan, 2020; Slade et al., 2015). However, those studies examined countries whereby the knowledge level of the respondents according to m-payment was never taken into account (Slade et al., 2015). Therefore, examining performance expectancy concerning the Dutch market is taken into account in this study. Based on this, the first hypothesis is formulated:

H1: The higher performance expectancy the more likely it is that Dutch consumers intent to use m-payment.

2.2.2 Effort Expectancy.

The second variable is effort expectancy, which is defined as “the degree of ease associated with the use of the system” (Venkatesh et al., 2003, p. 450). For instance, people may believe that using a mobile phone for transaction purposes is useful, however, the experience can lead to disappointment because of the difficulty to utilize the system. For this reason, m-payment users have to consider if the benefits outweigh the effort of using the system (Davis, 1989). Davis (1989) states that when a technology is perceived easier than another payment system, but the usefulness is the same, the m-payment system is more likely to be adopted. The impact of effort expectancy on the usage behavior can be described by UTAUT (Venkatesh et al., 2003). This research states that effort expectancy is a strong predictor of intention to use a new technology (Venkatesh et al., 2003). Other studies have proven the effect of effort expectancy on the adoption of m-payment within different cultures or circumstances (Abrahão et al., 2016; Alalwan et al., 2017, Patil et al., 2020; Slade et al., 2015). However, these studies recommended examining effort expectancy in a more western context. Besides,

Slade et al., (2015) describe that besides cultural differences, also the prior knowledge of the consumer needs to be tested to use the outcomes in a specific context such as the Dutch market. For this reason, effort expectancy is included in this study. Based on this research, therefore, the following hypothesis is formulated:

H2: The higher effort expectancy the more likely it is that Dutch consumers intent to use m-payment.

2.2.3 Facilitating Conditions.

The third variable is facilitating conditions, which is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003 p. 453). Specified to mobile services, Alalwan et al. (2017) describe that using online payment channels requires specific skills, resources, and technical resources. Hence, consumers could be more motivated to use m-payment when experiencing a certain support service and accessibility to resources and technical facilities (Alalwan et al., 2017). Concerning mobile banking adoption, research of Joshua and Koshy (as cited in Palau-Saumell et al., 2019) showed a positive effect having easier access to the internet or computers on online banking technology adoption. In addition, the impact of facilitating conditions on the adoption of payment services, in general, has been supported by several studies (Alalwan et al., 2017; Palau-Saumell et al., 2019; Yu, 2012; Zhou et al., 2010). According to Patil et al., (2020) an explanation for this result could lie within the homogeneity of the respondents selected (all students or alumni) who are familiar with using their mobile phones for several purposes. Since this study involves people of different ages and (cultural) backgrounds, adding this variable to the study is of high relevance. Therefore, the following hypothesis is formulated:

H3: The higher the expected facilitating conditions, the more likely it is that Dutch consumers intent to use m-payment.

2.2.4 Social Influence.

The sixth independent variable is social influence, which is defined as "the degree to which an individual perceives that others believe he or she should use the new system" (Venkatesh et al., 2003). Zhou (2010) specified social influence by stating that someone's social environment has an impact on a customer's intention to adopt m-payment. The impact of social influence can also be explained by UTAUT which shows a significant impact on the early stages of individual experience with technology (Venkatesh et al., 2003). However, Venkatesh and Davis (2000) stated that there are two mechanisms of social influence that have an impact on social behavior: compliance (about the way a person changes his or her intention to respond to social pressure) and identification (changes an individual's belief and/or causes an individual to respond to potential social status gains). These two different mechanisms can be referred to as descriptive social norms and injunctive social norms (Venkatesh and Davis, 2000).

Descriptive social norms describe what actions are considered normal or typical (White, Smith, Terry, Greenslade, & McKimmie, 2009). In addition, White et al. (2009) state that descriptive social norms motivate action by showing people what type of behavior is effective and appropriate. Injunctive social norms describe the perceived social pressure a person experiences from others to behave in a specific way (White et al., 2009). Because the potential rewards according to certain behavior are highlighted, White et al. (2009) states that actions of an individual can be influenced.

Various earlier conducted studies concerning m-payment have found significant results of the impact of social influence on the intention to use m-payment (Oliviera et al., 2016; Patil et al., 2020; Slade et al., 2015). The study of Slade et al. (2015) even found social influence as one of the strongest predictors of consumers' intention to adopt m-payment. However, the distinction between descriptive social norms and injunctive social norms was in best knowledge of the researcher not made in m-payment studies. Therefore, based on the literature the following hypotheses are formulated:

H4: The higher the descriptive social norms, the more likely it is that Dutch consumers intent to use m-payment.

H5: The higher the injunctive social norms, the more likely it is that Dutch consumers intent to use m-payment.

2.2.5 Habit.

The seventh variable is habit, which is defined as "the extent to which people tend to perform behaviors automatically because of learning" (Limayem, Hirt, & Cheung, 2007, p. 705). Limayem et al. (2007) describe that prior usage of a technology can be seen as a predictor of habit. Besides, Ajzen and Fishbein (2005) state that previous experiences will influence beliefs and future behavior. Since m-payment is a service derived from mobile banking services, the habit of using mobile devices for payment purposes could predict the adoption of m-payment. Nowadays, 86% of the Dutch population is using a mobile banking application (CBS, 2015). According to Zhong (2009), standardized and widely accepted procedures are important predictors for the acceptance of mobile payment. For standardization to occur and a habit to arise, technologies must exist for a longer period (Pal, Herath, & Rao, 2019). Since mobile phones are used for mobile banking to a high extent and for a longer period, using mobile banking can considered to be a habit for consumers (Mallat, 2007). Consumers experience the efficiency and convenience of using their mobile devices for payment purposes and therefore it could influence the intention to use and adopt other mobile payment methods more quickly. With this knowledge, and since prior use of related technology is a strong predictor for technology use and adoption (Kim, Malhotra & Narasimhan, 2005), the following hypothesis is formulated:

H6: The higher the habit of using mobile phones for payment purposes, the more likely it is that Dutch consumers intent to use m-payment.

2.2.6 Trust Perception.

The ninth independent variable is trust perception, which is defined as “the willingness of one party (trustor) to depend or rely on the actions of another party (trustee)” (Bisdikian et al., 2014, p. 170). Trust can also be defined as "the accumulation of customer beliefs of integrity, benevolence, and ability that could enhance customer willingness to depend on m-payment to attain the financial transactions” (Alalwan et al., 2017). As described by Lu, Yang, Chau, and Cao (2011), trust plays an important role in online banking services because consumers can experience a lack of control and uncertainty. Behavioral actions and future actions depend also on the level of trust someone is having in the technology (Sharma & Sharma, 2019). Specifically, trust gives consumers the possibility to gain a positive attitude about mobile payment technology.

According to Zhou (2014), characteristics of the online environment such as anonymity strengthen the role of trust in the decision to adopt online technology. Also, trust in the technology is highly needed for users to adopt and use m-payment because of personal and sensitive financial information (Duane, O'Reilly, & Andreev, 2012; Slade et al., 2015). Accordingly, earlier conducted research found trust to be the most significant predictor of the intention to adopt new technologies (Chandra et al., 2010; Lu et al., 2011). Although recent studies confirmed the relationship of trust on the intention to use new technology, little effort has been made to examine the effect of trust on the adoption of m-payment among Dutch consumers. Since the research of Slade et al., (2015) proved a positive significant effect of trust on the intention to use m-payment systems among inhabitants of the UK, trust seems to be a predictor for the Dutch market as well. However, according to the cultural dimensions of Hofstede (2017), the United Kingdom and the Netherlands differ on the dimension uncertainty avoidance (with 18%). This is the largest cultural difference between the Netherlands and the UK. Therefore, based on the statements above, the following hypothesis is presented:

H7: The higher trust perception, the more likely it is that Dutch consumers intent to use m-payment.

2.2.7 Risk Perception.

Perceived risk, the tenth independent variable, is defined as "the consumer's subjective belief of the possibility of loss as a result of engaging in online transactions'" (Dinev & Hart, 2006 as cited in Kim & Koo, 2016, p 1022). For online transactions and mobile applications risk perception is defined as feeling uncertainty about the negative consequences that might occur after performing a transaction (Featherman & Pavlou, 2003) According to Jones, Chin and Aiken (2014) consumers are anxious about renouncing private data and financial information towards mobile applications. Hence, when people feel anxiety and a high level of risk when using mobile technologies, Abrahão et al. (2016) indicate that the intention of adopting a new product decreases.

Risk perception is seen as an important variable in relation to using new technologies. According to Kim, Ferrin and Rao. (2008) it can prevent people from developing a positive attitude towards technologies. Furthermore, high risk perception can negatively influence the adoption of mobile technologies because of the lack of control consumers experience.

Ermakova, Baumann and Krasnova (2014) points out that privacy risk has a prominent role in the online context, since sharing personal data (credit card data or bank account data) is needed to get access to the m-payment technology. In research of Thakur and Srivastava (2014), a distinction was made between security risk and privacy risk. Both findings were supporting their hypothesis of risk negatively affecting the intention to use m-payment. Nevertheless, other studies using risk as one construct affecting the intention to use m-payment has also been supported in studies of Liébana-Cabanillas et al. (2014) and Lu et al. (2012). Therefore, the following hypothesis is formulated:

H8: The higher risk perception norms, the less likely it is that Dutch consumers intent to use m-payment.

2.2.8 Personal Innovativeness.

Personal innovativeness, the eleventh construct, is described in the literature as the desire of an individual to seek out something new (Hirschman, 1980). In relation to technologies Yi, Jackson, park and Probst (2006, p. 351) describes personal innovativeness as; "the willingness of an individual to try out a new technology". In other words, the willingness of a person to experience with new technologies explains a person's innovativeness (Slade et al., 2015). Research by Yi et al. (2006) showed a positive relationship of personal innovativeness on the adoption and usage of a new technology. Since m-payment can be seen as a fast-developing technology, innovation plays an important role in the intention of a consumer to use m-payment (Oliveira et al., 2016). Besides, earlier conducted research determined the importance of personal innovativeness in predicting the intention to use a new technology (Koenig-Lewis, Palmer & Moll, 2010). Since dominant theoretical models (such as UTAUT) concerning the adoption of technologies fail to include individual differences affecting the adoption process, personal innovativeness is an important extension of the UTAUT model.

