MobilePay: Evaluating User Experience in Finland

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Abstract

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This research-based thesis explores the user experience of MobilePay – a popular mobile payment application in the Finnish market while Finland is moving forward to a cashless society. The study aims to evaluate key aspects of the app's usability, convenience, accessibility, and overall satisfaction from the perspectives of users living in Finland. This thesis is entirely derived from the author's work without cooperation of any company or organization.

A theoretical framework is provided to describe the concepts used to develop the thesis, including definition of the acronym FinTech, the Technology Acceptance Model (TAM), and the thesis framework designed by the author showing step-by-step procedure of conducting this study. This chapter serves as a critical foundation which helps provide the audience a general understanding of the topic of this thesis.

A mixed-method approach is implemented, consists of quantitative and qualitative research methods with also support from theoretical studies. Theoretical study is the process of learning and gathering information from existing literature to build foundational knowledge for the topic. Quantitative research is implied through an online survey created by Webropol software with the aim of collecting actual and up-to-date feedback on MobilePay. Most questions in the survey are close-ended, while two of them are open-ended. The two open questions together with the interview are examples of qualitative research method, helping to acquire deeper insights from users.

The final outcome reflects overall satisfaction of users using MobilePay through numerical data and texts. Besides an evaluation of user experience generated based on research results, areas for improvement are also pointed out, which help propose ideas of developing, and thus encourage the adoption of MobilePay as well as develop enhance user experience. In addition to data gained from private users' perspectives, an interview with a restaurant owner was conducted to capture insights from a business's perspective.

The conclusions summarize the findings gained from the research process. This thesis not only provides valuable insights for MobilePay's developers but also contributes to broader discussions on optimizing user experience in mobile payment systems. If improvement is carried out, MobilePay can further solidify its position as a leading digital payment service in Finland.

Key words
FinTech, Mobile Payment, Traditional Payment, MobilePay, User Experience

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1 Introduction

This study is a bachelor's thesis of Degree Program in International Business with the specialization in Financial Management. The study explores the introduction of MobilePay – an enormous advancement in Finland's FinTech (Financial Technology) industry. Furthermore, the influence that MobilePay has exerted on people's daily lives is also analyzed to determine whether the adoption of MobilePay in the Finnish market is bringing positive impacts to the FinTech industry.

The study aims to investigate the adoption of MobilePay, which is the most common digital wallet and mobile payment method in recent years in Finland. More particularly, the study focuses on collecting feedback and evaluating the experiences that users have had when using the app. Before digging into the main topic, a general understanding of mobile payment systems is also provided to acquaint the audience with the basic knowledge of how mobile payment works. The data is gained from deep theoretical research and collected from a quantitative survey. In addition to experience shared by private users, an interview is carried out with a business owner who uses and accepts MobilePay as a payment method for customers. This interview is considered an example of the qualitative research method that provides knowledge as well as experience from a business's perspective. The findings are expected to contribute valuable insights into the way that MobilePay is exerting an influence on consumers' daily lives as well as its benefits compared to traditional payment cards. This study also receives support from AI (Artificial Intelligence) platforms, including Grammarly for language check and ChatGPT as a guiding tool for offering suggestions on building the thesis's structure and expounding the topic by breaking the topic into smaller sections for further research and proposing the addition of new information that had not yet been considered. It is guaranteed that knowledge taken from ChatGPT was implemented only as general guidance for building the thesis and never for direct research.

1.1 Background

In recent years, Finland's technology industry has led the world in innovation, and Financial Technology (FinTech) is a field gaining significant attention. Throughout the years, Finland has attracted a considerable number of FinTech startups thanks to the diverse tech ecosystem. One of the most prominent trends in the Finnish FinTech market is the boost in digital payments and banking solutions (Cathcart Associates Group 2023).

Rapid advances in the FinTech industry foreshadow a world in which the most basic financial services can be easily completed by consumers with only the need of owning a smartphone. With the swift growth of digital banking and the enormous impact of FinTech, traditional financial services are gradually being substituted by mobile payment methods as well as online financial platforms.

