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The Impact of Payment Context on the Use of Mobile Payment Systems.

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Dedication

We dedicated this research to:

Our families and friends for their love and strong support.

Summary

The development of the Internet and the arrival of e-commerce fostered digitalization in the payment processes by providing a variety of electronic payment options including payment cards (credit and debit), digital and mobile wallets, electronic cash, contactless payment methods etc. Mobile payment services with their increasing popularity are presently under the phase of transition, heading towards a promising future of tentative possibilities along with the innovation in technology. At this point of the development, we look at the current state of the payment services market from a literature review perspective. We review prior literature on technology adoption and analyze the various factors that impact choice of payment method, specifically mobile payment. To facilitate the analysis of literature, we propose a framework based on The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) developed by Venkatesh, Thong and Xu in 2012. Notably, we have expanded the model by introducing the impact of contextual factors such as product involvement of item purchased, time pressure and whether the purchase happens online or offline on the choice of the payment method.

Contents

1. Introduction

The purpose of this chapter is to introduce the background of the study and to define research objectives and questions. The structure of the thesis is also presented at the end of this chapter.

1.1 Background of the Study

Over the past decade the rapid development of information and communication technology decade has revolutionized many industries, including the payments industry. The ubiquity of smartphones and internet access opened new opportunities to merchants and service providers and has led to a radical change in the way consumers and businesses perform transactions and receive funds. Today, mobile payments (or m-payments) are becoming progressively prevalent in our everyday life, with an increasing amount of companies introducing various mobile payment options for consumers**.** Mobile devices can be used in variety of payment scenarios such as payment for digital content, concert or flight tickets, parking fees, and bus, tram, train and taxi fares, as well as payments for physical goods, both at vending and ticketing machines, and at manned point-of-sale. (Dahlberg et al.,2008)

Mobile payment could be defined as any payment in which a mobile device, such as a mobile phone or any other device capable of connecting to mobile communication networks, is utilized to initiate, authorize, and confirm a commercial transaction (Yoris, Y.A., Kauffman, 2008). As the number of smartphones grows and internet access gets significantly better, such services are becoming more and more widespread across society and are rapidly replacing traditional means of payment.

A perfect example of a such trend could be seen in Norway. Over 91% of Norway's population between 16 and 79 owns a smartphone, 77% of which use it to access the internet daily[1]. In, addition, Norway is also a world leader in becoming a completely cashless economy. Already today, the country is effectively cashless, with less than 10% of number

[1] https://www.ssb.no/teknologi-og-innovasjon/faktaside/internett-og-mobil

of transactions are in cash and it is believed that the cash transactions will entirely disappear in in next decade.[2]

This development has not only affected the use of cash. As an example of the development of mobile payment services, the Norwegian payment system Vipps has gained 2,9 million users in just three years after launch, thus covering the as much as 75% of the country's whole population.[3]

1.2 Problem statement

Despite mobile payments have increased sharply over the past years, according to the Norwegian Central Bank, over 80 percent of such payments in Norway were payments between private individuals, so-called P2P payments[4]. Payment cards are still by far the most widely used method of payment at points-of-sale, with 86% of payments. Cash payments accounted for 11 percent, while mobile payments accounted for 2 percent.

It seems that such inconsistency between the number of users and the actual usage of mobile payment systems is not only limited to Norwegian consumers. According to Nordic report of Deloitte's Global Mobile Consumer Survey (2017)[5] the biggest challenge is to convince consumers to adopt mobile payments, with the most common reason for not using mobile payments is the lack of perceived benefits, with 45% of consumers naming it. Some of the other reasons for not using in-store mobile payments include consumers having security concerns (24%) and having the necessary features/apps on their phones (21%).

Although it seems that m-payment presents convenience, ubiquity, and time-saving for some consumers, it is not always readily accepted or used by the majority. Nevertheless, the increasing importance and popularity of m-payments raises some questions: why do some consumers still prefer older payment methods over mobile payments? What factors

[2] https://nordic.businessinsider.com/norway-first-cashless-society-2018-4?r=US&IR=T

[3] https://www.finansnorge.no/aktuelt/sporreundersokelser/forbruker-og-finanstrender/forbruker--og-finanstrender-2018/pa-bare-tre-ar-har-tre-av-fire-nordmenn-tatt-i-bruk-vipps/

[4] Retail payment services 2017, Norges Bank

[5] https://www2.deloitte.com/content/dam/Deloitte/fi/Documents/technology-media-telecommunications/GMCS%202017_digital_nordic_cut_final.pdf

influence their choice of payment method? In which situations they are more likely to use mobile payment option?

Although there are existing studies that explore the adoption of technology, only few have explored the influence of the context on the behavior intention. However, these studies were mostly focused on the context as a physical and social situation in which technology is used, a discarding the decision-making process, when more than one technology is available. Nowadays, we are still in the time of transition, where not only payment methods like mobile payment and bank cards co-exist simultaneously, but also are widely adopted by the same users. This makes us think that the consumers choice of payment method is not only dependent on their perception of one's method advantage over the other, but also the circumstances the payment occurs.

1.3 Research Purpose and Questions

Based on the questions above, we describe that preliminary purpose of this research paper is to determine and to validate the factors that will directly and indirectly influence an individual's intention to use the mobile payment technologies. In order to understand the consumers' intention to use mobile payment, we will base our research on The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model, which was developed specifically for consumer context (Venkatesh et al., 2012). Further, we assume that user acceptance of mobile payments is characterized by specific contextual factors that are not described in the original model. Therefore, we try to verify that beside all of determining factors that influence the adoption of the mobile payment systems, and thus customers' intention to use them, the contextual factors of the payment situation might also influence the likelihood of using these systems by users. To address this objective, the following research questions are examined:

1. What factors influence the consumer's intention to use mobile payment systems?
2. Does context of payment affect the likelihood of use of such systems?
3. When and under what circumstances consumers are more likely to choose mobile payment system as a valid payment?

1.4 Structure of the Thesis

Chapter 1 provides background information and the idea behind this study. It also outlines the research questions.

Chapter 2 reviews existing research relevant to this study and describes the main concepts used in the development of the framework, as well as outlines the developed model and related hypothesis.

Chapter 3 describes the research methodologies used and how the data collection was carried out.

Chapter 4 analyses the data gathered and provides insights into findings.

Chapter 5 concludes the findings of this research and recommends further research questions.

2. Theory and hypothesis

In order to answer our research questions and formulate research approach, we have reviewed the theoretical groundworks of technology adoption in general at first, then focusing on contextual factors. This chapter reviews past research and literature, as well as describes the theoretical models our study is based on and the hypothesis developed.

2.1 The Unified Theory of Acceptance and Use of Technology 2

For a long time, a great number of researchers are trying to accurately explain user adoption of technology. Previous research on the topic of technology adoption has resulted in the development of a significant number of theories that predict the determinants of information technology acceptance. In order to understand the consumers' intention to use mobile payment services, we used The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) developed by Venkatesh, Thong and Xu in 2012 as a theoretic basis for our model. This model was established as an extension of the UTAUT, which was originally created in order to explain the factors that affect the acceptance and use of technology in organizational context. It was developed as a comprehensive synthesis of prior technology acceptance research by comparing empirical and conceptual differences of eight prominent models:

1. Theory of Reasoned Action (TRA, Fishbein & Ajzen, 1975)
2. Technology Acceptance Model (TAM, TAM2, Davis, 1989)
3. Theory of Planned Behavior (TPB, Ajzen, 1991)
4. Social Cognitive Theory (SCT, (Compeau and Higgins, 1995)
5. Combined TAM and TPB (C-TAM-TPB, Taylor & Todd, 1995)
6. Model of PC Utilization (MPCU, Thompson et al. 1991)
7. Innovation Diffusion Theory (IDT, Rogers, 1962)
8. Motivational Model (MM, Davis et al., 1992)

According to UTAUT, there are four main constructs that influence behavioral intention to use a technology: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC). Compared to UTAUT, the revisited UTAUT2 model was developed to effectively explain and analyze the acceptance and use of technology specifically by the consumer and included three additional key constructs - Hedonic Motivation (HM), Price Value (PV) and Habit (HT). It has also introduced gender, age and experience as moderator variables. The inclusion of these variables, as well as changing the focus from organizational context to consumer's perspective, has led to a substantial improvement in the variance explained in behavioral intention (56 percent to 74 percent) and technology use (40 percent to 52 percent) (Venkatesh et al. 2012).