Besides the theoretical relevance, marketing practitioners see variables concerning individual differences such as personal innovativeness as important concepts for their campaigns (Aroean & Michaelidou, 2014). Chang (2014) found personal innovativeness as one of the most important predictors for the intention to use m-payment in Malaysia. In addition, Slade et al. (2015) found a positive significant relationship between personal innovativeness and m-payment adoption in the UK. Despite the positive relationships proven in other studies

examining m-payment adoption, determining the effect of personal innovativeness on m-payment adoption in the Netherlands is of high relevance. As the m-payment technology is a new payment method in the Netherlands and the adoption of m-payment remains behind, the innovativeness of people with the Dutch nationality is seen as an important predictor for the Dutch market. It provides also insights in cultural and personal differences as recommended by Slade et al. (2015). Based on this research the following hypothesis is formulated:

H9: The higher personal innovativeness, the more likely it is that Dutch consumers intent to use m-payment.

2.2.9 Attractiveness of Alternatives.

The last independent variable, attractiveness of alternatives, is described as "the extent to which consumers perceive that viable competing alternatives are available in the marketplace" (Jones, Mothersbaugh & Beatty, 2000, p. 262). According to Amoroso and Magnier-Watanabe (2012) reputation, image, and service quality are important factors for determining the attractiveness of alternatives. And because m-payment is not popular among Dutch consumers yet, alternatives might still be more attractive. Not only other available technologies seem to be a main effect on m-payment adoption, but also bandwagon effects in a specific country influence the attractiveness of alternatives of m-payment (Au & Zafar as cited in Amoroso & Magnier-Watanabe, 2012). In other words, when more people start to believe in something, others choose to "jump onto the wagon". Ideas, trends, and beliefs within a country influence the attitude of others towards the technology and the alternatives. The study of Jones et al. (2000) showed a negative effect of attractive alternatives on the intention to use a technology. Alternatives that are already used and seem more attractive to consumers such as credit- and debit cards or cash, might be a hurdle for adopting m-payment. However, when existing payment methods lack attracting consumers' usage, m-payment could fulfill a gap. For this reason, the following hypothesis is formulated:

H10: The higher the attractiveness of alternatives, the less likely it is that Dutch consumers intent to use m-payment.

2.2.10 Gender as a Moderator.

Gender, as a moderating factor is less examined in technology adoption studies compared with other factors, for instance age and previous knowledge. Gender is considered important in technology adoption described by UTAUT2 (Venkatesh et al., 2003), proving gender causes differences in the effect of independent variables on dependent variables. According to Venkatesh et al. (2003), gender influences attitudes and behaviors. Besides, Agarwal and Prasad (1998) stated that males are more positive and less anxious towards new technologies than women. In addition, a difference in adoption of new technologies between men and women was found by Hoque (2016), exploring that males adopt e-health technologies faster than women. Therefore, the following additional research question is proposed:

RQ: To what extend is being a male influencing the independent variables (performance expectancy, effort expectancy, facilitating conditions, habit, descriptive social norms, injunctive social norms, trust perception, risk perception, attractiveness of alternatives) in influencing intention to use m-payment?

2.3 Research Model

The theoretical framework defined ten independent variables and the relationship with the dependent variable of this study. The expectation is that the independent variables influence the adoption of m-payment. In addition, the moderating effect of gender is defined. The expectation is that gender will cause changes in the effect of personal innovativeness on behavioral intention. Figure 1 graphically summarizes the hypothesized relationships mentioned in this section.

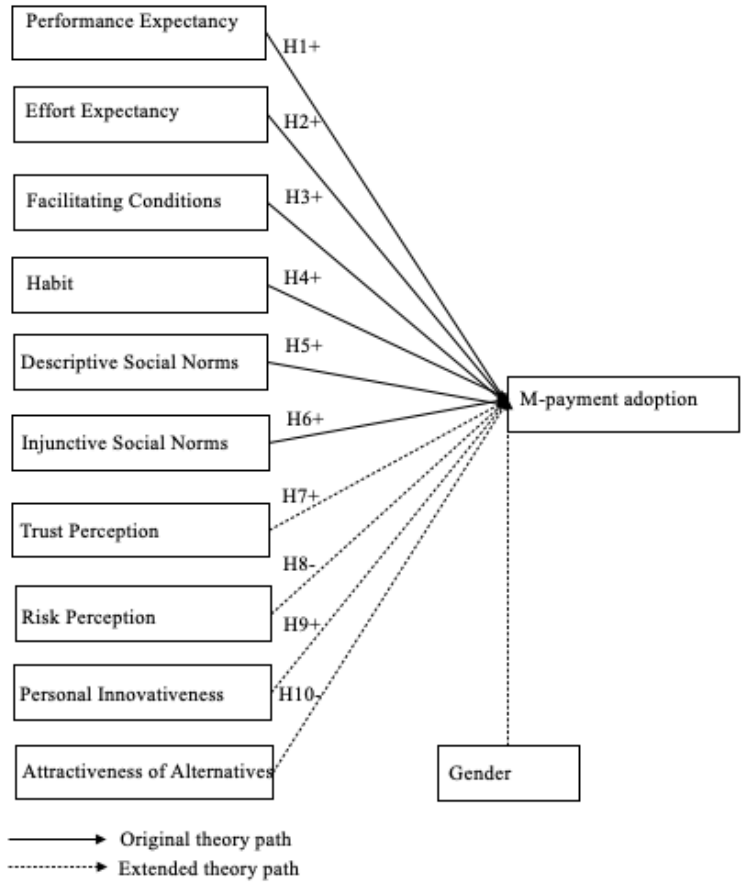

Figure 1 Proposed research model

3. Research Methodology

In this section, the research design, the methodology, and the participants of the study will be described. Also, the measurements used in the study will be explained.

3.1 Design

A survey was conducted to measure the effects of the independent variables on the adoption of m-payment among Dutch users. Using a survey gives the possibility of testing correlations of independent variables on a dependent variable. Second, respondents stay anonymous, so social desirability can be avoided (Ten Klooster, Visser, & De Jong, 2008). In addition, the data can be gathered quickly.

3.2 Pre-test

A pretest (n=20) was performed to identify the issues related to the formulation of the statements and test the inter-item reliability. Participants were asked to pay attention to content, wording, and understandability. Since the formulation is translated from English to Dutch, the results of the pilot test were of high importance to secure the quality of translation. Therefore, one native English speaker with a Dutch advanced language level translated statements from English to Dutch. The results of the pilot test determined small alterations of the items such as writing mistakes.

3.3 Procedure

The survey was constructed using the online survey software Qualtrics. Respondents with the Dutch nationality were recruited using snowball sampling. To reach a more general population, a widespread network among different provinces in the Netherlands was contacted to distribute the online survey among their network.

First, an introduction screen explaining the aim of the research was shown. Also, the respondents were told that no information would be shared with third parties. The first question (which nationality do you have?) was a question excluding respondents that did not meet the requirement of having the Dutch nationality. Followed by an example (as shown in appendix A) and an explanation of m-payment. An introduction that contains demographic questions followed. After that, the respondents were asked to fill in the questionnaire for the constructs

of the independent variables and the dependent variable. The survey was completed when a "thank you for participating" screen was shown after filling in all the survey questions.

3.4 Respondents

After eliminating incomplete respondents, a total of 376 respondents was used for data analysis. The results showed that 41% of the respondents (n=154) stated that they are using m-payment and 59% of the respondents do not use m-payment (n=222). Therefore, it was decided to use both groups for further analysis. Regarding the gender of the respondents, 35% of the respondents were male (n=131) and 65% of the respondents were female (n=244). Furthermore, most respondents can be found in the age group of 18 to 27 years, where the mean age for both groups users and non-users lie around 35 years (M=34, SD=13.5, M=36, SD=15.5). In table 1 the complete demographics of the research respondents can be found. Research questions giving insight in prior knowledge of m-payment (heard, read, or saw m-payment before) showed that there are only three respondents of the total amount of respondents that do not use m-payment (n=222) without prior knowledge. In total, 218 (98,2%) respondents said that they have heard about m-payment before.

Table 1 Demographics

Demographic characteristics		Frequency	Percentage
Age	18 - 27 years	127	45.7
	28 - 37 years	60	16.0
	38 - 47 years	36	9.6
	48 - 57 years	60	16.0
	58 - 67 years	40	10.6
	68 - 77 years	4	1.1
	Decline to answer	4	1.1
Gender	Female	244	64.9
	Male	131	34.8
	Decline to answer	1	.3
Occupation	Working	263	69.9
	Student	86	48.1
	Unemployed	27	7.2
Province	Overijssel	120	31.9
	Drenthe	104	27.7
	Groningen	39	10.4
	Noord-Holland	24	6.2
	Gelderland	20	5.3
	Friesland	18	4.8
	Noord-Brabant	18	4.8
	Zuid-Holland	17	4.5
	Utrecht	12	3.2
	Flevoland	4	1.1
	Limburg	0	0
	Zeeland	0	0
Banking	ING Bank	120	31.9
	Rabobank	148	39.4
	ABN-Amro Bank	56	17.3
	SNS Bank	21	5.6
	ASN Bank	6	1.6
	Triodos Bank	3	0.8%
	Knab	1	0.3%
	Decline to answer	3	0.8%
Adopted mobile Payment	No	222	59.0%
	Yes	154	41.0%
Total		376	100

3.4 Measures

For the operationalization of the constructs, validated or constructs inspired by those scales were formulated. A Likert-scale was used to measure the constructs of this research (Ten Klooster et al., 2008). The Likert-scale measure allows collecting data that is free of bias caused by the presence of a researcher. Thereby, most of the respondents are familiar with Likert-scales. Furthermore, it allows the respondents to express their attitudes (Ten Klooster et al., 2008). All the items used for the 9 constructs were measured on a five-point Likert scale which corresponds to 1=strongly disagree 2=disagree, 3=neither agree/neither disagree, 4= agree, 5=strongly agree (Ten Klooster et al., 2008). The option 'I do not know' was added for several statements.