Since the horrendous COVID-19 pandemic in 2019, there has been a drastic decline in the habit of paying by cash due to the risk of cross-contamination (Lee 2020). An analysis done by Bank of Finland in 2021 stated that 93% of consumers decided to switch from cash to contactless and digital payment options mainly, whilst 62% of those also had the option to use digital wallets and payment apps at the same time, thanks to the convenience.

Figure 1. Change in use of payment methods in Finland (Bank of Finland 2021)

According to Statista's survey, in 2022, smartphone penetration rate reached 97% in Finland. This proved that smartphones have been an indispensable part of the vast majority of the Finnish population. Moreover, the whole amount of money from card payments made by mobile applications has increased by nearly three times, reaching €2.7 billion in 2021 (Bank of Finland 2022). This has unintentionally encouraged more technological advancement in the mobile payment industry. The story began in 2013 when MobilePay was first introduced in Denmark by Danske Bank. Ony one year later, the platform was expanded to the second Nordic country – Finland, which was considered an admirable milestone that Danske Bank had gained at that time. Ever since its release to the Finnish community, MobilePay has become increasingly popular for technology users in Finland (Danske Bank s.a.).

1.2 Demarcation

The research focuses on exploring the highlight features of the MobilePay application, examining its impact on consumers' payment habit, and evaluating the experience that users currently have when adopting MobilePay. Besides self-studying on theoretical materials, Eventually, a conclusion will be made based on all data collected from the research process, and the question whether users are satisfied with using MobilePay will be solved. The user experience of MobilePay is analyzed through several key dimensions, including ease of use, accessibility, security, and overall satisfaction of the users. A brief overview of the history of mobile payment and the technologies used to build most mobile payment systems are described briefly to provide the audience with a general understanding. To clarify, this study is entirely derived from self-study and many different perspectives based on the survey and the interview. Support from the service providers is opted out.

1.3 Research questions

The thesis addresses the main question: *What experience do users have when adopting MobilePay into their daily lives?*

The investigative questions that can assist in solving the main research topic are as follows:

IQ1. What are the common motivations for users to adopt MobilePay over traditional payment methods?

IQ2. Is MobilePay perceived as safe as physical payment cards?

IQ3. How do the design and appearance of MobilePay impact the user experience in Finland?

An overlay matrix was created to clarify the process of gathering and analyzing data for a better understanding.

Table 1. Overlay matrix of the main research question (RQ) and investigative questions (IQs) (Author)

Investigative Questions (IQs)	Research Method	Data Analysis / Results
IQ1. What are the common motivations for users to adopt MobilePay over traditional payment methods?	Theoretical studies, surveys, interviews	Reasons for preferring MobilePay over other payment methods / Benefits that Mobilepay has brought
IQ2. Is MobilePay perceived as safe as physical payment cards?	Theoretical studies	• Investigating the technology that MobilePay is developed from. • Examining its data security and authentication methods. • Looking up whether there were reported incidents or negative user experiences
IQ3. How do the design and appearance of MobilePay impact the user experience in Finland?	Surveys, interviews	• Users' perspectives on the app's design and appearance whether it is user-friendly • Overall satisfaction of users

2 Theoretical Framework

In this chapter, the key concepts of the thesis will be clarified. It begins with a definition of Financial Technology (FinTech) and a general introduction of the FinTech industry in Finland. The next phase introduces the academic theory that is chosen to develop the key concept for this thesis – the Technology Acceptance Model (TAM) proposed by Davis. Lastly, a diagram is deigned to illustrate the procedure and key concepts while analyzing data collected from research, which is inspired and designed based on the TAM theory.