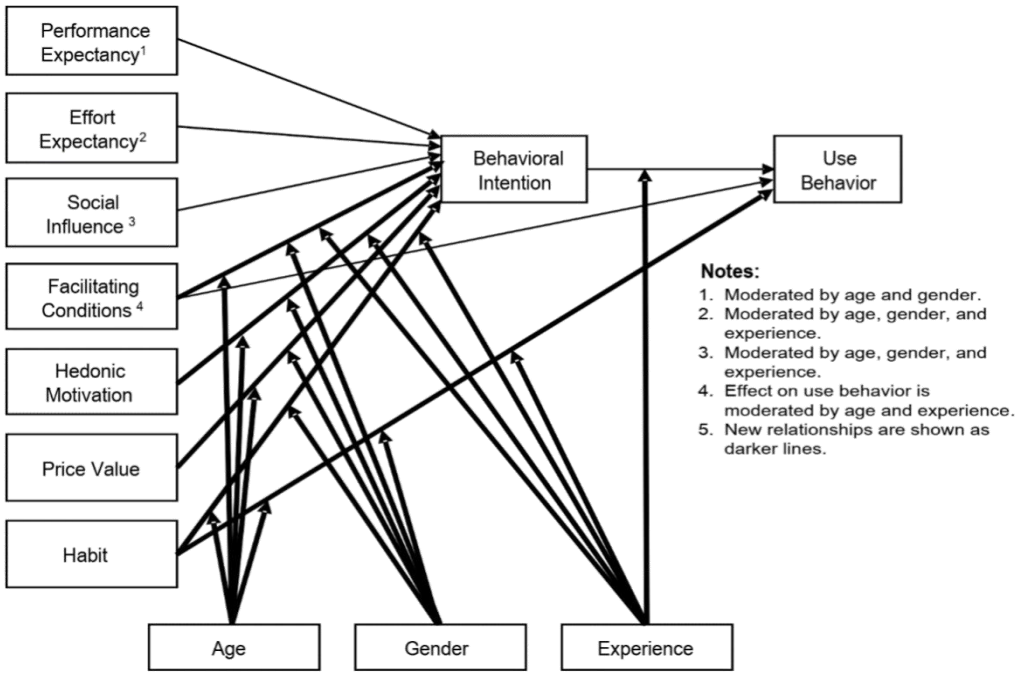

Figure 2.1: UTAUT2 Model (Venkatesh et al., 2012).

UTAUT and UTAUT2 have become a popular theoretical choice among researchers worldwide, who have applied the model in order to study the adoption by users of the following information and communication technologies:

Authors	Application
Venkatesh, Thong, & Xu. (2012)	Mobile internet
Baptista, G., & Oliveira, T. (2015) Oliveira, T., Faria, M., Thomas, M. A., & Popovič, A. (2014) Zhou, T., Lu, Y., & Wang, B. (2010)	Mobile banking
Shaw, N., & Sergueeva, K. (2018) Blaise, R., Halloran, M., & Muchnick, M. (2018	Mobile commerce
Miltgen, C. L., Popovič, A., & Oliveira, T. (2013)	Biometric system
Huang, C., & Kao, Y. (2015)	Mobile devices
Morosan, C., & Defranco, A. (2016) Abrahão, R. D., Moriguchi, S. N., & Andrade, D. F. (2016) Khalilzadeh, J., Ozturk, A. B., & Bilgihan, A. (2017). Cao, Q., & Niu, X. (2018) Wang, L., & Yi, Y. (2012)	Mobile Payments

Below we provide a brief explanation of each variable used in the UTAUT2 model as well as the additional variables we used to develop our research model.

2.1.1 Behavioral Intention (BI)

Over the years the concept of behavioral intentions was largely explored by psychologists and scientists. Behavioral intention could be defined as a person's deliberate intention to perform or not perform some specified future behavior(s) (Aarts, Verplanken & Knippenberg, 1998). In the context of technology adoption, behavioral intention can be defined as the individual willingness or likelihood that consumer will use a technology

system (Venkatesh et al., 2012; Venkatesh et al., 2003; Davis et al., 1989). There are several antecedents that may affect an individual's behavioral intention. It is based on attitude toward the behavior, subjective norm, and perceived behavioral control.

There is consensus among researchers that high behavioral intention may lead a consumer to become more likely to actually use a new technology. Behavioral intention refers as an individual's intention to perform a given act that can predict corresponding behaviors when the individual acts voluntarily (Islam et al. 2013). Behavioral intention is the subjective probability of carrying out behavior and also the cause of certain usage behavior (Yi, Jackson, Park & Probst, 2006).

2.1.2 Performance Expectancy (PE)

According to Venkatesh, the performance expectancy, is an important construct for the behavior intention in the UTAUT or UTAUT2 models and is defined as the degree to which using a technology will provide benefits to consumers in performing certain activities. In other words, it suggests that individuals are more likely to use a certain technology if they believe it will give them a beneficial outcome. The performance expectancy construct consists of five criteria: perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT) (Venkatesh et al. 2003).

The construct of performance expectancy has consistently been shown to be the strongest predictor of behavioral intention. A number of empirical studies has proven its significant impact on the adoption of different technologies such as mobile internet (Venkatesh et al., 2012) mobile devises (Huang, C., & Kao, Y., 2015), biometric technologies (Miltgen et al., 2012;), mobile banking (Baptista & Oliveira, 2015), mobile apps (Morosan, C., & Defranco, A., 2016) and mobile payment (Abrahão, Moriguchi & Andrade, 2015). Therefore, in the context of mobile payments, performance expectancy can be expected to have significant on the consumer's behavioral intention such technology:

H1: Performance Expectancy (PE) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

2.1.3 Effort Expectancy (EE)

In UTAUT, effort expectancy is defined as the degree of ease associated with the use of the system. This construct was derived from three: perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). Davis (1989) found that an application perceived by people which is easier to use is more likely to be acceptable. When users feel that technology is easy to use and does not require much effort, they have higher expectations toward acquiring the desired performance (Venkatesh et al. 2003).

Prior research showed that EE had a significant influence on individual intention to use technology, which indicates that users' intention to use technology is fostered by their perception of how easy it is to use technology. (Venkatesh et al., 2012; Abrahão, et al, 2015) However, several recent studies found non-significant relationships between effort expectancy and behavioral intentions (Baptista and Oliveira, 2015; Morosan & DeFranco, 2016) Nevertheless, effort expectancies within the UTAUT framework can reasonably be expected to apply to the consumer's intention to use mobile payment systems:

H2: Effort Expectancy (EE) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

2.1.4 Social Influence (SI)

The influence of society plays a big role in determining users' perception of and approach to technology. Venkatesh et al. (2003) defined SI as the degree to which a person perceives how important it is that "other people" believe he or she should use a technology. These significant others include family members, friends, workmates or other members belonging to the same group as the individual consumer. As an individual in society, consumer could be very susceptible to these groups, especially when it comes to decision making. When friends or family start to a certain technology like mobile payment app, the user will be more likely to adopt it due to the influence of group dynamics. Social influence is the direct determinant of behavioral intention and is constructed from subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPB, social factors in MPCU, and image in IDT (Venkatesh et al. 2003). Each of these factors contains the explicit or implicit belief that the individual 's behavior is influenced by the way in which they believe others will view them as a result of using the technology.

Past research has showed inconclusive results whether SI has a significant impact on BI. Some studies confirm that SI is significant in shaping an individual's intention to use technology (Blaise, R., Halloran, M., & Muchnick, M., 2018), where others suggest otherwise (Miltgen et al. 2013; Morosan & DeFranco, 2016; Shaw, N., & Sergueeva, K., 2018)

As mobile payment systems spread across society, social influence is likely to be an important predictor of their adoption. Therefore, we can assume that:

H3: Social Influence (SI) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

2.1.5 Facilitating Conditions (FC)

Facilitating conditions are defined as ''the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system'' (Venkatesh et al., 2003) In other words, facilitating conditions refer to consumers' perceptions of the resources and support required to use the technology. Such resources might include access to the time, money and other specialized resources required. In the case of mobile payments, it also includes the availability of compatible technology, such as smartphone and internet access.

This concept incorporated by three different constructs: perceived behavioral control (TPB/ DTPB, C-TAM-TPB), facilitating conditions (MPCU), and compatibility (IDT). These factors describe the relationship between the organization's attempts to overcome barriers to use and the potential users' intent to use. Like effort expectancy, the power of this variable predicts usage decreases after initial acceptance. (Chang, A., 2012).

A positive relationship between facilitating conditions and behavior intention was confirmed by some studies, such as the adoption of mobile and internet banking and 3G mobile telecommunication services (Oliveira et al., 2014; Yeoh & Chan, 2011; Wu et al.,2008) Thus, the following hypothesis is proposed:

H4: Facilitating Conditions (FC) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

2.1.6 Hedonic Motivation (HM)

Hedonic motivation refers as the fun or pleasure derived from using a technology, which has been recognized to impact in determining technology acceptance and use (Venkatesh et al. 2012). It implies that hedonic factors affect individual's intentions to explore a technology, where the effects vary across different stages of technology adoption (Magni, Susan Taylor & Venkatesh, 2010). Moreover, according to the research of Lee (2009), if a technology creates pleasure and fun while the user is using it, users are able to gain enjoyment, which influences their behavioral intention to pursue the technology.

Studies reveal that hedonic motivation is a significant factor to influence' behavioral intention to adopt technologies like mobile banking (Baptista, G., & Oliveira, T., 2015). Hence, the following hypothesis is proposed:

H5: Hedonic Motivation (HM) has a significant influence on Behavioral Intention to use mobile payment system.

2.1.7 Price Value

Price value is the consumers' cognitive trade-off between the perceived benefits of using mobile banking services and the monetary cost of using it (Venkatesh et al., 2012). The cost and pricing structure may have a significant impact on consumers' technology use. When it comes to mobile payment, such cost may include data service carriers' costs (mobile Internet), device cost, service costs, and transaction fees. At the same time, the vast majority of such services are free to use and doesn't carry transaction fee to the consumers. As an example, price value has been proven to have no significant effect on intention to use such technologies like mobile banking (Baptista, G., & Oliveira, T., 2015).