M-payment adoption was measured using a four-item scale of behavioral intention based on items of Venkatesh et al. (2012). Performance expectancy was measured with a four-item scale. Effort expectancy, facilitating conditions, and habit were measured using a three-item scale. These items were inspired by items of Venkatesh et al. (2012). Descriptive social norms was measured using a three-item scale inspired by items of Lu, Yao, and Yu (2005). A four item-scale (as shown in table 2) with items inspired on Venkatesh et al. (2012) was used to measure injunctive social norms. Trust perception was measured with items constructed by Hegner, Beldad and Brunswick (2019). The variable risk perception was measured with three items by Lu et al. (2011). Personal innovativeness was measured using three items retrieved from Yang et al. (2012). The last independent variable, attractiveness of alternatives was formulated using earlier conducted research of Jones et al., (2000) and Kim et al. (2011) (retrieved from Pham & Ho, 2015). This variable was measured using four factors. Finally, the adoption of m-payment was measured by items of Venkatesh (2012). The decision to include habit was based on the study of Kim et al., (2005) explaining that the habit and familiarity of using a certain overlapping technology such as mobile banking can lead to easier adoption of a related technology. Therefore, the items were formulated as using mobile banking daily.

3.5 Validity and Reliability

To test the sampling adequacy the Kaiser-Meyer-Olkin (KMO) was calculated as well as the Bartlett's Test of Sphericity. The KMO resulted in .785 (p >.5) and Bartlett's Test of Sphericity shows a significant result (p <.001). Therefore, the sample size can be considered sufficient.

3.5.1 Validity.

To determine whether the 37 items selected measure the constructs of this study, a Varimax factor analysis using the total amount of respondents was performed. In table 2 all the items included in the survey are presented showing the factor loadings after rotation. As shown in the factor analysis (excluding factors <.4), the constructs of performance expectancy and intention to use are highly questionable because the items for both constructs load the same factor. Despite concluding this, performance expectancy cannot be excluded from the analysis. Because the factor is derived from UTAUT2, from a content validity perspective excluding this factor would result in an incomplete model. Therefore, this construct is approached as an exclusive construct in this study. Besides performance expectancy, the items measuring attractiveness of alternatives and facilitating conditions were excluded from the study to determine internal validity because the factors did not load with the right construct.

Table 2 Results of the factor analysis with VARIMAX rotation of the items included in the online survey instrument

		Factor							
Constructs	Items	Usefulness	Effort expectancy	Descriptive social norms	Injunctive social norms	Habit	Trust	Risk	Personal innovativeness
Performance Expectancy	I expect m-payment to be useful when performing my payments.	.61							
	I expect using m-payment helps me accomplish my payment more easily.	.65							
	I expect using m-payment increases my productivity.	.62							
Effort expectancy	I think I will learn quickly how to use mobile payment.		.78						
	I think mobile payment is understandable to me.		.77						
	I think mobile payment is easy to use.		.73						
	I think it is easy for me to become skillful at using m-payment.		.83						
Descriptive social norms	Mobile payment is used a lot at the moment by people I know.			.87					
	Mobile payment is popular in the Netherlands.			.77					

	A lot of people in my area use mobile payment.		.91					
Injunctive social norms	People who are important to me think that I should use m-payment.			.84				
	People who are important to me advise me to use mobile payment.			.89				
	People who are important to me think it is a good idea to use mobile payment.			.87				
	People who are important to me think that I should start using mobile payment.			.78				
Habit	I am using my mobile phone for payments on a daily basis.				.86			
	Using my mobile phone to perform my payments happens automatically.				.78			
	I use my mobile phone because this became normal to me.				.85			
Trust	I think the technology of m-payment is trustworthy.					.84		
	I think the technology of m-payment is safe.					.84		
	I expect that I can rely on the technology of m-payment					.77		
Risk	I think using mobile payment harms my private information.						.72	
	I think using mobile payment gives others access to my private account.						.72	
	I think using mobile payment will reveal personal information via the system.						.81	
Personal innovativeness	When I hear about a new technology, I would look for ways to experiment with it.							.79
	Among my peers, I am usually the first to explore new technologies.							.84
	I like to experiment with new technologies.							.84
	In general, I do not hesitate to try out new information technologies.							.73
Behavioral intention	I intend to use m-payment in the future.	.75						
	I will try to use m-payment in the future.	.73						
	I plan to use m-payment on a daily basis.	.72						
	I am willing to use m-payment in the future.	.70						

3.5.2 Reliability.

Internal reliability was measured with Cronbach's alpha. A scale was considered reliable if the alpha level was equal to or higher than .70 (Field, 2009). Table 3 presents an overview of the reliability scores, means, and standard deviations of the scales. According to the reliability scores, all scales were considered reliable (>.70). And, since the scales are based on scales already proven in other studies of Venkatesh et al. (2012), Lu et al. (2005), Pham and Ho (2015) and Yang et al. (2012), these scales were used for analysis. To see whether internal reliability could be increased the total item correlation was used. Since all total item correlations were above .40, it was not needed to exclude items to increase reliability.

Table 3 Reliability scores and mean and standard deviation values for the different constructs of the study

	Mean	SD	α
Measurement scales:			
Performance expectancy	4.04	0.90	.79
Effort expectancy	4.48	0.65	.84
Descriptive social norms	3.00	1.34	.89
Injunctive social norms	3.31	1.09	.90
Habit	4.32	0.89	.86
Trust perception	3.61	0.75	.91
Risk perception	2.50	0.94	.71
Personal innovativeness	2.97	0.91	.88
Behavioral intention	3.71	0.90	.90

All scales are measured on a 5-point liker scale (1=totally disagree / 5=totally agree)

4. Results

This section presents the main results of this study. To test the hypotheses of this research, a regression analysis was performed. The results of respondents not using m-payment were analyzed. In addition, the results of respondents using mobile payment (n=154) were examined. The main objective of this study was to test the influence of the independent variables as predictors on the adoption of m-payment in the Netherlands. However, since the group of respondents already using m-payment consists of 41% of the total research respondents, both groups are used for analysis. In the first section, a correlation analysis will be discussed, followed by hierarchical regression analysis for both users and non-users of m-payment. After that, logistical regression analysis and moderation analysis are presented, followed by a summary of the hypotheses.

4.1 Quantify Associations

Before the hierarchical regression analysis, a correlation analysis (table 4) was performed. Results imply that all eight correlations are significant in relation to the dependent variable behavioral intention. The correlation analysis was performed to quantify the association between the independent and dependent variable showing significant positive (performance expectancy, effort expectancy, descriptive social norms, injunctive social norms, habit, trust perception and personal innovativeness) and one significant negative relationship (risk perception). To examine to what extent multicollinearity is present among variables, the variance of inflation factors (VIF) were calculated. None of the variables were contributing to multicollinearity issues within the dataset used (< 4) (O'Brien, 2007). The correlations and VIF results establish the assumptions in order to develop the regression analysis.

Table 4 Correlation analysis (N=376)

Variables	1	2	3	4	5	6	7	8	9
Performance expectancy	-								
Effort expectancy	.54**	-							
Descriptive social norms	.34**	.21**	-						
Injunctive social norms	.32**	.14**	.43**	-					
Habit	.40**	.35**	.07	.26**	-				
Trust perception	.34**	.21**	.16**	.25**	.30**	-			
Risk perception	-.20**	-.11**	.03	-.06	-.25**	-.48**	-		
Personal innovativeness	.39**	.33**	.22**	.15**	.24**	.42**	-.15**	-	
Behavioral intention	.61**	.36**	.28**	.34**	.38**	.55**	-.31**	.56**	-

**p <.01. (2-tailed).

4.2 Measure the Relationships

Since the survey has shown a group of respondents not using m-payment of 59% (n=222), this group of respondents can be used to answer the research question and hypotheses of this research. In addition, the group of respondents already using m-payment (n=154) is used to examine similarities and differences between both groups. Since this study used constructs based on already proven constructs by Venkatesh (2013), these constructs were presented in the first block. In the second block, also the constructs risk, trust, and personal innovativeness were entered. First, hierarchical regression analysis for non-users is presented followed by hierarchical regression analysis for the users of m-payment. After that, the similarities and differences between the groups are described.

4.2.1 Hierarchical Regression Analysis for Non-Users of M-Payment.

As shown in the hierarchical regression analysis (presented in table 5) for non-users of m- payment (n = 222), constructs derived from UTAUT2 (Venkatesh et al., 2013) in model 1 are presented resulting in an adjusted R^2 of .24, F(14, 7) = 5, $p < .001$. After expanding the model with the predictors trust, risk and personal innovativeness, the adjusted R^2 rose up to .43 F(12, 3) = 8, $p < .001$. Therefore, it states that the complete model describes that 43% of the variance for the intention to use m-payment can be explained by the eight independent variables presented in the model.

As shown in the second model, the variance of intention to use m-payment can be explained by four independent variables that were found to be significant predictors, namely performance expectancy ($\beta = 0.34$, $p < .001$), injunctive social norms ($\beta = .12$, $p < .05$), trust perception ($\beta = .30$, $p <.001$) and personal innovativeness ($\beta = .21$, $p < .001$). Therefore, the hypothesis for performance expectancy, injunctive social norms, trust perception and, personal innovativeness can be supported by this research. But, since the constructs of the independent variable performance expectancy and the constructs of the dependent variable behavioral intention load on the same factor, the internal validity is considered low. Therefore, this hypothesis is not convincingly supported in this research. However, the variance in intention to use m-payment can be explained for 12% by injunctive social norms ($p < .05$). Furthermore, trust explains 30% of the variance in the intention to use mobile payment. The other constructs were not found influencing the intention to use m-payment. Therefore, hypotheses 2, 4, 5, 8 and 10 are not supported by the results of this study. To see whether performance expectancy is influencing the model, because it loads with behavioral intention, regression analysis was

performed without performance expectancy (appendix B**)**. However, no large differences were present. Therefore, the complete model was used in favor of content validity.