2.1 Definition of Financial Technology (FinTech)

FinTech is an acronym standing for financial technology, which refers to the use of technology to deliver and solve financial solutions (Arnet et al. 2015). Besides, Schueffel stated in his scientific research in 2016 that FinTech can be simply defined as ‘’a new financial industry that applies technology to improve financial activities’’. To briefly conclude, FinTech represents the integration of technology with financial services to innovate, enhance, support, and automate the delivery of financial solutions. FinTech innovations consist of applications ranging from mobile banking, digital wallets, and payment processing to cryptocurrency and investment platforms. Since the invention of FinTech, a wide variety of technological advancements have been released, including blockchain, artificial intelligence (AI), cloud computing, and so on. The process of conducting financial tasks has been enormously improved – faster, more secure, and more accessible. The fundamental goal of the FinTech industry is to enhance customer experience and foster financial inclusion, thus increasing financial sector efficiency (Schueffel 2016).

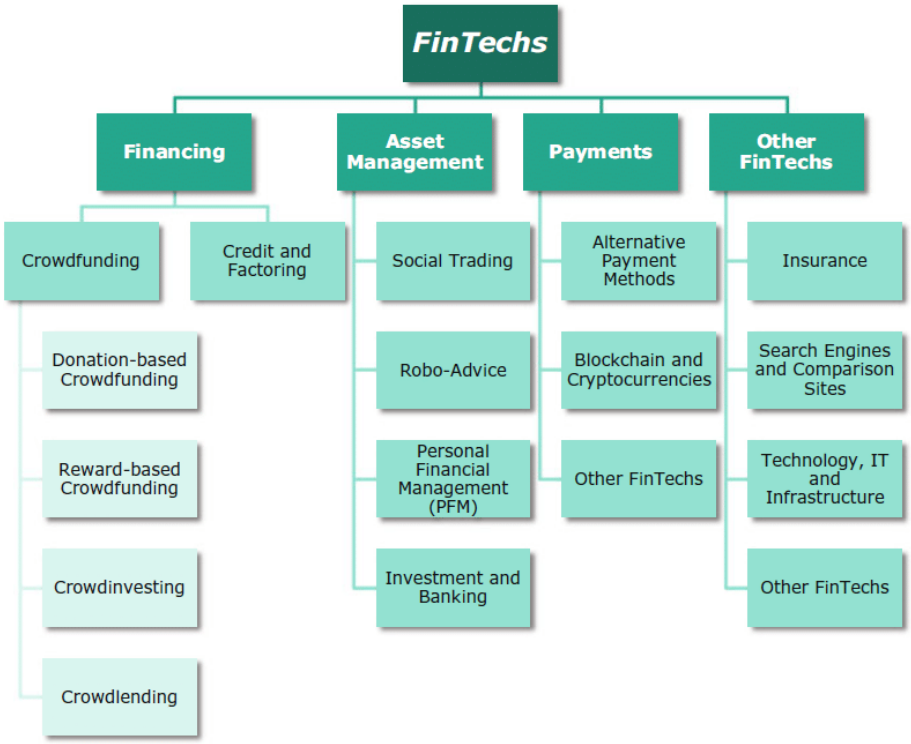


Figure 2. Segments of the FinTech industry (Ahmed 2019)

The FinTech industry in Finland has been experiencing a dynamic growth, thanks to such a strong digital infrastructure as well as a tech-savvy population. Finland has positioned itself as a center for financial technology innovation by exploiting its strength in mobile technology and cybersecurity. The country is moving forward to the cashless economy since most residents now tend to conduct transactions via mobile payment apps or online banking services rather than do it in the traditional way. Besides an increasing usage of mobile payment services like Apple Pay and Google Pay, mobile wallets such as MobilePay and Pivo are also very common payment methods. Consumer demand for secure, user-friendly and convenient financial services is predicted to still grow, Finland is expected to become one of the global leaders in digital payment technologies. (Cathcart Associates Group 2023)

2.2 Technology Acceptance Model (TAM) by Davis

Among various reliable sources, the Technology Acceptance Model (TAM) developed by Davis in 1989 is chosen to be the inspiration. Davis's work seems to be the most extensively utilized to investigate user acceptance of new technologies as well as the way users familiarize themselves with those innovations. Compared to other models, the TAM by Davis is believed to feature all crucial components needed for assessing and evaluating the adoption process.