2.1.8 Habit (HT)

Habit is the extent that individuals tend to execute behaviors automatically because of learning (Limayem et al. 2007). Habit can directly and indirectly effect on consumer behavioral intention to use certain technology (Venkatesh et al. 2012). According to Kim and Malhotra (2005) habit defined as "prior behavior", while Limayem et al. (2007) defines habit as the extent to which individuals believe that their behavior is automatic. An important

precondition for the development of habit is that the behavior in question is performed repetitively. The more frequently it is performed, the more likely it is that the cognitive processes involved will take on an automatic nature. In terms of our study it means that once consumers get more knowledge after initial introduction of a new technology and start using it more and more frequently, their past experience leads to automatic behavior. Study found that increased consumer experience in usage lead to habitual technology use. To support this further Limayem et al. (2007) demonstrated that habit has a direct positive effect on the use of a technology and a more moderate effect on the intention to use, as the stronger habit makes the consumer consciousness to use the technology less important. In context of mobile payments, once the users have started to use these systems regularly, this action becomes a routine and habit which influences the individuals to use this payment method further. Hence, the following hypothesis is proposed:

H6: Habit (HT) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

In the next section, we try to expand the base UTAUT2 framework by adding some new variables to the model.

2.2 Perceived Risk (PR)

Perceived risk is the subjective belief that a certain product or service will precipitate loss if used to perform an activity. According to Bauer and Featherman (as cited in Chanchai et al. 2016) perceived risk is a certain factor that creates feelings of uncertainty among consumers of using new technology that may discourage adoption of that particular technology. Koenig-Lewis et al. (2010) added that perceived risk is concerned with the probability happening something negative where the consequences of that certain outcome are usually unacceptable. PR can affect a person's intentions to use new technology if they perceive this type of service to involve a high level of risk. In terms of mobile payment services, consumers do not intend to adopt new payment methods if they found there is a higher risk in adopting new method of payment technology over existing methods of payment. Wang, L., & Yi, Y. (2012) mentioned that perceived risk is the likelihood of privacy invasion, which has been found as a critical concern among consumers. Technology users are mainly afraid of the loss of their personal information and smartphone bank accounts and that their money would be stolen. The research of Mallat (2007) showed that perceived risks of mobile

payments described by the interviewees related to six different categories: transaction errors, lack of transaction record and documentation, vague transactions, concerns on device and network reliability and concerns on privacy. Several studies have found that there is a negative influence of perceived risk on behavioral intentions. Pavlou (2003) confirmed that perceived risk negatively influenced acceptance of electronic commerce. In addition, several studies have also suggested that perceived risk was one of the significant factors that affected the adoption of mobile payments (Mallat, 2007; Cao, Q., & Niu, X. 2018). Therefore, we can hypnotize:

H7: Perceived Risk (PR) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

2.3 Trust (TR)

When it comes to situations that tend have a certain level of perceived risks, trust is an important factor. Trust can be defined as the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trust or irrespective of the ability to monitor or control that other party" (Mayer et al., 1995). Trust can be measured by three aspects. First, by the ability of consumer service providers to acquire the required knowledge and essential expertise to complete their tasks. Secondly, by consumer service providers' integrity to which they will be committed in order to provide exact service and will not misguide users. And the lastly, by benevolence, suggesting that the service providers are concerned not only about their own benefit, but also for users' interest (Zahedi and Song, 2008). In the context of the payment mobile payment technologies, where information could be compromised, trust is an essential factor influencing consumers' chances of adoption. Mallat's research (2007) indicates that trust in mobile payment service providers and merchants reduced the perceived risks of mobile payments, making consumers more willing to make payments with trustworthy transaction parties and regarded established banks, credit card companies, and telecom operators as reliable mobile payment service providers. The results suggest ed that reliable and well-established payment service providers are better appreciated than unknown and smaller competitors in the same market. Zhou (2014) have achieved similar results, suggesting that the trust in online payment reflects user beliefs in the trustworthiness of online payment. In addition, once users have formed their level of trust in online payment,

they have less concern on payment risk and uncertainty. However, there is a different point of view. In terms of trust, consumers are more concerned about service providers rather than the available technological infrastructure (Pavlou,2003).

In consistence with previous studies, we adopt this factor of Trust and propose following hypothesis:

H8: Trust (TR) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

2.4 Usage Likelihood (UL)

Even though the end goal of UTAUT2 model was to measure the influence of behavioral intention on use behavior, in practice, it is highly problematic to validate the actual usage, due to a strong tendency for people to overestimate the likelihood that they will engage in a certain behavior. This is especially true when it comes to such complex technologies like payment systems. As an example, while using the UTAUT2 model in order to predict consumer behavioral intention to use mobile internet, Venkatesh et al. (2012) have explained only 33% of the variance in the technology by direct effect from behavioral intention, leading us to believe that there are many other factors that define the actual use of technology beside user's intention to adopt this technology.

Since the actual usage behavior cannot be measured in this study due to inability to collect realistic data from service providers and the limitations of the survey, we have introduced a substitute variable – usage likelihood (UL). Despite being rather similar to use behavior, it has some key differences. This variable describes the users' perceived probability of them using a technology under certain circumstances. Additionally, this construct relies on decision-making process instead of adoption process. By this we mean that it reflects customer's choice to use one specific technology over others depending on context of the situation. For example, in terms of payment methods, it describes the likelihood of consumer picking a mobile payment system to pay with instead of other means of payment like cash while making a purchase. In this way UL can be seen as a construct affected by consumer's predefined intention to use technology and moderated by the situation or context this technology is used in. Therefore, we can assume that:

H9: Behavioral Intention (BI) has a significant influence on Usage Likelihood (UL) of mobile payment systems.

2.5 Contextual Factors

Although previous research showed that most important factors in the decision to adopt mobile systems is user perception of their performance (PE) and ease of use, the key for understanding the underlying decision-making process is to identify what affects customer's preferences in different situations. A construct of context can provide an understanding of circumstances that may affect the use of technology. According to Gao et al. (2014), a user can decide whether mobile services are useful or not depending on the context. For example, when a service needs to be accessed immediately regardless of time and place, the perceived usefulness of the mobile service should be high and that would implicitly influence users' intention to use the service (Gao et al. 2014). In the same way, some new technologies may be seemed less appealing than existing ones. As we saw in introduction, the usage of the mobile payment systems in Norway is much higher when it comes to purchasing products online than at the point-of-sale. At the same time, the fact that virtually everyone in Norway owns a smartphone and has access to the internet means that availability of this technology is barely a problem. In addition, the already existing massive user base of systems like Vipps makes technology adoption problem less relevant, indicating that there might be other factors affecting use behavior. Therefore, we believe that users' choice of payment method may differ depending on context of the purchase.

According to Stavins (2017), consumers prefer to use different payment methods not only for in-person versus online purchases, but also for transactions of a different value. It has been proven that as the value of a transaction rises, consumers become less likely to prefer cash and more likely to prefer credit or debit cards for in-person payments. At the same time, credit or debit cards are almost universally preferred for online transactions while a very small fraction of consumers prefer to use cash for online transactions. This indicates that there are at least two situations affecting choice of the payment method. The first one defines whether payment is done online or offline. We called it Payment condition. The second one describes whether a product has high or low value. However, the perception of the product value and price can vary a lot between consumers with different incomes and social groups. Therefore, we have used the concept of low and high Product involvement instead, in order to equalize the difference.

When it comes to decision-making process, many studies showed that consumers' choices can be often affected by time constrains. Previous research has shown a number of findings describing how **time pressure** may affect consumers' choice:

- people under time pressure become more risk-averse than usual (Saqib & Chan, 2013);
- people under time pressure defer making a choice because choosing under time pressure is difficult and they want to avoid choosing something that they would later regret (Dhar & Nowlis, 1999);
- people become less creative under time pressure (Kelly & McGrath, 1985);
- people under stress prefer what is safe and familiar (Shors & Wood, 1995).
- consumers under time pressure are likely to simplify their selection decision by using a less effortful non-compensatory decision strategy (Dhar & Nowlis, 1999)

The first two examples here emphasize the influence of time pressure on the customer's perceived risk, which can directly affect behavioral intention. In terms of our research, this could mean that consumers under time pressure are less likely to use the payment method they perceive as risky and opt for safer and more reliable option. The next two examples of decision-making under time pressure seems to be closely related to yet another variable in our model – habit. This could mean that under the time pressure consumers are more likely to choose the payment method they are more familiar and have more experience with. The last example can also be interpreted as a correlation between time pressure end effort expectancy. This implies that a consumer is more likely to choose the payment method that is simpler and requires less effort to use under time constrains.

These three factors, payment condition, product involvement and time pressure, put together create a variety of possible situations, each creating completely different context for the transaction, thus theoretically affecting customer's choice of payment method. In order to simplify this study, we approached these variables as binary conditions. In other words, each potential context has only one of two forms of the variable: either purchase is happening **offline** or **online**, either the product purchased has **low** or **high** involvement; and either the consumer experiences **time pressure** or **not**.

In our research, we investigate to what extent context affects the consumer choice of payment method. Thus, we propose the following hypotheses:

H10: Context has a significant influence on Usage Likelihood (UL) of mobile payment systems.

H10a: Product Involvement has a significant influence on Usage Likelihood (UL)

H10b: Time Pressure has a significant influence on Usage Likelihood (UL)

H10c: Payment Condition has a significant influence on Usage Likelihood (UL).