Table 5 Regression analysis predicting: "intention to use mobile payment" non-users

Models	*Adj. R^2*	*F-value*	*Sig.*
Model 1: predictors UTAUT2 model	.24	14.7	.00
Model 2: predictors from UTAUT model + trust, usage experience, risk	.43	12.3	.00

Regression coefficients	*β*	*t-value*	*Sig.*
Model 1: predictors UTAUT2 model (Δ Adj. R^2 = 0.255)			
Performance expectancy	.42	5.82	.001*
Effort expectancy	.01	0.14	.891
Descriptive social norms	-.02	-0.31	.757
Injunctive social norms	.16	2.47	.014*
Habit	.05	0.82	.414
Model 2: predictors UTAUT2 model + trust, risk, personal innovativeness (Δ Adj. R^2 = 0.446)			
Performance expectancy	.34	5.41	.001*
Effort expectancy	-.04	-0.69	.492
Habit	-.01	-0.19	.847
Descriptive social norms	.00	0.01	.990
Injunctive social norms	.12	2.08	.04*
Trust perception	.30	4.63	.001*
Risk perception	-.10	-1.63	.104
Personal innovativeness	.21	3.65	.001*

a. *Dependent Variable: behavioral intention*
b. ** Significant at an alpha level of .05*

4.2.2 Hierarchical Regression Analysis for M-Payment Users.

Hierarchical regression analysis (presented in table 6) utilized for users of m-payment (n=154) shows that constructs derived from UTAUT2 (Venkatesh et al., 2013) resulted in an adjusted R^2 of .31 F(14, 6) = 5, $p < .001$. After expanding the model with the predictors trust, risk and personal innovativeness, the adjusted R^2 rose up to .40 F(13, 0) = 8, $p < .001$). Therefore, it states that the complete model describes that 40% of the variance for the intention to use m-payment can be explained by the eight independent variables presented in the model.

As shown in the model, the variance of intention to use m-payment can be explained by five independent variables that found to be significant predictors namely, performance expectancy ($\beta = 0.28$, $p < .001$), habit ($\beta = .23$, $p < .05$), injunctive social norms ($\beta = 0.16$, $p < .05$), trust perception ($\beta = 0.20$, $p < .01$) and personal innovativeness ($\beta = 0.21$, $p < .001$). As presented in table 5, effort expectancy is showing a significant result in model 1 ($\beta = .19$, $p < .05$). However, when combining all factors in the expended model, the significant influence of effort expectancy is decreased due to the other factors. To see whether performance expectancy

is influencing the model because it loads with behavioral intention, regression analysis was performed without performance expectancy (appendix B). However, no large differences were present. Therefore, it was decided in favor of content validity to use the complete model.

Table 6 Regression analysis predicting: "intention to use mobile payment" users

Models	*Adj. R^2*	*F-value*	*Sig.*
Model 1: predictors UTAUT2 model	0.31	14.6	.00
Model 2: predictors from UTAUT model + trust, usage experience, risk	0.40	13.0	.00

Regression coefficients	*β*	*t-value*	*Sig.*
Model 1: predictors UTAUT2 model (Δ Adj. R^2 = 0.255)			
Performance expectancy	.28	3.56	.001*
Effort expectancy	.19	2.37	.019*
Descriptive social norms	-.13	-1.65	.101
Injunctive social norms	.19	2.47	.015*
Habit	.23	3.07	.003*
Model 2: predictors UTAUT2 model + trust, risk, personal innovativeness (Δ Adj. R^2 = 0.446)			
Performance expectancy	.24	3.21	.002*
Effort expectancy	.12	1.65	.100
Habit	.15	2.10	.038*
Descriptive social norms	-.12	-1.68	.095
Injunctive social norms	.16	2.19	.030*
Trust perception	.20	2.67	.009*
Risk perception	-.02	-0.32	.754
Personal innovativeness	.23	3.38	.001*

a. *Dependent Variable: behavioral intention*
b. ** Significant at an alpha level of .05*

4.3 The Role of Gender as a Moderator

One of the demographic questions asked in the survey was about the gender of the respondents. Females were overrepresented with 64.9% (n = 244). The number of male respondents consisted of 34.8% (n = 131). One person declined to answer the question about gender and is therefore excluded from this analysis. After determining the interdependence of the variables (VIF <4), significant linear relationships in the regression analysis, and excluding the outliers, moderation analysis was performed. According to Hayes and Rockwood (2017) moderation analysis can be used to address if there is an effect of instance types of people on the relationship between the independent and the dependent variables. In this study, an interaction effect of being a male or female on the relationship of the independent variables on the dependent variable was examined to answer the research question; To what extend is being a male influencing the independent variables in influencing intention to use m-payment?

To answer this research question, moderated multiple regression Hayes Process Macro is used with a 95% confidence interval (n = 375). For trust perception, there was found a positive outcome for the moderation effect of gender on behavioral intention to use m-payment (R^2 = .30, t = 2.84, p <.05). In other words, men are more willing than woman to adopt m-payment even though trust perception is low. And, when women experience higher trust perception, they are more willing to adopt m-payment than men. However, for the other independent variables, there were no significant moderating results found. Therefore, the research question can be answered for only one independent variable. Gender has a significant moderating role in the relationship between trust perception and m-payment adoption among Dutch consumers.

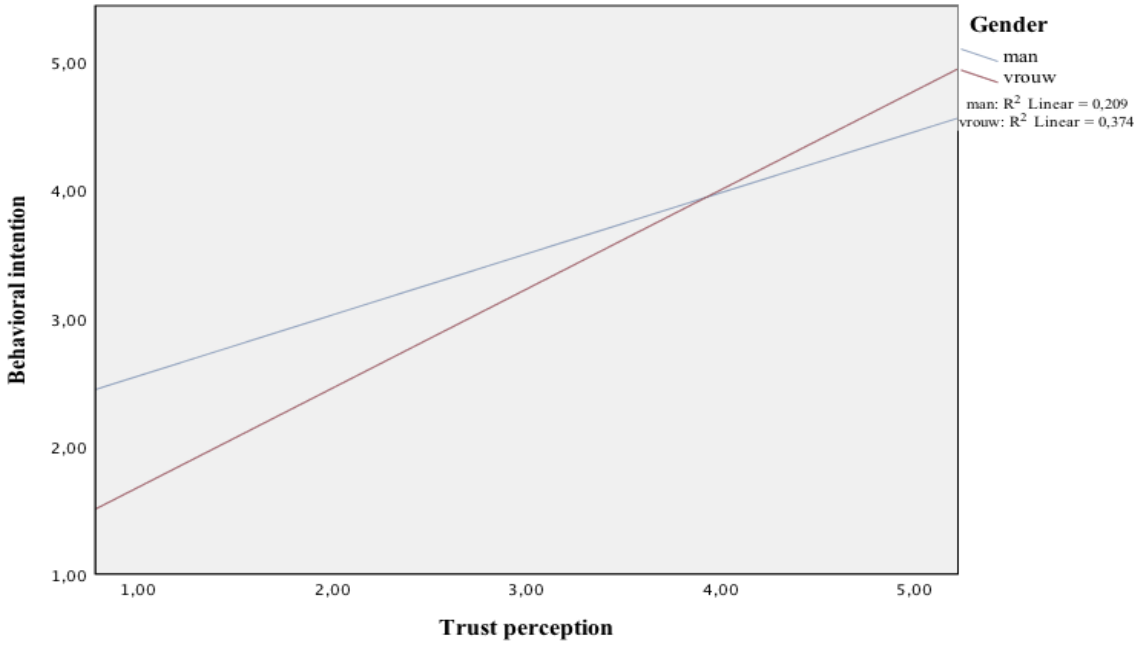

Figure 2 The effect of Trust perception on Behavioral intention moderated by gender

4.4 Predicting Use Intention

Results of this study showed an unexpected outcome presenting a large number of m-payment users in the Netherlands. This outcome provides the opportunity to perform a logistical regression analysis. This analysis is performed to determine the relationship between using (41%) or not using (59%) m-payment and the independent variables; effort expectancy, performance expectancy, descriptive social norms, injunctive social norms, habit, trust perception, risk perception, and personal innovativeness. According to Peng, Lee, and Ingersoll (2002) logistical regression can be used to predict the logit of Y from X. In this research X consists of the eight independent variables whether Y consists of using m-payment (=0) or not (=1). The alternative hypothesis used for this logistical regression is the likelihood that someone is using m-payment is related to his/her outcomes of effort expectancy, performance expectancy, descriptive social norms, injunctive social norms, habit, trust perception, risk perception, and personal innovativeness.

An eight-predictor logistic model (α .05) was fitted to the data to test the hypothesis: when someone is experiencing high performance expectancy, effort expectancy, descriptive social norms, injunctive social norms, habit trust and personal innovativeness and low risk perception, it is likely that someone is using m-payment. The variability in the model is for 51% accountable by the independent variables. Since the Hosmer and Lemeshow test showed a non-significant result and the chi-square consists of a low value (6.1), the difference between the expected and observed prediction is greater and therefore a prediction can be made based on the model. After performing the model, the prediction accuracy increased with 20.3% (59% to 79.3%). Therefore, accurate predictions (79.3%) can be made by the model, resulting in the following formula:

*Predict logit of (not using m-payment) = 10.81 + (-1.378) *performance expectancy + (-.434) *descriptive social norms + (-.403) *habit + (-1.004) *personal innovativeness*

According to the outcomes of the model, the chances of a person not using m-payment is negatively related to performance expectancy, descriptive social norms, and personal innovativeness ($p < .001$). In addition, as shown in table 7, habit has a negative result in relation of being a person not using m-payment ($p = .04$). In other words, the higher the performance expectancy, descriptive social norms, personal innovativeness, and habit, the more likely it is

that someone is using m-payment. Therefore, the hypothesis of this analysis is confirmed by this analysis.