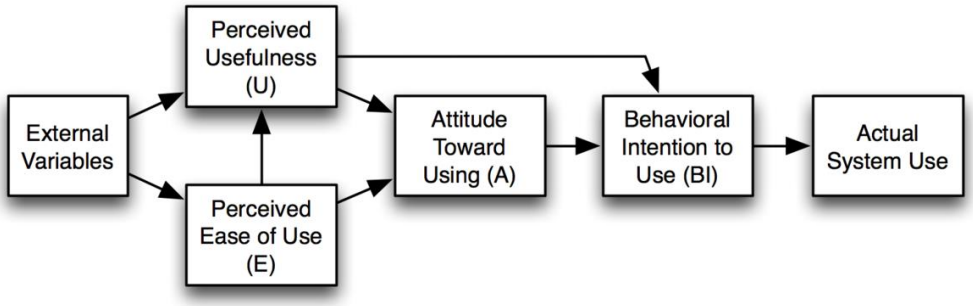


Figure 3. Technology Acceptance Model (TAM) (Davis 1989)

The TAM was first proposed by Fred Davis in his Doctoral thesis conducted in 1989. Since then, it has been known as an instrument to predict the probability of a new technology adoption within a group or an organization. Throughout the years, the TAM has evolved to become one of the core models used in comprehending predictors of human behavior toward potential acceptance or rejection of innovative technologies (Turner et al. 2010, 464). The TAM was developed based on the Theory of Reasoned Action (TRA) by Fishbein in 1979 and the Theory of Planned Behavior (TPB) by Ajzen in 1991 (Scherer & Teo 2019). There are four components illustrated in the diagram, which act as important factors influencing user decisions when adopting a new innovative technology: Perceived Usefulness (U), Perceived Ease of Use (E), Attitude Toward Using (A), and Behavioral Intention to Use (BI). In Davis's Doctoral thesis, these mentioned components were clarified transparently.

- Perceived Usefulness (U or PU): This term refers to the degree to which a user believes that by adopting and using a specific technology or system, his or her job performance and productivity will be enhanced. Davis also explained that users are more likely to adopt new technologies if they perceive that beneficial or effective for their daily lives. For instance, in the context of FinTech apps like MobilePay, users may find the app useful since it simplifies payments or reduces transaction time.

- Perceived Ease of Use (E or PEOU): This aspect refers to the degree to which a user thinks that the technology is effortless to use. It might be common sense that some users possibly hesitate to adopt new technology if they feel it is too complicated. It is obvious that technologies that are simple and user-friendly, with minimal learning efforts, are more likely to be adopted. In this model, PU and PEOU are the two key aspects affecting the way of evaluating the adoption process.

- Attitude Toward Using (A or ATU): This is defined as the user's overall feelings or evaluation of utilizing the technology. The higher the level of PU and PEOU is, the more positive and

favorable attitudes from users. Therefore, the likelihood of adoption also increases. For instance, if users feel MobilePay makes their life easier and provides value, they are likely to have a positive attitude toward its use.

- Behavioral Intention to Use (BI): This component is explained as a direct predictor of actual usage that represents a user's readiness or willingness to adopt the technology. It is influenced by both PU and ATU. For example, if users believe that MobilePay will improve their financial management and enjoy using it, they are more likely to intend to use it regularly.