2.6 Proposed Conceptual Framework

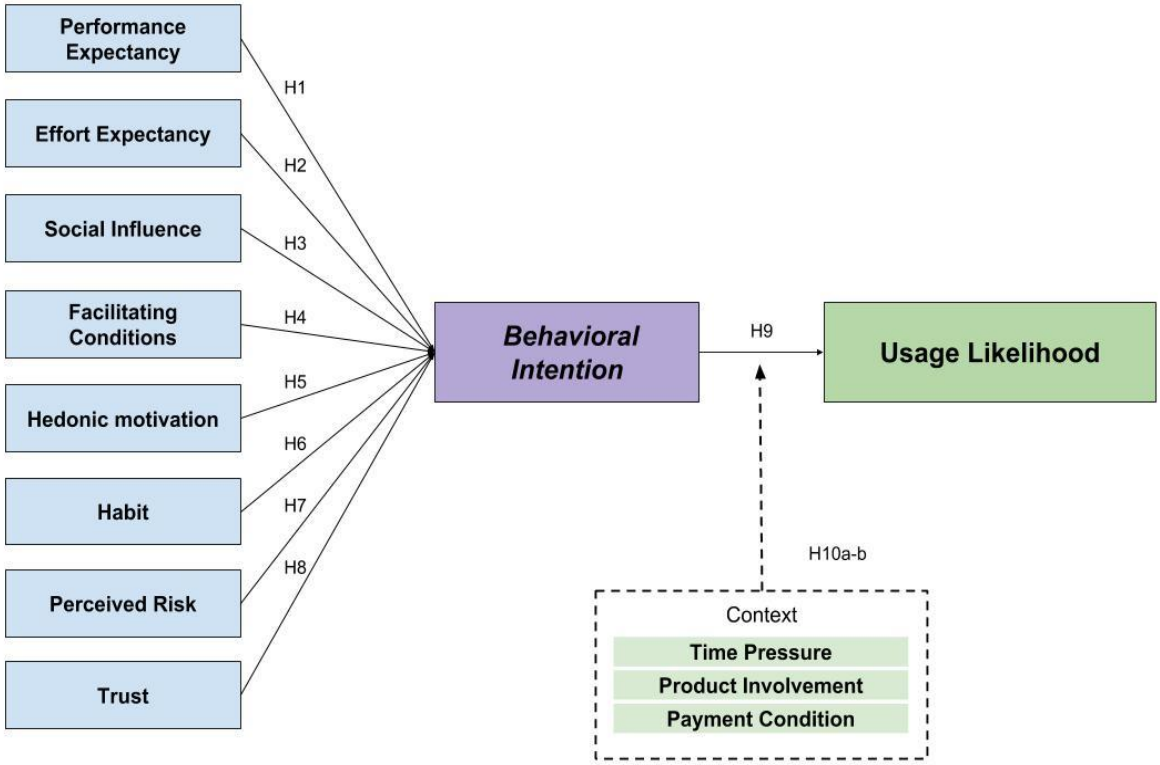

Figure 2.6: Proposed Conceptual Framework

As stated in introduction, we will follow the logic established by UTAUT2 model and we will test the combined constructs that define user behavioral intention. Since the focus of our research is mobile payment systems, the vast majority of which is free to use, we have eliminated the price value (PV) form consideration, given its insignificant influence on customer behavior. Thus, we chose to use all other 6 variables, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), Habit (HT) and adding trust (TR) and perceived risk (PR) variables. As we mentioned, we were unable to measure the actual use behavior due to

limitations of our study. Its replacement, Usage Likelihood (UL), represents consumers' willingness to use mobile payment system under certain contextual circumstances, namely Product Involvement, Time Pressure and Payment Condition.

3. Methodology

This chapter explains the how our study was conducted, its research design, population, data collection methods, variables and measurements as well the techniques used to analyze the data in order to test the hypotheses developed.

3.1 Research Design

We used a quantitative approach in our research. To assure the validity of the research, items used to measure the constructs were adapted from the existing literature by modifying the wording of the questionnaire to fit the mobile payment context. The primary research methodology for this study was a survey with closed-ended type of questions created with the help of the research software Sawtooth Lightroom. The questionnaire was distributed through social media, mostly among students, family and friends. The participation in the survey was voluntary and anonymous without any form of motivation or compensation.

The survey included two major parts. First, in order to examine users' behavioral intention to use mobile payment systems, the questionnaire was set up based to the framework established for testing UTAUT2 model (Venkatesh et al., 2012), including additional variables of trust and perceived risk, and excluding price value variable. A total of 33 items were used to measure performance and effort expectancy, hedonic motivation, habit, social influence, facilitating conditions, perceived risk, trust and behavioral intentions to use mobile payment systems. The measurements for the main dependent and independent variables in our model were collected with the help of 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

Performance expectancy was measured with a 4-item scale to determine the strength of the participants' belief that MPS would help them to perform payments better (e.g., "I think paying with mobile payment apps improves my payment efficiency."). Effort expectancy included 4-item measures of the belief that using MPS is effort-free and easy to use (e.g., I find mobile payment apps easy to use."). Hedonic Motivation was measured with a 3-item

scale to determine the level of enjoyment consumer experience while using MPS (e.g., "I think paying with mobile payment app is something that I like doing"). Habit was Motivation was measured with a 3-item scale to determine to which the extent respondents tend to pay using MPS automatically and how often they do it (e.g., "I think paying with mobile payment app is something I do without thinking"). Social influence was measured with a 3-item scale to determine the strength with which important others have influenced a person to adopt or use MPS (e.g., "It is true that people who are important to me think that I should use mobile payment apps."). Facilitating Conditions was a 4-item measure of the respondent's perception that they have enough technical resources and knowledge required in order to use MPS (e.g., "It is true that I have the resources necessary to pay with my phone."). Perceived risk was measured with a 4-item scale to determine the level of uncertainty consumers may have while using MPS, including the concern of personal information security (e.g., "Using the mobile payment apps makes me feel unsafe by providing personal information through the mobile payment system.") Trust was a 3-item measure of the strength of an individual's belief that service providers are trustworthy and using MPS is secure and has no privacy threats (e.g., "I could use the mobile payment system if the system protects the privacy of its users.").Finally, behavioral intention was a 4-item scale that measured the strength of the participants' intentions to use MPS in the future (e.g., "I intend to use mobile payment apps in the future"). The full list of 33 measurable items can be found in Appendix A.

The second part of the survey consisted of several thought experiments. Based on three binary context variables, we created 8 hypothetical scenarios where respondents were asked to choose the likelihood of using each of three payment methods provided – MPS, card and cash. Each of these situations combined a single "state" of the context variable: a purchase must be made either online or offline, either buying low or high involvement product, and either with time constrain or with no time pressure to make a decision. Two examples of such situations are provided below:

1. Imagine that came to **a local grocery store** in order to buy some **toothpaste**. The store is **empty**, and you are the **only customer** at the moment. There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash. How likely would you pay with each of these methods?

2. Imagine that you are ordering **a family tour package** for the upcoming holidays online. The tour package for the dates you have chosen has **just dropped in price**, but there are **only few packages left**. This means that the tour will be most likely **sold out in the next few minutes.** There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash at the travel agent's office. How likely would you pay with each of these methods?

These two situations provide two drastically different contexts for the decision-making process. In the first example, a transaction must be made in a certain physical location (offline), the product that is being purchased has low value and doesn't require high level of involvement from the consumer (low involvement) and the consumer does not have any time restrictions to make a decision (low time pressure). In the second case however, the context is opposite in every aspect: the purchase is made online, the product requires higher involvement from the buyer, and the time to perform the purchase is limited. These situations simulate the real-world scenarios that can occur to consumers and can affect their choice of the payment method.

As examples of low and high involvement products we chose the products most of the people tend to buy on regular or semi-regular basis. For the low involvement product group, we chose toothpaste and movie tickets, while laptop and holiday trip package represented high involvement products. The offline locations to the purchase toothpaste and laptop were local grocery and electronic store respectively, whereas online locations were movie theater and travel agency websites. A matrix of purchase situations is provided below:

	Offline	Online
Low Involvement Product	**Toothpaste**	**Movie tickets**
High Involvement Product	**Laptop**	**Holiday trip package**

In addition, the time constrains were applied to each situation, thus creating 8 possible payment contexts in total. Examples of time pressure factors were such situations like large line behind the buyer, a limited time until store's closing, end of sale or high demand for the product. The full list of payment situation can be found in Appendix A.

It is important to notice that the respondents were artificially limited to answer only 4 of 8 situations. The appearance of the questions was randomized based on time pressure,

meaning that each respondent answered either “low pressure” or “High pressure” for each of the 4 products above. This had to be done in order to avoid bias and decrease the time required to answer the survey.

3.2 Initial data preparation

Before initiating the data analysis and testing of the model, we conducted the initial preparation of the dataset. To ensure the better accuracy of analysis the dataset was cleaned by removing the uncompleted responses that. As a result of the data collection we received 130 responses. After the screening of the data, 5 responses were removed. Thus, the final dataset consisted of 125 respondents.

4. Data Analysis

The results of descriptive analysis, scale measurement, inferential analysis, correlation analysis and one sample T-test for experimental context will be discussed and presented in this chapter.

4.1 Descriptive Analysis

4.1.1 Demographic Profile of Respondents

This section describes the demographic profile of 125 respondents collected from the survey, resulting in a response rate of 100 per cent. Closed-ended questions were used in the questionnaire and thus, choices of answers in the questionnaires are limited.

Table 4.1.1: Gender of Respondents

Category	Frequency	Percent (%)
Male	66	53.0
Female	59	47.0
Total	125	100.0

As shown in Table 4.1, out of 125 respondents, 66 are males (53.0%) and 59 are females (47.0%). The number of male respondents is higher than female respondents by 6%. Thus, there is a significant difference between the number of male and female respondents.