As shown in the results of the hierarchical regression analysis per group (users and non-users) the main difference is the influence of habit on intention to use m-payment. For non-users, habit does not result in a significant predictor for m-payment adoption (β = -.10, p > .05) However, for users, habit is seen as a predictor for using m-payment (β = *.15*, p <. 05). However, this result is not convincingly supported because of the weak relationship. Both groups show performance expectancy as the strongest predictor for m-payment adoption. Nevertheless, as discussed, the constructs of the independent variable performance expectancy and the constructs of the dependent variable behavioral intention load on the same factor. Therefore, the internal validity is considered low and results must be interpreted carefully. In addition, one of the strongest predictors for non-users is trust perception, while the strongest predictor (besides performance expectancy) shown by regression analysis is personal innovativeness for the group of m-payment users. Despite the small differences between both groups, overlapping results are shown as well. Besides habit presenting a difference, the variables performance expectancy, injunctive social norms, trust perception, and personal innovativeness overlap for both groups.

Table 7 Logistic Regression Analysis of Dutch consumers in relation to m-payment adoption

Predictor (0=yes, 1=no)	β	SE β	Wald's x^2	*df*	p	e^{β} $(odds\ ratio)$
Constant	10.812	1.682	41.326	1	.000*	N/A
Performance expectancy	-1.378	.244	31.783	1	.000*	.252
Effort expectancy	.457	.292	2.449	1	.118	1.579
Descriptive social norms	-.434	.124	12.228	1	.000*	.648
Injunctive social norms	.102	.152	.450	1	.502	1.108
Habit	-.403	.197	4.196	1	.041*	.668
Trust perception	-.270	.240	1.266	1	.261	.763
Risk perception	.036	.181	.039	1	.843	1.036
Personal innovativeness	-1.004	.191	27.637	1	.000*	.366
Test			x^2	df	p	
Overall model evaluation						
Score test			136.833	8	.000	
Wald test			12.162	1	.000	
Goodness-of-fit test						
Hosmer&Lemeshow			6.116	8	.634	

4.5 Summary of the Hypotheses

A summary of the hypotheses examined in this study is shown in table 8. Four of the ten hypotheses can be confirmed by the study. In addition, figure 3 graphically summarizes the research model with the relationships between the dependent and the independent variables.

Table 8 Summary of the Hypotheses

	Hypotheses	Result
H1	The higher performance expectancy the more likely it is that Dutch consumers intent to use m-payment.	Confirmed
H2	The higher effort expectancy the more likely it is that Dutch consumers intent to use m-payment.	Not confirmed
H3	The higher the expected facilitating conditions, the more likely it is that Dutch consumers intent to use m-payment.	Excluded from data analysis
H4	The higher the descriptive social norms, the more likely it is that Dutch consumers intent to use m-payment.	Not confirmed
H5	The higher the injunctive social norms, the more likely it is that Dutch consumers intent to use m-payment.	Confirmed
H6	The higher the habit of using mobile phones for payment purposes, the more likely it is that Dutch consumers intent to use m-payment.	Not confirmed
H7	The higher trust perception, the more likely it is that Dutch consumers intent to use m-payment.	Confirmed
H8	The higher risk perception norms, the less likely it is that Dutch consumers intent to use m-payment.	Not confirmed
H9	The higher personal innovativeness, the more likely it is that Dutch consumers intent to use m-payment.	Confirmed
H10	The higher the attractiveness of alternatives, the less likely it is that Dutch consumers intent to use m-payment.	Excluded from data analysis

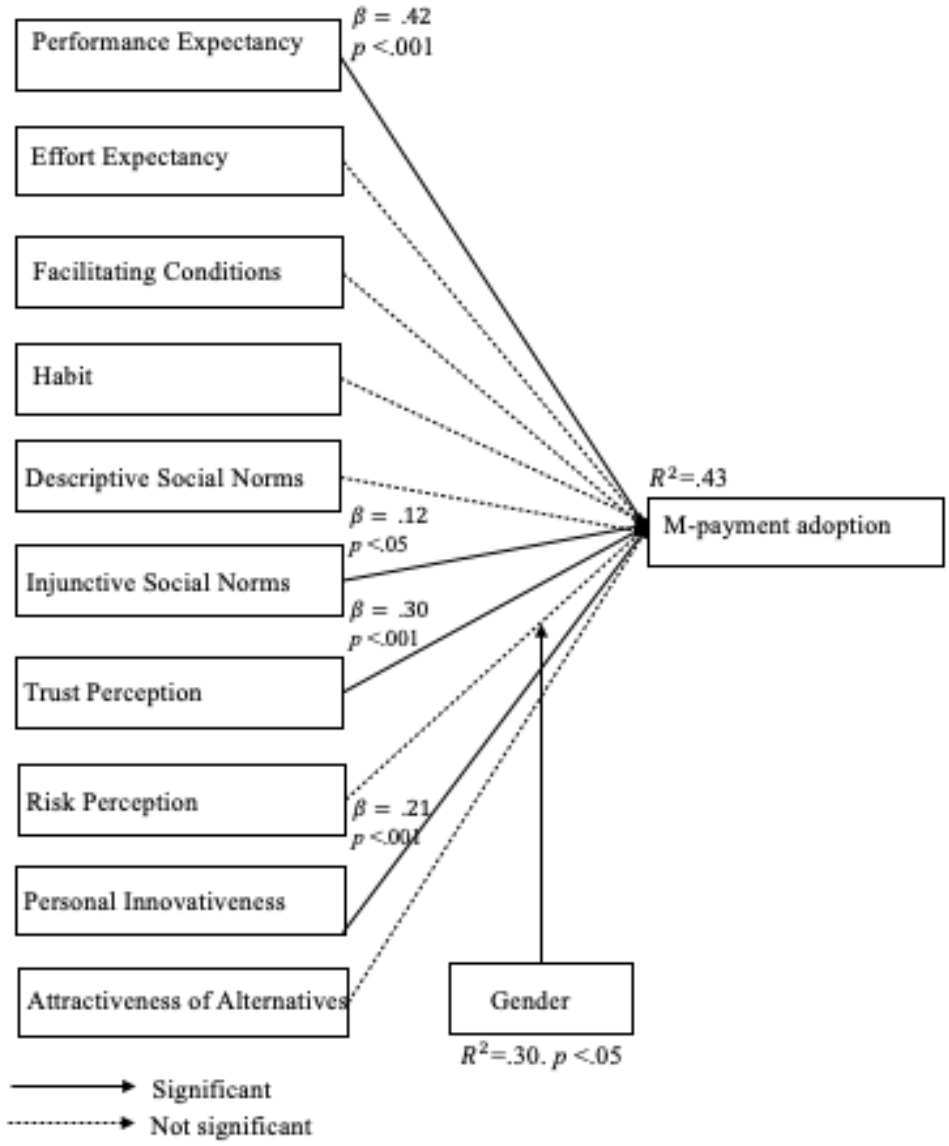

Figure 3 Complete research model

5. Discussion

The purpose of the study was to examine the factors influencing m-payment adoption in the Netherlands. Therefore, a survey was conducted, and hierarchical regression analysis was performed. However, after finding unexpected results showing 41% of the participants already using m-payment, a logistic regression was performed to examine whether the independent factors can predict if someone is using m-payment or not. And besides, a moderation analysis was performed to see whether age is influencing the relationship of the independent variables on behavioral intention. In the following section of this study, the key findings and the theoretical and practical implications will be discussed. After that, the limitations and suggestions for future research will be considered.

5.1 Key Findings

This study tried to examine the effect of the independent variables performance expectancy, effort expectancy, habit, injunctive social norms, descriptive social norms, trust perception, risk perception and personal innovativeness on the dependent variable intention to use m-payment. In the following, the main findings will be discussed.

5.1.1 Performance Expectancy.

It was hypothesized that performance expectancy positively impacts m-payment adoption among Dutch consumers. This hypothesis was supported by this study meaning that when people expect the technology to help them perform tasks, it is more likely that adoption will take place. However, the assumptions were not completely confirmed (table 2) since factor analysis revealed that performance expectancy and behavioral intention load on the same factors. Therefore, the significant results of this independent variable are highly questionable. Functionalities of a technology (performance expectancy) in relation to technology adoption is proven by other studies that have applied UTAUT as a theoretical foundation in their conceptual models (Alalwan et al., 2014; Luo, Li, Zhang, & Shim, 2010; Oliviera et al., 2016; Zhou, 2014). Statistical results in this study also provide a significant relationship between performance expectancy and intention to adopt m-payment (β = .34, p <.001). It could therefore be possible that people consider m-payment to be useful, are willing to adopt m-payment soon.

5.1.2 Effort Expectancy.

The second hypothesis in this study was effort expectancy influencing m-payment adoption among Dutch consumers. This hypothesis was not supported by this study which contradicts to the literature of Venkatesh et al. (2003) describing the significant relationship between effort expectancy and technology adoption. However, since this study showed that using mobile phones for mobile banking purposes became a habit for Dutch consumers, an explanation for this outcome could be that people do not expect to experience difficulties using a new payment method provided by their mobile phone (such as m-payment). As described by Gu, Lee and Suh (2009), a certain level of knowledge and skill is needed to perform tasks related to the technology. The results of this study might indicate that Dutch consumers think they already possess these skills by using their mobile phones for other payment purposes.

5.1.3 Habit.

The hypothesis that habit positively impacts the adoption of m-payment by Dutch consumers cannot be confirmed by this study. Even though respondents consider using mobile banking as a habit, it is not shown that this results in adopting m-payment. An explanation for this result might lie in the assumption which is made based on literature in this study. The literature stated that habits arise when technologies are used for a longer period and are widely accepted (Pal et al., 2019; Zhong, 2009). Also, Limayem et al. (2007) aim that prior use of a technology can be seen as a predictor for habit. Therefore, it was expected that, according to the similarities of m-payment and mobile banking, the habit of using a mobile device for payment purposes could be a predictor for m-payment adoption (Mallat, 2007). However, results in this study do not show a significant relationship between the habit of using mobile banking and the intention to use m-payment. Therefore, it could be that the habit of using mobile banking is not seen by Dutch consumers as the same technology as mobile payment technology.

As described by Limayem et al., (2007) habit exists because of an individual learned response to a certain stimulus and requires repetition and practice. In the case of this study, it could it be that the performance (m-payment is presented in the study as an instore payment with a mobile phone while mobile banking can be performed at any moment at any place even from home) has a role in forming a habit. Interestingly enough, when comparing the users and non-users of m-payment by performing hierarchical regression analysis, habit is the only independent variable that shows a significant result for users while there was no significant result found for non-users. This might indicate that people who are already using m-payment

experience mobile payment technology use as a habit. Those who are not using m-payment might experience the handling and technology of m-payment and mobile banking as two different things.

5.1.4 Descriptive Social Norms.

It was hypothesized that descriptive social norms positively impact m-payment adoption among Dutch consumers. This hypothesis was not supported by this research. Various studies concerning m-payment showed significant results of social influence on the intention to use m-payment (Oliviera et al., 2016; Patil et al., 2020; Slade et al., 2015). However, to the best of the researcher's knowledge, there was never a distinction made between descriptive social norms and injunctive social norms in studies examining m-payment adoption. The results of this study might initialize the effect of social influence lie within the injunctive social norms instead of the descriptive social norms. In other words, Dutch consumers may not feel influenced because m-payment usage is something that is already seen as typical behavior. An explanation for this result might be that m-payment is not used by the majority of Dutch consumers (Nieuwsuur, 2019) and is therefore not considered to be behavior that someone has to perform based on the behavior of others.

5.1.5 Injunctive Social Norms.

Besides descriptive social norms, injunctive social norms was measured in this study. It was hypothesized that injunctive social norms have a positive effect on the intention to use m-payment. Analysis proved the effect of injunctive social norms. M-payment adoption thus depends to a small extent ($\beta = .12$, $p < .05$) on the pressure a person experiences from others to behave in a specific way (White et al., 2009). This means that Dutch consumers will be influenced by the pressure people in their environment put on them. The outcome of this study confirms prior studies (Oliviera et al., 2016; Patil et al., 2020; Slade et al., 2015). However, these studies tested social influence as one construct while this study approached social influence as two separate constructs (descriptive social norms and injunctive social norms). While there was no significant relationship found between descriptive social norms and behavioral intention, the results for injunctive social norms on behavioral intention can be interpreted as significant.

The study of Slade et al. (2015) about m-payment adoption on the UK market found social influence as one of the most important predictors for adoption. However, they did not examine injunctive social norms as a separate construct. The distinction is important for theoretical as well as practical purposes because of the internal and external motivation. Despite the fact that this study showed a significant relationship, the impact of injunctive social norms should be interpreted with caution because of the weak effect shown (R^2 = .12).

5.1.6 Trust Perception.

It was hypothesized that trust in the technology positively influences people's willingness to adopt m-payment. As presented in this research, trust in the technology is the strongest factor of acceptance and adoption of m-payment. The analysis in this research suggests that trust predicts m-payment adoption in the Netherlands if all the other factors remain the same (β = .30, p <.001). This result is in line with other studies describing that trust plays an important role, especially in online environments because of the uncertainty and lack of control consumers can experience (Duane, O'Reilly, & Andreev, 2012; Lu et al., 2011; Slade et al., 2015). In addition, trust seems to be the strongest predictor for m-payment adoption regarding the analysis of this study, which is in line with the study of Chandra, Srivastava and Theng (2010) & Lu et al. (2011).

Since Slade et al. (2015) proved the effect of trust on the intention to use m-payment in the UK, this study tried to examine the cultural differences as this was described as a recommendation for future research by Slade et al., (2015). As shown by Hofstede (2017) the largest cultural difference between the Netherlands and the UK lies within the avoidance of uncertainty (18%), which is related to trust- and risk perception. Because Dutch people seem to avoid uncertainty to a much higher extent, it was expected that the effect of trust was stronger for the Netherlands than for the UK. Although both studies show a significant relationship of trust on the intention to use m-payment, the effect of trust is found to be stronger in the UK (.40) than in the Netherlands (.30). This result is against expectations. However, Slade et al. (2015) pointed out that prior knowledge or earlier usage could increase trust perception. Since this study showed that 98.2% of the respondents have prior knowledge about the m-payment technology (they heard about the technology before) it could be possible that an explanation for the unexpected lower trust perception within the different cultures (UK and the Netherlands) is prior knowledge of the m-payment technology. Especially because the study of Slade et al. was performed in 2015, when the technology was even more unknown. The outcome of this study,

which is in line with prior studies, authenticates the theoretical extension of the UTAUT2 Model to the context of m-payment with trust perception. Despite the opportunities m-payment has to offer, a technology connected to a person's bank account and personal data which stores much more other data and is also connected to more other technical gadgets (such as applications), needs to gain trust of their (possible) users.

5.1.7 Risk Perception.

The eighth hypothesis was described as; risk perception negatively impacts the adoption of m-payment by Dutch consumers. Despite other studies presenting a significant relationship of risk perception negatively influencing behavioral intention (Liébana-Cabanillas et al., 2014; Lu et al., 2012), the hypothesis cannot be confirmed by this study. In this study, it was decided based on prior studies in m-payment adoption (Liébana-Cabanillas et al., 2014 & Lu et al., 2012) to consider risk perception as a one-dimensional factor using privacy risk as most important subject of risk perception. To test whether Dutch consumers experience other types of risk related to m-payment an open question in the pre-test was used. Respondents could fill in the question if they considered other types of risk, but no respondents were stating other types of risk. Therefore, no other types of risk were included in this research.

However, other researchers made clear distinctions between different types of risks involved in adopting new technologies. For instance, Cunningham (as cited in Featherman & Pavlou, 2003) typified besides the importance of privacy risk six dimensions for perceived risk (1) performance, (2) financial, (3) opportunity/time, (4) safety and, (5) psychological loss. However, privacy risk can be considered as an important type of risk especially in e-payments (Featherman & Pavlou, 2003). When a consumer is required to share delicate information to the seller, consumers are more likely to experience high levels of risk. Even though someone has to pay with their phone using an m-payment application, the m-payment transaction occurs at a real-time moment at a specific location. Consumers can control the situation by observing and deciding where they buy with m-payment, and in addition, they can control the situation because consumers are physically present when performing the instore m-payment. This can be confirmed by literature stating that control over the situation is an important predictor for decreasing risk perception (Kim et al., 2008; Lu et al., 2011).

5.1.8 Personal Innovativeness.

It was hypothesized that personal innovativeness positively influences m-payment adoption. This hypothesis was supported by this study meaning that people who are innovative in using or adopting new technologies are more willing to adopt m-payment. This is in line with earlier conducted research of Oliveira et al. (2016), Slade et al. (2015) and Tan et al. (2014).

As described by Oliveira et al. (2016) and Slade et al. (2015) differences in sales markets and their behavioral differences are an important adjustment for m-payment adoption. As shown in this study, Dutch consumers can be considered not as innovative to a high extent. This means that most Dutch consumers are not sensitive to quickly adopting new technologies for experimenting or exploring those technologies. This result can be interpreted as an explanation for the long run-up towards complete m-payment adoption in the Netherlands compared to Asian countries since personal innovativeness proved to be an important factor predicting m-payment adoption but the level of innovation of Dutch consumers might be considered as low. The outcome of this study, which is in line with prior studies, provides an extension to the original UTAUT2 model in the context of m-payment. It provides future researchers with knowledge which can be used for sustainable m-payment development. Besides, it provides information about Dutch consumers and the reason m-payment adoption might lag behind.

5.1.9 The Moderating Effect of Gender & Predicting M-Payment Adoption.

With the unexpected result of 41% of the participants already using m-payment, more analysis was performed and can be used than expected beforehand. Therefore, the following results can be discussed. As hypothesized, this study tried to find the effect of gender differences in relation to the independent variables and the willingness to adopt m-payment. As shown in this study men and women respond differently concerning trust perception on the intention to use m-payment. This result is in line with prior studies aiming that men are less anxious to try new technologies (Agarwal & Prasad, 1998; Ong & Lai (2006). In other words, men are willing to adopt the technology faster, even when there is not much trust yet.

Additional analysis was performed to examine whether the independent variables could predict if someone is using m-payment or not. The results of this study indicate that the independent variables performance expectancy, descriptive social norms, habit, and personal innovativeness can predict (79.3%) if someone is using m-payment or not. The outcome of

performance expectancy predicting if someone is using m-payment in line with literature explains that if someone is experiencing the system to help him or her performing the task, it is likely that someone will continue using the system (Venkatesh, 2003). This result might also indicate that people already using m-payment experience the technology as useful. In addition, descriptive social norms which is shown to be a predictor for using m-payment (β = -.43, p < .001) can be explained by earlier conducted research of White et al. (2009). According to White et al. (2009) showing what kind of behavior is normal, effective, and appropriate will influence m-payment adoption. According to the results, it is likely that when someone experiences high descriptive social norms on m-payment, someone will use m-payment by themselves as well. The effect of habit can be explained by Ajzen and Fishbein (2005) stating that previous experiences will influence beliefs and future behavior. Therefore, someone that is already using m-payment made using a mobile phone for in-store payment purposes already a habit. Using the technology became normal, resulting in the higher the score on habit, the more likely it is that someone is already using m-payment and the other way around (β = .40, p < .05). In addition, someone who is highly innovative is according to the results more likely to use m-payment and someone less innovative is less likely to use m-payment (β = -1.00, p < .001). This is in line with previous research of Oliviera et al. (2016) and Yi et al. (2006) stating that personal innovativeness plays an important role in technology adoption.

Interestingly enough, when comparing the results of the hierarchical regression analyses (users and non-users) in relation to the logistical regression analysis, habit seems to be an important predictor for m-payment usage. Habit show a significant relationship for users of m-payment in the hierarchical regression analysis and besides that, also seems to be an important predictor for deciding whether someone is using m-payment. In other words, when someone is using a mobile device for all kinds of banking purposes, it is likely that someone is already using (or highly willing to adopt) m-payment. Another result when comparing both analyses is personal innovativeness (which is for both users and non-users significant in hierarchical regression). This variable seems to be an important predictor and variable in m-payment adoption. For instance, all results show that the extent to which someone is innovative can strongly predict m-payment adoption.