Table 4.1.2: Age of Respondents		
Age group	Frequency	Percent (%)
Under 18 years	2	1.6
18 to 24 years	39	31.2
25 to 30 years	57	45.6
31 to 40 years	21	16.8
41 to 50 years	6	4.8
51 and over	0	0
Total	125	100.0

Table 4.1.2 above presents the distribution of respondents according to four main age groups which are Under18 years, 18 to 24 years, 25 to 30 years, 31 to 40 years, 41 to 50 years and 51 years or more. Here, there are only 2 (1.6%) respondents who are under18 years, 39 (31.2%) respondents who are 18 to 24 years, 57 (45.6%) respondents who are 25 to 30 years, 6 (4.8%) respondents who are 41 to 50 years, and there is 0 or no respondent (0%) respondent who are 51 years or more. This shows that the majority of respondents are young people in two groups aged from 18 to 30 years that represents combined in total 76.8%.

Table 4.1.3: Respondents' Use of Mobile Payment System		
Use of Mobile Payment Systems	Frequency	Percent (%)
Yes	106	84.8
No, But Used Before	6	4.8
No, Never Used	13	10.4
Total	125	100.0

As resulted in Table 4.1.3 above, among 125 (100.0%) respondents, 106 (84.8%) respondents are using mobile payment systems, 6 (4.8%) respondents said “No but they have used mobile payment system before” and 13 (10.4%) respondents said “No, they have never used mobile payment system”.

As we mentioned previously, in order to simplify the survey and to avoid bias, each respondent had been given only 4 out of 8 possible payment scenarios. The frequencies of answers per scenario is provided below in the Table 4.1.4:

Table 4.1.4: Statistics of responses per context situation

	N	
	Valid	Missing
Low Pressure Low Involvement Offline	66	59
High Pressure Low Involvement Offline	59	66
Low Pressure High Involvement Offline	69	56
High Pressure High Involvement Offline	56	69
Low Pressure Low Involvement Online	61	64
High Pressure Low Involvement Online	64	61
Low Pressure High Involvement Online	73	52
High Pressure High Involvement Online	52	73

4.2 Scale Measurement

4.2.1 Reliability Test

Reliability is examined using the Cronbach’s coefficient alpha test results as shown in the Table 4.2. Cronbach’s alpha is used in order to test the reliability and internal consistency of the individual factors of the proposed research model and the model as a whole. This is the most common approach for testing the reliability of a scale consisting of several Likert-type items. The closer the value of Cronbach’s alpha coefficient is to 1.0, the greater the internal consistency of the questions related to the factor which is tested. According to

DeVellis (2012, as cited in SPSS Survival Manual) Cronbach's alpha values above .7 are considered acceptable, while values above .8 indicate high reliability and good internal item consistency of the scale. Table 4.2 presents the reliability analysis of the variables used in this study:

Table 4.2: Reliability Statistics			
Variables	Constructs	Number of Items	Cronbach's Alpha
IV1	PE	4	**.892**
IV2	EE	4	**.926**
IV3	SI	3	**.699**
IV4	FC	4	**.755**
IV5	HM	3	**.901**
IV6	HT	3	**.868**
IV7	PR	4	**.887**
IV8	TR	4	**.870**
DV	BI	4	**.874**

Results of the Cronbach's Alpha analysis show that 6 out of 8 factors, as well as the overall proposed research model can be considered highly reliable, with the values higher then .85, while two others (SI and FC) are just acceptable. Among the independent variables, EE attained the highest Cronbach's alpha value with 0.926, while SI achieved the lowest value, which is 0.699. Thus, the data collected is highly reliable.

4.2.2 Central Tendencies Measurement of Constructs

Table 4.1.4 below shows the mean and standard deviation of of the variables related to mobile payments adoption. First, we computed the sum of different items related to each factor of the research model to create 9 combined variables. The mean values of all variables range from 3.6740 to 6.1320. This shows that most of the respondents selected "Neither agree nor disagree", "Slightly agree" or "Agree". As for standard deviation, the minimum value is .94910, while the highest is 1.54844.

Table 4.1.4: Central Tendencies Measurement – MPS adoption				
Variables	Construct	N	Mean	Standard Deviation
IV1	PE	125	**6.0220**	1.11759
IV2	EE	125	**6.1320**	.94910
IV3	SI	125	**4.9547**	1.20360
IV4	FC	125	**5.5160**	1.05482
IV5	HM	125	**4.6133**	1.34431
IV6	HB	125	**4.7973**	1.54844
IV7	PR	125	**3.6740**	1.41501
IV8	TR	125	**5.8080**	1.07910
DV	BI	125	**5.6740**	1.18425

Table 4.1.5 below shows the mean and standard deviation of likelihood of use of MPS in 8 different scenarios. The mean values of all variables range from 4.09 to 5.69. This indicates that most of the respondents are "Neither likely nor unlikely", "Slightly likely" or "Likely" to use mobile payment systems under given circumstances. The standard deviation has a minimum value of 1.661 and maximum value of 2.140.

Table 4.1.5: Central Tendencies Measurement – Usage Likelihood			
Contexts	N	Mean	Std. Deviation
Low Pressure Low Involvement Offline	66	4.06	2.140
High Pressure Low Involvement Offline	59	4.75	2.014
Low Pressure High Involvement Offline	69	4.09	1.892
High Pressure High Involvement Offline	56	4.50	2.174

Low Pressure Low Involvement Online	61	5.64	1.798
High Pressure Low Involvement Online	64	5.69	1.661
Low Pressure High Involvement Online	73	4.42	1.950
High Pressure High Involvement Online	52	4.73	2.069

4.3 Correlation Analysis

Pearson Correlation Analysis was conducted in order to explore linear relationships between the independent and dependent variables. A Pearson Correlation Coefficient is a measure of the linear correlation between two variables, where 1 denotes total positive correlation, 0 means no correlation, and −1 is total negative correlation.

Table 4.3: Correlation Matrix

	BI	PE	EE	HM	Habit	SI	FC	PR	Trust
BI	1.000	.765	.702	.601	.681	.661	.555	-.363	.440
PE	**.765**	1.000	.730	.590	.616	.604	.542	-.299	.476
EE	**.702**	.730	1.000	.591	.475	.451	.574	-.289	.447
HM	**.601**	.590	.591	1.000	.547	.514	.468	-.140	.324
Habit	**.681**	.616	.475	.547	1.000	.538	.469	-.260	.310
SI	**.661**	.604	.451	.514	.538	1.000	.475	-.062	.359
FC	**.555**	.542	.574	.468	.469	.475	1.000	-.214	.562
PR	**-.363**	-.299	-.289	-.140	-.260	-.062	-.214	1.000	-.138
Trust	**.440**	.476	.447	.324	.310	.359	.562	-.138	1.000

As we can see from the table 4.3, our independent variables have a relationship with the dependent variable, as the values of the correlation are not equal 0. This indicates the existence of a linear relationship between independent and dependent variables, which is required in order to proceed with multiple linear regression analysis. Correlation coefficient are positive in all the cases, but one, demonstrating the negative relationship between perceived risk and behavioral intention. It is also should be noticed that PE and EE may have a small multicollinearity problem, since their correlation is above .7. This implies that these constructs are similar in their nature, which was expected based on previous studies.

When it comes to relationship between intention to use MPS and the likelihood of its usage in different contexts, the correlation matrix in Table 4.4 (rotated) has also shown a significant correlation:

Table 4.4: Correlation analysis between BI and experimental contexts.

		BI
LowPresLowInvOffline - MPS	Pearson Correlation	**.466**
	Sig. (2-tailed)	.000
	N	66
HighPresLowInvOffline - MPS	Pearson Correlation	**.387**
	Sig. (2-tailed)	.002
	N	59
LowPresHighInvOffline - MPS	Pearson Correlation	**.307**
	Sig. (2-tailed)	.010
	N	69
HighPresHighInvOffline - MPS	Pearson Correlation	**.652**
	Sig. (2-tailed)	.000
	N	56
LowPresLowInvOnline - MPS	Pearson Correlation	**.674**
	Sig. (2-tailed)	.000
	N	61
HighPresLowInvOnline - MPS	Pearson Correlation	**.351**
	Sig. (2-tailed)	.004

	N	64
LowPresHighInvOnline - MPS	Pearson Correlation	**.454**
	Sig. (2-tailed)	.000
	N	73
HighPresHighInvOnline - MPS	Pearson Correlation	**.373**
	Sig. (2-tailed)	.006
	N	52

Results from the table above indicate that there is a strong correlation between BI with each individual context variables, where the correlation is significant at the 0.01 level (2-tailed). Thus, we can validate the significance of the relationships between all the context variables and behavioral intention.

4.4 Inferential Analysis

4.4.1 Multiple Linear Regression (MLR)

First, we used ANOVA analysis in order to examine the statistical significance of the correlations between the predictor constructs and the dependent construct (BI). The adjusted R2 is a value that explains the percentage of variance in the dependent variable as accounted for by the independent variables.

Table 4.4.1: Model Summary

Model	R	R2	Adjusted R2	Standard Error of the Estimate
1	.866	.749	**.732**	.61322

Based on Table 4.3.1 above, Adjusted R2 of 0.732 indicates that 73.2% of the variation in the dependent variable (BI) can be explained by all the independent variables (PE, EE, SI, FC, HM, PR and Trust). Therefore, the remaining 26.8% of variation can be explained by other factors which were not considered in this study.