5.2 Theoretical and Managerial Implications

The current study provides both theoretical and managerial implications. Despite previous studies explored technology adoption (UTAUT, UTAUT2), mobile banking (Alalwan et al., 2017; Koenig-Lewis et al., 2010) and even m-payment adoption (Abrahão et al. 2016; Liébana-Cabanillas et al. 2015; Oliviera et al 2016; Slade et al., 2015), this study tried to fulfill a gap in knowledge. This is tried by examining social influence as two separate factors (descriptive social norms and injunctive social norms), by expanding the model with trust, risk, and personal innovativeness, and by examining prior knowledge and cultural differences.

5.2.1 Theoretical Implications.

Earlier conducted research focused on expanding UTAUT2 with variables related to the context of m-payment. Most of the m-payment studies performed focused on Eastern cultures for instance Lu et al. (2011), Patil et al. (2020), Talwar et al. (2020). Only few studies examined European countries (Abrahão et al., 2016; Liébana-Cabanillas et al., 2015; Oliviera et al., 2016;). The most important direction for future research given by these studies was the need for insights in other European countries. In addition, Slade et al., (2015) stated that prior knowledge of non-users could be a valuable contribution to the field of m-payment. This research contributes academically by conceptualizing the influences of performance expectancy, injunctive social norms, trust perception, and personal innovativeness on the intention to use m-payment. Knowing that, even with prior knowledge about the technology, these factors are still considered important predictors for m-payment adoption.

Besides, this study contributes academically by showing a significant result for injunctive social norms and not a significant result for descriptive social norms where all studies related to m-payment considered this as one construct; social influence. In addition, examining cultural differences and prior knowledge of consumers is a contribution to the research field. Therefore, UTAUT2 can be expanded in future research by considering social influence as separate construct using descriptive social norms and injunctive social norms. Also, this research has proven that adding personal innovativeness to the UTAUT2 model for new technologies is of high relevance for future research to examine a more specific user context. Also, using personal innovativeness as additional independent variable of UTAUT2 precludes the gab of examining individual differences. Since this is seen as an important pitfall of the UTAUT2 model, showing this significant result could be an outcome for other studies using UTAUT2 as foundation for research.

5.2.2 Practical Implications.

The results of this study can be used by practitioners in the field. The focus should lie within performance expectancy, injunctive social norms, trust perception, and personal innovativeness to seduce consumers to use m-payment and develop sustainable m-payment technologies. For instance, when developers want to improve the m-payment technology for the benefit of users, uncertainty can be reduced by implementing advanced verification technologies. Marketers should communicate about safety and safe data storage to increase trust perception, and also developers should develop (in co-creation) a transparent m-payment technology which gives users the feeling of controlling their payment stream and data. They should focus on easily assessable privacy statements and options for consumers to gain insight and control their own data. This will help to increase trust in the technology. These actions give consumers insight into the companies behind the technology that has access to their data. As described by Giovanni, Ferreira, Silva and Ferreira (2015), visual displays of security and certifications regarding quality and privacy help to build trust. The results of women being more sensitive to trust when adopting m-payment can be used to target women with advertisements emphasizing the trustworthiness of the technology.

Besides, the outcome of injunctive social norms can be used for practical matters since social norms are about social pressure within a person's social network. Marketers could use social media to promote m-payment, for instance, they could either place advertisements or promote the spread of worth-of-mouth on social media platforms Facebook and LinkedIn. Both could be effective marketing activities. The reserved attitude of Dutch consumers can hold them back from adopting m-payment in an early adopters' stage whereby no one is using the technology yet. Organizations could use his outcome to provide consumers with examples or numbers of people who have adopted m-payment already showing that the technology is not that new anymore. Also, making the technology super sophisticated will scare the reluctant Dutch consumer. Besides finding relevant insights, this study also has its limitations.

5.3 Limitations and Recommendations for Future Research

The main limitation of this research is the design of the constructs. Despite the application of constructs formulated and proven by other research, formulations of performance expectancy, attractiveness of alternatives, and facilitating conditions were not measuring the right factors. It even was the case that performance expectancy was loading the factors of intention to use m-payment. It was decided to exclude the factors attractiveness of alternatives and facilitating conditions from this study because of the factor loadings. However, since performance expectancy is a construct of UTAUT2, due to content validity it was not possible to exclude this construct from further research. Therefore, the result of finding performance expectancy a significant predictor for m-payment adoption is highly questionable. Future research could improve this study by considering the statements for performance expectancy, attractiveness of alternatives and facilitating conditions more carefully – paying attention to the formulation of the statements and the m-payment context, so they will load the right factors.

Another limitation is the sample size of this study (n = 376). According to prior literature, the total amount of adopters (41%) of m-payment was expected to be lower. When setting up this research, literature showed low adoption rates of m-payment in the Netherlands. However, when performing data analysis, it is shown that 41% of the respondents already used m-payment. This result was against expectations. Therefore, additional analysis to compare users and non-users was performed. As mentioned in this research, m-payment can be seen as a disruptive technology. Therefore, adoption of those technologies can get a boost every moment. Because of the low number of respondents, discretion when interpreting the statements is crucial. Future research could pay attention to the fast development of technologies and their adoption curve. Developing a questionnaire for both scenarios (using the technology and not using the technology) can provide insights comparing those two groups more carefully. In addition, research examining continues usage of m-payment could be a relevant future field of study.

In addition, future research could take more care of the example used in the survey to avoid misunderstandings. In this study a picture representing an in-store m-payment performance was shown. Besides, a short explanation about m-payment was given in the explanatory notes. It could be that people confuse m-payment with contactless payments. A video that is as free as possible from bias (no surrounding effects, brands or other stimuli present) could possibly take away ambiguity regarding the intended technology. Also, besides

a survey, interviews could be deployed to prevent this kind of misunderstandings. A researcher can anticipate and interact with the respondent when asking questions, and besides, respondents can ask questions if they are confused by the example. Another benefit for improving this study using interviews is that it can provide insightful information gained from the participant that was never thought of by the researcher due to interaction. Therefore, performing qualitative research using interviews could be a relevant research method for future research.

The last limitation considered is the sampling technique that was used. Snowball sampling was used to collect respondents whereby people throughout the Netherlands were asked to distribute the questionnaire with their network. However, demographic data shows that most of the respondents live in Overijssel (31.9%) and Drenthe (27.7%), which can be caused by using a snowball technique. Therefore, it is possible that the results are not representative for the entire Dutch population. For instance, it could be considered that people living in more urbanized parts of the Netherlands are more willing to adopt technologies than people living in rural areas. Influences of foreigners, tourists and corporate organizations might speed up the adoption process. Therefore, it is possible that the actual m-payment adoption for all Dutch people in reality differs from the results shown in this research. Due to the timeframe and the limited resources of this study, choices for sampling techniques were made. But therefore, the data quality cannot be completely guaranteed. Future research can perform the study with a randomized sample approaching a group of respondents that is large enough and represented by all regions of the Netherlands, so the reliability of the study can be improved.

6. Conclusion

The adoption of m-payment is increasing worldwide. In Asian countries m-payment even seems indispensable. Because of the advantages of the m-payment technology, large companies as Google and Nokia invested millions of dollars into the mobile payment market. However, the adoption in European countries seems to lag behind. To understand m-payment adoption from a customer viewpoint and use these outcomes to develop sustainable m-payment technologies and gain competitive advantage, in-depth insights in the m-payment field were needed. This study investigated the influence of performance expectancy, effort expectancy, habit, descriptive social norms, injunctive social norms, trust perception, risk perception, and personal innovativeness on behavior intention of Dutch consumers to use m-payment.

It was shown that performance expectancy, injunctive social norms, trust perception and personal innovativeness can be seen as significant predictors for Dutch m-payment adoption. Surprisingly, there was no effect found for effort expectancy, habit, descriptive social norms, and risk perception. This highlights the need for further research diving deeper into those variables. In addition, as the group of m-payment users covered a large amount of the total amount of respondents, research into continuous usage of m-payment might be an interesting future research direction contributing to the field. The most important factor turned out to be risk perception. Concerning the viewpoint of Dutch consumers, implementing advanced verification technologies and clear and transparent communication could help preventing trust issues. In addition, it is important to consider women are less willing to adopt m-payment when they reexperience a low level of trust in the technology.

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Appendix

A: Questionnaire

Welkom

Beste deelnemer,

Ik ben Elise Taselaar, masterstudent Communicatiewetenschappen aan de Universiteit Twente. Voor mijn Master Scriptie voer ik een onderzoek uit naar het gebruiken van mobiele betaalmethoden.

Leuk dat u wil deelnemen aan mijn onderzoek. Het onderzoek neemt ongeveer 5 tot 10 minuten van uw tijd in beslag en bestaat uit een vragenlijst met stellingen. Bij elke stelling kunt u aangeven in welke mate u het eens bent met deze stelling.

Bij het invullen van de vragenlijst is het van groot belang dat u deze zo volledig mogelijk en eerlijk invult. Er bestaan geen goede of foute antwoorden. Daarnaast worden alle gegevens vertrouwelijk behandeld, niet aan derden verstrekt en is deelname geheel anoniem. U kunt uw deelname ten aller tijde beëindigen. Met uw deelname aan dit onderzoek geeft u toestemming de gegevens uit dit onderzoek te gebruiken voor educatieve doeleinden.

Voor eventuele vragen of opmerkingen kun je contact opnemen met:
e.taselaar@student.utwente.nl

Ik heb bovenstaande informatie gelezen en begrepen en wil deelnemen aan dit onderzoek.

Ja/Nee

Introductie deel 1

In dit onderzoek ga ik verder in op mobiel betalen. Mobiel betalen is een technologie waarbij u met uw mobiele telefoon op een fysieke locatie (winkel, restaurant, markt) kunt betalen. Op de locatie waar u moet betalen betaalt u met uw mobiele telefoon. Op onderstaande afbeelding staat de betaalmethode weergegeven:

Image 1: Used example m-payment

Neem bij het invullen van enquêtevragen bovenstaande betaalmethode als uitgangspunt.

Introductie deel 2

Q1. Nationaliteit (filter vraag)
- Nederlandse
- Anders namelijk; out

Q2. Maak je gebruik van mobiel betalen zoals in dit onderzoek beschreven?
- Ja
- Nee

Q3. Leeftijd
Q4. Woonplaats
Q5. Heb je gehoord van deze manier van mobiel betalen?
Q6. Heb je gelezen over deze manier van mobiel betalen?
Q7. Heb je deze manier van mobiel betalen al eens gezien?
Q7. Wat is uw hoogst genoten opleidingsniveau?
Q8. Wat is uw huidige werksituatie? (Student, werkend, geen werk)

Vragenlijst

Performance expectancy (inspired on statements of Venkatesh et al. (2012))

Dutch
PE1. Ik denk dat mobiel betalen bruikbaar is bij het doen van mijn betalingen.
PE2. Ik denk dat mobiel betalen mij helpt mijn betalingen eenvoudig uit te voeren.
PE3. Ik denk dat mobiel betalen mij helpt sneller mijn betalingen uit te voeren.

English
PE1. I expect m-payment to be useful when performing my payments.
PE2. Using m-payment helps me accomplish my payment more easily.
PE3. Using m-payment increases my productivity.

Effort expectancy (inspired on statements of Venkatesh et al. (2012))

Dutch
EE1. Ik denk dat ik snel zou kunnen leren hoe ik mobiel betalen moet gebruiken.
EE2. Ik denk dat de uitvoering van een mobile betaling begrijpelijk is voor mij.
EE3. Ik denk dat mobiel betalen eenvoudig is in gebruik.
EE4. Ik denk dat ik snel weet hoe ik mobiel betalen moet gebruiken.

English
EE1. I think I will learn quickly how to use mobile payment.
EE2. I think mobile payment is understandable to me.
EE3. I think mobile payment is easy to use.
EE4. It think it is easy for me to become skillful at using m-payment.

Facilitating Conditions (Inspired on statements of Venkatesh et al. (2012))

Dutch
FC1. Ik denk dat de meeste winkels in Nederland de mogelijkheid bieden om mobiel te betalen.
FC2. Ik denk dat mobiel betalen tot een van mijn betaalmogelijkheden kan behoren.
FC3. Ik denk dat mijn huidige telefoon de mogelijkheid biedt om mobiel te betalen.

English
FC1. I think most of the stores in the Netherlands have the possibility to pay with mobile payment.
FC2. I think that m-payment is compatible with other technologies I use.
FC3. I think that I can get help from others when I have difficulties using m-payment.

Habit (Inspired on statements of Venkatesh et al. (2012))

Dutch
HT1. Ik gebruik regelmatig mijn mobiele telefoon voor online mobiel bankieren.
HT2. Het gebruiken van mijn telefoon om online mobiel te bankieren gebeurt automatisch.
HT3. Ik gebruik online mobiel bankieren omdat dit voor mij normaal is geworden.

English
HT1. I am using my mobile phone for payments on a daily basis.
HT2. Using my mobile phone to perform my payments happens automatically.
HT2. I use my mobile phone because this became normal to me.

Descriptive social norms (inspired on statements of Lu et al. (2005))

Dutch
DS1. Mobiel betalen wordt op dit moment veel gebruikt door mensen die ik ken.
DS2. Mobiel betalen is populair in Nederland.
DS3. Veel mensen in mijn omgeving gebruiken mobiel betalen.

English
DS1. Mobile payment is a lot a the moment by people i know.
DS2. Mobile payment is popular in the Netherlands.
DS3. A lot of people in my area use mobile payment.

Injunctive social norms (inspired on statements of Venkatesh (2012))

Dutch
IS1. Mensen die belangrijk voor mij zijn bevelen mobiel betalen aan.
IS2. Mensen die belangrijk voor mij zijn adviseren mij om mobiel betalen te gebruiken.
IS3. Mensen die belangrijk voor mij zijn denken dat het een goed idee is mobiel betalen te gebruiken.
IS4. Mensen die belangrijk voor mij zijn denken dat ik mobiel betalen moet gebruiken.

English
IS1. People who are important to me think that I should use m-payment.
IS2. People who are important to me advise me to use mobile patyment.
IS3. People who are important to me think it is a good idea to use mobile payment.
IS4. People who are important to me think that I should start using mobile payment. My friends think that I should use m-payment.

Trust perception (inspired on statements of Hegner, et al. (2019))

Dutch
TR1. Ik denk dat de technologie van mobiel betalen betrouwbaar is.
TR2. Ik denk dat de technologie van mobiel betalen veilig is.
TR3. Ik denk dat ik kan vertrouwen op de techniek van mobiel betalen.

English
TR1. I think the technology of m-payment is trustworthy
TR2. I think the technology of m-payment is safe
TR3. I expect that I can rely on the technology of m-payment

Risk Perception (Inspired on statements of Lu et al. (2011))

Dutch
RI1. Ik denk dat het gebruik van mobiel betalen mijn persoonlijke informatie in gevaar brengt.
RI2. Ik denk dat het gebruik van mobiel betalen anderen toegang geeft tot mijn betaalaccount.
RI3. Ik denk dat bij het gebruik van mobiel betalen mijn persoonlijke informatie wordt gedeeld via het system.

English
RI1. I think using mobile payment harms my private information.
RI2. I think using mobile payment gives others access to my private account.
RI3. I think using mobile payment will reveal personal information via the system.

Personal innovativeness (Inspired on statements of Yang et al. (2012))

Dutch
PI1. Wanneer ik hoor over een nieuwe technologie, ga ik op zoek naar manieren om hiermee te experimenteren.
PI2. Onder mijn bekenden, ben ik meestal de eerste die een nieuwe technologie ontdekt.
PI3. Ik vind het leuk om met nieuwe technologieën te experimenteren.
PI4. Over het algemeen twijfel ik niet om nieuwe technologieën te proberen.

English
PI1. When I hear about a new technology, I would look for ways to experiment with it.
PI2. Among my peers, I am usually the first to explore new technologies;
PI3. I like to experiment with new technologies.
PI4: In general, I am hesitant to try out new information technologies

Attractiveness of alternatives (Inspired on statements of Jones et al. (2000); Kim et al. (2011) retrieved from Than Thao, (2015)

Dutch
AA1. Wanneer ik mijn huidige betaalmethode zou moeten veranderen, zijn er andere geschikte alternatieven.
AA2. Ik ben tevreden met andere betaalmethoden.
AA3. In vergelijking met mobiel betalen, lijken mijn huidige betaalmethoden beter bij mij te passen.
AA4. In vergelijking met mobiel betalen zijn mijn huidige betaalmethoden beter.

English
AA1. If I need to change payment services, there are other good services to choose from.
AA2. I would probably be happy with other payment methods than m-payment.
AA3. Compared to m-payment, there are other payment methods with which I would probably be equally or more satisfied.
AA4. Compared to m-payment there are not very many other payment methods with which I would probably be equally or more satisfied.

Behavioral Intention (inspired on statements of Venkatesh et al. (2012))

Dutch
BI1. Ik verwacht mobiel betalen in de toekomst te gaan gebruiken.
BI2. Ik zal niet twijfelen mobiel betalen in de toekomst te gebruiken.
BI3. Ik ben van plan mobiel betalen dagelijks gebruiken.
BI4. Ik ben bereid mobiel bankieren in de toekomst te gebruiken.

English
BI1. I intend to use m-payment in the future.
BI2. I will try to use m-payment in the future.
BI3. I plan to use m-payment on a daily basis.
BI4. I am willing to use m-payment in the future.

B: Hierarchical regression analysis without performance expectancy

Table 8 Regression analysis predicting: "intention to use mobile payment" non-users

Models	*Adj. R^2*	*F-value*	*Sig.*
Model 1: predictors UTAUT2 model	.12	8.64	.00
Model 2: predictors from UTAUT model + trust, usage experience, risk	.35	17.81	.00

Regression coefficients	*β*	*t-value*	*Sig.*
Model 1: predictors UTAUT2 model (Δ Adj. R^2 = 0.122)			
Effort expectancy	.21	2.83	.00 *
Descriptive social norms	.16	0.36	.72
Injunctive social norms	.16	3.20	.02 *
Habit	.10	1.73	.08
Model 2: predictors UTAUT2 model + trust, risk, personal innovativeness (Δ Adj. R^2 = 0.348)			
Effort expectancy	.10	1.61	.11
Habit	.03	0.58	.56
Descriptive social norms	.03	0.63	.53
Injunctive social norms	.13	2.74	.01 *
Trust perception	.33	4.59	.00 *
Risk perception	-.09	-1.79	.08
Personal innovativeness	.24	3.89	.00 *

a. *Dependent Variable: behavioral intention*
b. ** Significant*

Table 9 Regression analysis predicting: "intention to use mobile payment" users

Models	*Adj. R^2*	*F-value*	*Sig.*
Model 1: predictors UTAUT2 model	.25	13.9	.00
Model 2: predictors from UTAUT model + trust, usage experience, risk	.36	13.6	.00

Regression coefficients	*β*	*t-value*	*Sig.*
Model 1: predictors UTAUT2 model (Δ Adj. R^2 = 0.253)			
Effort expectancy	.40	3.72	.00 *
Descriptive social norms	-.05	-1.66	.24
Injunctive social norms	.14	2.84	.00 *
Habit	.32	3.76	.00 *
Model 2: predictors UTAUT2 model + trust, risk, personal innovativeness (Δ Adj. R^2 = 0.366)			
Effort expectancy	.29	2.80	.01 *
Habit	.22	2.69	.01 *
Descriptive social norms	-0.5	-1.21	.23
Injunctive social norms	.12	2.55	.01 *
Trust perception	.20	2.61	.01 *
Risk perception	-.05	-0.78	.44
Personal innovativeness	.19	3.35	.00 *

a. *Dependent Variable: behavioral intention*
b. ** Significant*