Table 4.4.2: ANOVA of Multiple Linear Regression for Behavioral Intention					
	Sum of squares	df	Mean square	F	Pr>F
Model	130.283	8	16.285	43.308	.000
Residual	43.620	116	.376		
Total	173.903	124			

The ANOVA table above is used to determine whether there is a significant difference in the treatment effects. Where we can see that the model explained 130.283 which is more than the Residual part or unexplained part that is 43.620. The F value is 43.308 with 8 and 116 degrees of freedom (df) and a probability of occurrence by chance alone is less than 0.000 if there is no significant effect between the variables. Thus, we can say that there is a significant difference among the means. Therefore, the independent variables (PE, EE, SI, FC, HM, HT, PR and Trust) can be used to explain the dependent variable (BI) [F = 43.308, p < .000].

Table 4.4.3: Coefficients of Multiple Linear Regression for Behavioral Intention					
Constructs	Unstandardized B	Coefficients Std. error	Standardized Coefficients Beta	t	Sig.
PE	**.213**	.088	.201	2.425	**.017**
EE	**.303**	.093	.243	3.247	**.002**
HM	**.043**	.057	.049	.753	**.453**
HT	**.171**	.049	.223	3.459	**.001**
SI	**.258**	.063	.262	4.124	**.000**

FC	**.005**	.074	.004	.068	**.946**
PR	**-.122**	.042	-.146	-2.895	**.005**
TR	**.037**	.064	.034	.583	**.561**

--Dependent Variable: BI

The coefficients table for each of the independent variable shows how well each of the variables contributes towards dependent variable (Behavioral Intention). As can be seen from Table 4.4.3, five independent variables out of eight makes a unique statistically significant contribution (less than .05) towards dependent variable BI. These are Performance expectancy (PE), Effort expectancy (EE), Habit, Social Influence (SI) and Perceived risk (PR). On the other hand, three independent variables, namely Hedonic motivation (HM), Facilitating condition (FC) and Trust, were not able to make contribution towards dependent variable BI.

In order to measure the in fluence of the BI on Usage Likelihood of MPS in different contexts, we ran the regression analysis 8 times, by making UL a dependent variable and using BI as a predictor.

Table 4.4.4: Summary of contextual models

Model	R	R2	Adjusted R2	Standard Error of the Estimate
BI / LowPresLowInvOffline	.466	.217	**.205**	1.908
BI / HighPresLowInvOffline	.387	.150	**.135**	1.873
BI / LowPresHighInvOffline	.307	.094	**.081**	1.814
BI / HighPresHighInvOffline	.652	.425	**.415**	1.663
BI / LowPresLowInvOnline	.674	.454	**.445**	1.340
BI / HighPresLowInvOnline	.351	.123	**.109**	1.567
BI / LowPresHighInvOnline	.454	.206	**.195**	1.749

BI / HighPresHighInvOnline	.373	.139	**.122**	1.938

As we can see from the table above, the portion variance of usage likelihood predicted by behavioral intention fluctuates a lot depending on the context that is used as a dependent variable. The lowest result achieved was 8,1% of variance explained by behavior intention in case of purchasing high involvement product offline without time constrains. On the other hand, BI has explained 44,5% of the variance when it comes to purchasing low involvement products online, again with no time constrains.

Table 4.4.5: Coefficients of Multiple Linear Regression for Contexts

Constructs	Unstandardized B	Coefficients Std. error	Standardized Coefficients Beta	t	Sig.
BI / LowPresLowInvOffline	.843	.200	**.466**	4.217	**.000**
BI / HighPresLowInvOffline	.659	.208	**.387**	3.172	**.002**
BI / LowPresHighInvOffline	.491	.186	**.307**	2.641	**.010**
BI / HighPresHighInvOffline	1.198	.189	**.652**	6.324	**.000**
BI / LowPresLowInvOnline	1.023	.146	**.674**	7.003	**.000**
BI / HighPresLowInvOnline	.493	.167	**.351**	2.955	**.004**
BI / LowPresHighInvOnline	.748	.174	**.454**	4.298	**.000**
BI / HighPresHighInvOnline	.652	.229	**.373**	2.844	**.006**

As can be seen from Table 4.4.5, the Sig value, is lower than 0.05 for behavior intention in each of 8 scenarios. Hence, it has a significant predictive power on likelihood of use of MPS in any given context.

4.4.2 One-sample T-test for experimental context

In this section we explored whether time pressure, product involvement and purchase location have an effect on consumers' likelihood to use mobile payment systems. Although, a paired T-test would be preferable here, due to the randomization of the questionnaire based on time pressure, there is no single respondet that have answered the question including same product involvement and location, but different time pressure. Therefore, we have conducted 8 one-sample T-test to find out the mean values of UL for each of eight individual context scenarios. Then, we created 3 groups, based on 3 subcategories of the context: by time pressure (low vs high), by product involvement (low vs high) and by payment location (offline vs online). Each of these groups included all 8 contexts which were divided into pairs, based on the measured item. Consequentially, both items in a pair had two out of three variables in the same "state", but different state of measured variable. (e.g. paying for low involvement product versus high involvement product, while both purchases happen online and without time constrain). Next, in order to find the mean difference between pairs of variables in the same group, we performed a one-sample t-test for one of the items in the pair by manually entering the mean value of the second variable as a test value.

Table 4.5.1: Experimental Context (One Sample T-Test)
Time Pressure – Low Vs High

Context Name	N	Mean Value	Sig. (2-tailed)	Mean Difference
Low Pressure Low Involvement Offline (Pair 1)	66	4.06	.000	.686
High Pressure Low Involvement Offline	59	4.75	.011	
Low Pressure High Involvement Offline (Pair 2)	69	4.09	.000	.410
High Pressure High Involvement Offline	56	4.50	.164	

Low Pressure Low Involvement Online	61	5.64	.000	.048
(Pair 3)				
High Pressure Low Involvement Online	64	5.69	.820	
Low Pressure High Involvement Online	73	4.42	.000	.311
(Pair 4)				
High Pressure High Involvement Online	52	4.73	.284	

Table 4.5.1 shows that based on different time pressure there are differences between the observed means of UL. However, only Pair 1 has p-value less than .05 level, making it significantly different, while the observed means of Pairs 2, 3 and 4 are not significantly different. Thus, we can confirm that time pressure has a significant influence on UL when purchasing a low involvement product offline.

Table 4.5.2: Experimental Context (One Sample T-Test)
Product Involvement – Low Vs High

Context Name	N	Mean Value	Sig. (2-tailed)	Mean Difference
Low Pressure Low Involvement Offline	66	4.06	.000	.027
(Pair 1)				
Low Pressure High Involvement Offline	69	4.09	.906	
High Pressure Low Involvement Offline	59	4.75	.000	-.250
(Pair 3)				
High Pressure High Involvement Offline	56	4.50	.393	
Low Pressure Low Involvement Online	61	5.64	.000	-1.215

(Pair 3) Low Pressure High Involvement Online	73	4.42	.000	
High Pressure Low Involvement Online	64	5.69	.000	-.959
(Pair 4) High Pressure High Involvement Online	52	4.73	.002	

The Table 4.5.2 shows that based on different level of product involvement, there are differences between the observed means. The means UL of Pair 3 and 4 are significantly different as its p-value is less than .05. At the same time, the observed means of Pairs 1 and 2 are not significantly different. Thus, we can validate that product involvement makes a significant difference in usage likelihood when purchase is made online, regardless of time pressure.

Table 4.5.3: Experimental Context (One Sample T-Test) Payment Options – Offline Vs Online

Context Name	N	Mean Value	Sig. (2-tailed)	Mean Difference
Low Pressure Low Involvement Offline	66	4.06	.000	1.579
(Pair 1) Low Pressure Low Involvement Online	61	5.64	.000	
High Pressure Low Involvement Offline	59	4.75	.000	.938
(Pair 2) High Pressure Low Involvement Online	64	5.69	.000	
Low Pressure High Involvement Offline	69	4.09	.000	.335

(Pair 3) Low Pressure High Involvement Online	73	4.42	.147	
High Pressure High Involvement Offline	56	4.50	.000	.231
(Pair 4) High Pressure High Involvement Online	52	4.73	.425	

The table 4.5.3 indicates that means of Pair 1 and Pair 2 are significantly different, since their p-values are less than .05. At the same time, the observed means of Pair 3 and 4 are not significantly different. Thus, we can conclude that there is a significant difference in usage likelihood depending on whether product was purchase online or offline for low involvement products independently of pressure.

4.5 Hypothesis testing

H1: Performance Expectancy (PE) has a significant influence on Behavioral Intention (BI) to use mobile payment system.

The p-value of PE is .017, which is lower than .05, hence there is a significant linear relationship between performance expectancy and the user's behavioral intention to use the mobile payment systems. Therefore, the B coefficient of PE (.213) is statistically significantly different from 0 and has a positive effect on the behavioral intention to use MPS. Thus, this hypothesis is accepted.

H2: Effort Expectancy (EE) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*

The p-value of EE is .02, which is lower than .05, meaning that its B coefficient of .303 is significant. This confirms, that there is a significant linear relationship between EE and behavioral intention to use MPS. Therefore, EE positively affects the behavioral intention to use mobile payments. Thus, this hypothesis is accepted.

H3: Social Influence (SI) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*

The p-value of SI is .001, which is lower than .05, while B coefficient equals .258, indicating a significant positive relationship between social influence and the user's behavioral intention to use the mobile payment systems. Thus, this hypothesis is accepted.

H4: Facilitating Conditions (FC) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*

The p-value of FC is .946, which is much higher than .05. This demonstrates that there is no significant linear relationship between facilitating conditions and behavioral intention to use mobile payment systems. Therefore, FC does not affect the behavioral intention to use MPS. Thus, this hypothesis is rejected.

H5: Hedonic Motivation (HM) has a significant influence on *Behavioral Intention to use mobile payment system.*

The p-value of HM is .453, which is higher than .05. This demonstrates that there is no significant linear relationship between hedonic motivation and behavioral intention to use mobile payment systems. Therefore, HM does not affect the behavioral intention to use MPS. Thus, this hypothesis is rejected.

H6: Habit (HT) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*

The p-value of HT is .001, which is lower than .05, meaning that its B coefficient of .171 is significant. This confirms, that there is a significant linear relationship between EE and behavioral intention to use MPS. Therefore, EE positively affects the behavioral intention to use mobile payments. Thus, this hypothesis is accepted.

H7: Perceived Risk (PR) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*

The p-value of PR is .005, which is lower than .05, hence there is a significant linear relationship between perceived risk and the user's behavioral intention to use the mobile payment systems. Therefore, the B coefficient of PR (-.122) is statistically significant and has a negative effect on the behavioral intention to use MPS. Thus, this hypothesis is accepted.

H8: Trust (TR) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*

The p-value of TR is .561, which is higher than .05. This demonstrates that there is no significant linear relationship between trust and behavioral intention to use mobile payment systems. Therefore, TR does not affect the behavioral intention to use MPS. Thus, this hypothesis is rejected.

H9: Behavioral Intention (BI) has a significant influence on Usage Likelihood (UL) of mobile payment systems.

Depending on the context scenario, the p-values of BI varied from .000 to .01, which is lower than .05. This indicates a significant linear relationship between behavioral intention and the likelihood of consumer using the mobile payment systems. Since all of the B coefficients of BI were positive and statistically significant, we conclude that behavioral intention has a positive effect on the MPS usage likelihood. Thus, this hypothesis is accepted.

H10: Context has a significant influence on *Usage Likelihood (UL) of mobile payment systems.*

H10a: Product Involvement has a significant influence on *Usage Likelihood (UL)*

H10b: Time Pressure has a significant influence on *Usage Likelihood (UL)*

H10c: Payment Condition has a significant influence on *Usage Likelihood (UL).*

Depending on the context scenario, the p-values of UL varied from .000 to .906. By comparing differences in mean values of usage likelihood in different contexts, we observed that some of them are statistically significant. Presence of time pressure has a significant positive effect on likelihood of using MPS when the low involvement product is purchased offline (+.686). Purchase of high involvement product online negatively affects UL when the time pressure is high (-.959) and when there are no time constrains (-1.215). Purchasing low involvement products online has a positive effect on the UL, both with (+.938) and without (+1.579) time pressure. Thus, all three hypotheses are accepted.

Table 4.6.: Summary of Results of Hypotheses Testing

Hypothesis	Result
H1: Performance Expectancy (PE) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Accepted

H2: Effort Expectancy (EE) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Accepted
H3: Social Influence (SI) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Accepted
H4: Facilitating Conditions (FC) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Rejected
H5: Hedonic Motivation (HM) has a significant influence on *Behavioral Intention to use mobile payment system.*	Rejected
H6: Habit (HT) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Accepted
H7: Perceived Risk (PR) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Accepted
H8: Trust (TR) has a significant influence on *Behavioral Intention (BI) to use mobile payment system.*	Rejected
H9: Behavioral Intention (BI) has a significant influence on Usage Likelihood (UL) of mobile payment systems.	Accepted
H10: Context has a significant influence on *Usage Likelihood (UL) of mobile payment systems.* *H10a: Product Involvement has a significant influence on Usage Likelihood (UL)* *H10b: Time Pressure has a significant influence on Usage Likelihood (UL)* *H10c: Payment Condition has a significant influence on Usage Likelihood (UL).*	Accepted Accepted Accepted Accepted

5. Conclusion

5.1 Findings and discussion

The purpose of this research was to identify the factors affecting the behavioral intention to use mobile payment systems as well as to explore the contextual factors that may affect the consumer's choice to pay for purchases with such systems. In our study we have developed a theoretical model based on the previous research in technology acceptance, namely the Unified Theory of Technology Acceptance 2 model, and then expanded it by adding trust and perceived risk constructs along with a concepts of usage likelihood and contextual factor affecting it. The first part of our model included eight hypotheses related to factors that affect the users' behavioral intention to use mobile payment systems, while the second part had for hypotheses aimed at discovering the effects the context of the payment situation can have on the usage likelihood. In order to validate these hypotheses, we have conducted a quantitative analysis of the data gathered with help of online survey. After the validation of the hypothesis, the revisited research model is shown below:

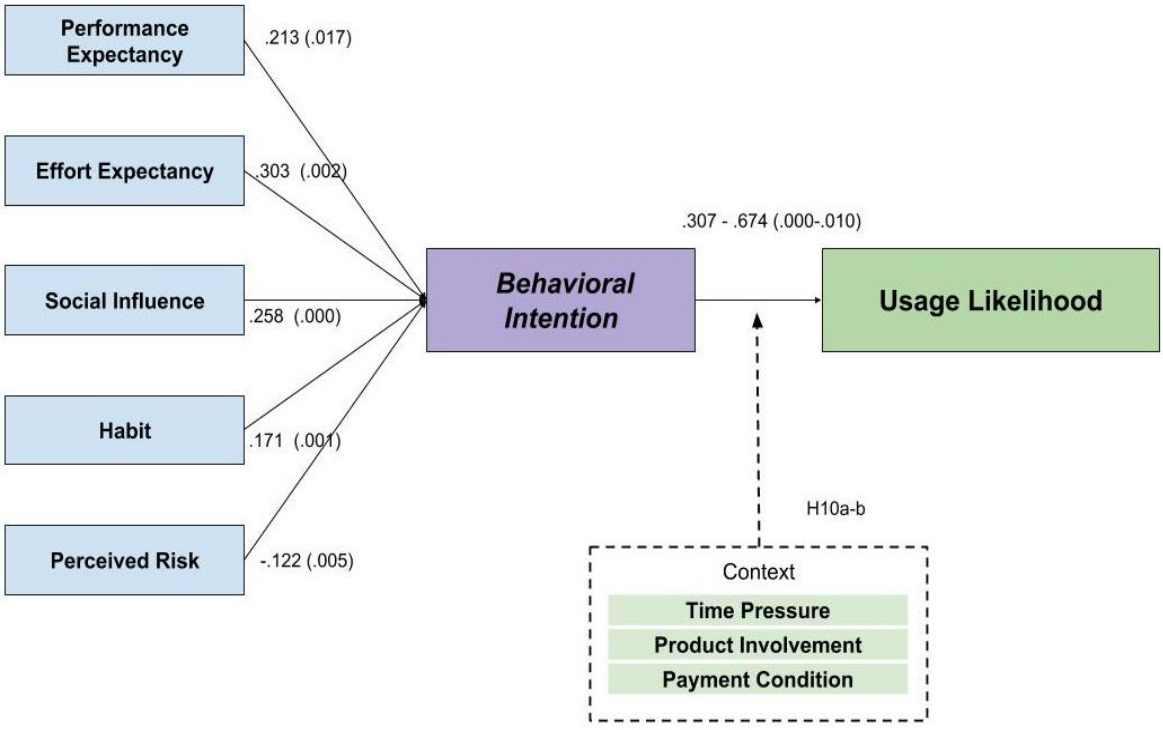

Figure 5.1: Revisited research model

The adjusted model shows a slight improvement of the goodness of fit and higher B coefficients across the board:

Table 5.1.1: Adjusted Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.864[a]	.747	**.736**	.60806
a. Predictors: (Constant), PR, SI, EE, Habit, PE				

Table 5.1.2: Adjusted ANOVA					
	Sum of squares	df	Mean square	F	Pr>F
Model	129.904	5	25.981	70.269	.000
Residual	43.999	119	.370		
Total	173.903	124			

Table 5.1.3: Adjusted Coefficients					
Constructs	Unstandardized B	Coefficients Std. error	Standardized Coefficients Beta	t	Sig.
PE	**.228**	.085	.215	2.674	.009
EE	**.335**	.085	.268	3.950	.000
Habit	**.180**	.047	.235	3.833	.000
SI	**.271**	.060	.275	4.498	.000
PR	**-.120**	.042	-.143	-2.872	.005

What factors influence the consumer's intention to use mobile payment systems?

Testing hypothesis showed that Performance Expectancy, Effort Expectancy, Social Influence, Habit and Perceived Risk directly affect consumers' intention to use mobile payment systems. The results indicate that Effort Expectancy has the strongest positive influence on the user's behavioral intention to use mobile payment systems. The second strongest factor that affects the behavioral intention was Social Influence, followed by Performance Expectancy and Habit, all of which had a positive influence on the intention to use MPS: Furthermore, results also showed that Perceived Risk has a negative impact on behavioral intention. The other three independent factors of the proposed research model, namely Hedonic Motivation, Facilitating Conditions and Trust were rejected as having statistically insignificant effect on behavioral intention to use MPS.

In terms of mobile payment adoption, the results of our study are mostly consistent with previous research on this topic. The research of Abrahão et al. (2016) and Cao, Q., & Niu, X. (2018) showed similar results when it comes to the influence of PE, EE, SI and PR on behavioral intention to adopt mobile payment solutions. At the same time, many studies portrayed the performance expectancy as main predictor of behavior intention, while effort expectancy played smaller role or, in some cases, even has been excluded from the model due to its similarity to PE (Oliveira et al.,2014; Baptista & Oliveira, 2015). This phenomenon can be partially observed in our study as well, where EE show signs of multicollinearity with PE. This might indicate that at least in terms of mobile payment systems, consumer's perception of how these systems perform and how easy it is to use them are the same thing.

Does context of payment affect the likelihood of use of such systems? When and under what circumstances consumers are more likely to choose mobile payment system as a valid payment?

As a result of our study, we found out that that intention to use MPS indeed has a direct positive effect on the likelihood of its usage. However, the portion of the variance explained by this relationship was drastically different in each situation, varying from 8,2% to 44,5%. This indicates the existence of other factors that influence consumers' choice of payment method. When it comes to the context of a payment transaction, our research showed that the likelihood of consumer choosing mobile payment system as a mean of payment can change significantly depending on what type of product is being purchased, whether the purchase happens online or offline and whether consumer experience effects of time

constrains. We concluded that consumers are generally more likely to use MPS while purchasing low involvement products, especially online, or while buying such products at physical locations, but under time constrains. Contrariwise, the likelihood of consumer choosing to pay with MPS decreases when purchasing a high involvement product online, regardless of pressure.

5.2 Additional findings and future implications

During our research we have noticed some facts that may be interesting for future research. First of all, just by looking at mean values of behavior intention to use mobile payments and mean values of usage likelihood in different context, we can see a discrepancy peoples' perception of their preferred method of payment.

Table 5.2.1: Means of BI an UL

BI	125	5.6740
Low Pressure Low Involvement Offline	66	4.06
High Pressure Low Involvement Offline	59	4.75
Low Pressure High Involvement Offline	69	4.09
High Pressure High Involvement Offline	56	4.50
Low Pressure Low Involvement Online	61	5.64
High Pressure Low Involvement Online	64	5.69
Low Pressure High Involvement Online	73	4.42
High Pressure High Involvement Online	52	4.73

At first look, it seems that consumers prefer mobile payments, since the mean value of BI implies that the majority of the answers to questions like "I will always try to pay with my phone when it is possible." are in between "Slightly agree" and "Agree". At the same time, mean values of usage likelihood mostly correspond with "Neither agree or disagree" and "Slightly agree", with 2 exceptions. So why people go against their preferences?

Some explanation can be provided by the following table:

Table 5.2.2 One sample Statistics T-Test of Usage Likelihood CARD vs MPS vs CASH				
Constructs	N	Means of Card	Means of MPS	Means of Cash
Low pressure Low Involvement Offline	66	6.03	4.06	3.62
High pressure Low Involvement Offline	59	5.85	4.75	3.81
Low pressure High Involvement Offline	69	6.00	4.09	3.13
High pressure High Involvement Offline	56	6.23	4.50	3.46
Low pressure Low Involvement Online	61	5.93	5.64	2.57
High pressure Low Involvement Online	64	5.69	5.69	2.64
Low pressure High Involvement Online	73	6.15	4.42	2.40
High pressure High Involvement Online	52	6.17	4.73	2.25
Average Mean:		6.00	4.73	2.98

Here we can see that in almost every payment context explored in our study, respondent tend to prefer the bank card over MPS. Only in case of purchasing low involvement products online regardless of time pressure, there is no significant difference between two methods of payment. There are a lot of possible reasons for this, many of which can give a foundation for future research. For example, customers may have higher behavioral intention to use cards than MPS or there are other contextual factors that affect the likelihood of choosing MPS. Nevertheless, cash payment option was unpopular across all contexts, confirming the trend of cash transactions slowly becoming a thing of the past and binging the cashless future closer.

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7. Appendix A - The research questionnaire

Q1. What is your gender?

Male
Female

Q2. What is your age group?

Under 18
18-24
25-30
31-40
41-50
51 and over

Q3. Do you use mobile payment systems? (e.g. Vipps, PayPal, Apple/Google/Samsung Pay, etc.)

Yes.
No, but used before.
No, never used

Q4. What mobile payment systems do you use / have used? *

Vipps
PayPal
MobilePay
mCash
Masterpass
Apple Pay
Android Pay
Other

**Only respondents who answered "Yes" of "No, but used before" in Q3 could see this question.*

You will get now a set of questions related to different aspects of using mobile payment systems.

Please select the answer that best represents how you feel about the statements below.

(Note: Each item on the following table has 7 answer options: Strongly disagree, Disagree Slightly disagree, Neither agree nor disagree, Slightly agree, Agree, Strongly agree)

Independent Variable	**Item**	**Description**
1. Performance Expectancy		**I think paying with mobile payment apps …**
	PE1	is useful in my daily life.
	PE2	improves my payment efficiency.

	PE3	helps me to make payments more quickly.
	PE4	have advantages over other payment methods.
2. Effort Expectancy		**I find mobile payment apps …**
	EE1	easy to use.
	EE2	clear and understandable to interact with.
	EE3	easy to learn
	EE4	flexible to interact with.
3. Hedonic Motivation		**I think paying with mobile payment app…**
	HM1	is fun.
	HM2	is entertaining.
	HM3	is something that I like doing
4. Habit		**I think paying with mobile payment app…**
	HT1	have become a habit for me.
	HT2	is something I do without thinking.
	HT3	is something I do often.
5. Social Influence		**It is true that…**
	SI1	People who are important to me think that I should use mobile payment apps.
	SI2	Many of my friends use mobile payment apps.
	SI3	Friend's suggestion and recommendation will affect my decision to use mobile payment apps.
6. Facilitating Conditions		**It is true that…**
	FC1	I have the resources necessary to pay with my phone.
	FC2	Mobile payment apps are compatible with other technologies I use.
	FC3	I can get help from others when I have difficulties paying with an app.
	FC4	Using mobile payment apps is entirely within my control.

7. Perceived risk		**Using the mobile payment apps makes me feel…**
	PR1	unsafe by providing personal information through the mobile payment system.
	PR2	unprotected when sending confidential information via the mobile payment system.
	PR3	that the possibility of something wrong happening with the mobile payment systems is high
	PR4	that the risk is high, given the possible loss of the phone.
8. Trust		**I could use the mobile payment system . . .**
	TU1	if the system provider and the software developers are widely acknowledged.
	TU2	if the system protects the privacy of its users.
	TU3	if I feel confident that I can keep the system under my control.
	TU4	if I believe it is risk-free to use the system
9. Behavioral Intention		
	BI1	I intend to use mobile payment apps in the future.
	BI2	I will always try to pay with my phone when it is possible.
	BI3	I plan to continue to use mobile payment apps frequently.
	BI4	I will recommend others to use mobile payment apps.

Now you will be given a number of scenarios related to purchasing some products under certain conditions.

Please answer how likely or unlikely would you chose each of the available payment methods in the given circumstances.

(Note: Each payment method on the following tables has 7 answer options: Very unlikely, Unlikely, Slightly unlikely, Neither likely nor unlikely, Slightly likely, Likely, Very likely)

1. Low pressure / Low involvement / Offline
Imagine that you came to **a local grocery store** in order to buy some **toothpaste**. The store is **empty**, and you are the **only customer** at the moment. There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash. How likely would you pay with each of these methods? Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.) Debit/Credit card Cash
2. High pressure / Low involvement / Offline
Imagine that you came to **a local grocery store** in order to buy some **toothpaste**. The store is full of customers and by the time it is your turn to pay at the cash desk, there is already **a significant line** behind you. There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash. How likely would you pay with each of these methods? Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.) Debit/Credit card Cash
3. Low pressure / High involvement / Offline
Imagine that you came **to a local electronics store** in order to buy **a brand-new laptop** you have been saving money for. The store is empty and you are the only customer at the moment. There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash.

How likely would you pay with each of these methods?

Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.)

Debit/Credit card

Cash

4. High pressure / High involvement / Offline

Imagine that you came to **a local electronics store** in order to buy **a brand-new laptop** you have been saving money for. It is the **last day of the sale**, after which the laptop will become too expensive for you. It is also quite late, and the store employee announces that the store **closes in 5 minutes.**

There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash.

How likely would you pay with each of these methods?

Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.)

Debit/Credit card

Cash

5. Low pressure / Low involvement / Online

Imagine that you **are buying movie tickets online**. There are still **many seats available** for the screening you chose.

There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash at the movie theater.

How likely would you pay with each of these methods?

Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.)

Debit/Credit card

Cash

6. High pressure / Low involvement / Online

Imagine that you are buying **movie tickets online** for a movie you have waited for a long time. The tickets for the premiere have **just gone on sale**, but they are expected to be **sold out in just few minutes**. There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash at the movie theater. How likely would you pay with each of these methods? Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.) Debit/Credit card Cash
7. Low pressure / High involvement / Online
Imagine that you are ordering **a family tour package** for the upcoming holidays online. There are still **many packages available** for the dates you have chosen. There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash at the travel agent's office. How likely would you pay with each of these methods? Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.) Debit/Credit card Cash
8. High pressure / High involvement / Online
Low pressure / High involvement / Online
Imagine that you are ordering **a family tour package** for the upcoming holidays online. The tour package for the dates you have chosen has **just dropped in price**, but there are **only few packages left**. This means that the tour will be most likely **sold out in the next few minutes.**

There are several payment methods available to you: you can pay using mobile payment system; you can pay with your bank card, either debit or credit; or you can pay in cash at the travel agent's office.

How likely would you pay with each of these methods?

Mobile payment system (Vipps, Paypal, Android Pay, Apple Pay, etc.)

Debit/Credit card

Cash