(Davis 1989)

2.3 The framework of the thesis

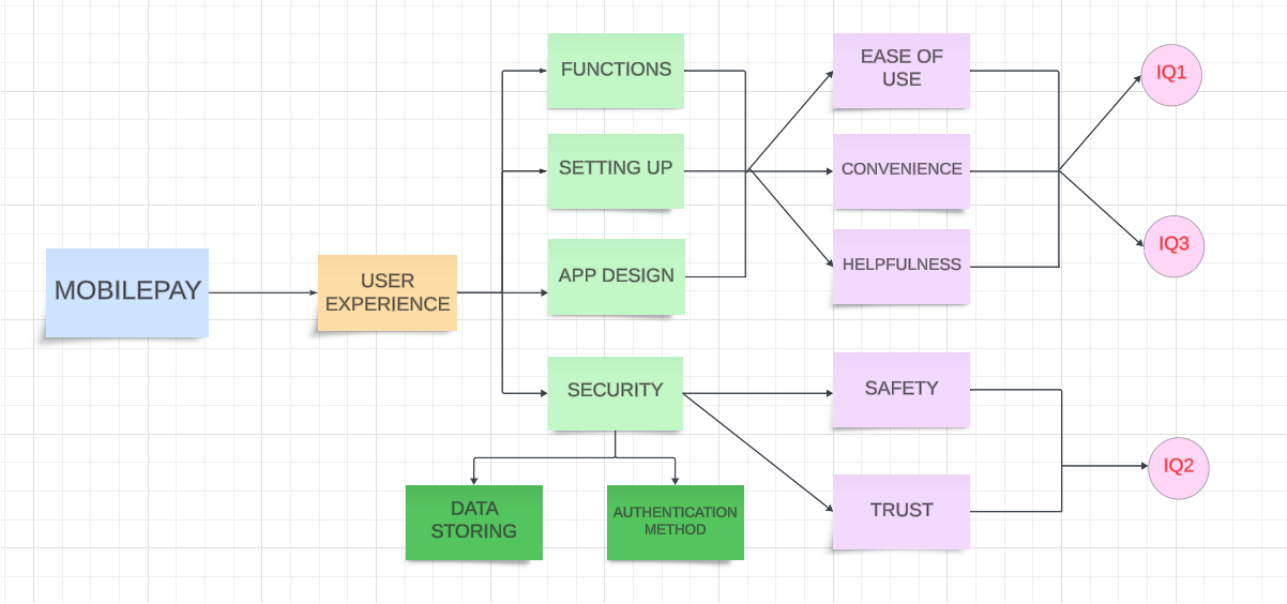


Figure 4. Thesis's Theoretical Framework (Author)

Figure 4 illustrates the study's theoretical framework that describes the key concepts and clarifies the aspects supporting and building the idea in order to answer the research questions. The main focus is to analyze and evaluate the data on user experience of the MobilePay application.

User experience is analyzed based on four aspects: Functions, Setting up and installation process, App's Design, and Security. More specifically, data needed for the first three aspects can be collected and evaluated based on answers gained from the user survey and the interview. In general, the target is to determine whether MobilePay users are satisfied with the app, for example, whether the new functions are considered effective updates, whether the installation and registration process is effortless, and whether the app's appearance is user-friendly or intuitive. Meanwhile, the security issue of MobilePay, which is the main idea of the IQ2, cannot be measured or determined

based on the answers from the survey since this is an issue that must be evaluated and concluded according to existing facts and theoretical materials. However, the user survey can also support partially in answering the IQ2 since the survey allows users to share whether they have ever had a bad experience related to security issue while using MobilePay. Technically, security covers various aspects, but in this study, two key categories of security are emphasized: data storing and authentication methods. Data storing refers to the way how users' data is managed and protected, preventing the leakage of users' private or sensitive information. Authentication methods are known as tools for the system to check if a user's credentials match the credentials provided in the database. Authentication technology is established to prevent unauthorized access to user accounts. With MobilePay, users can freely choose to protect their access with PIN code or biometric authentication like TouchID and FaceID.

After the process of doing theoretical research and gathering quantitative and qualitative data from the survey and the interview, evaluation kicks off. Assessment and conclusions about overall user experience are drawn based on three core factors – Ease of use, Convenience, and Helpfulness, and eventually, the IQ1 and IQ3 will be answered. Regarding IQ2, theoretical documents as well as survey responses can help to draw conclusions about the app's safety and trust from users and also solve the IQ2. Safety from the service provider reflects the importance of protecting users from risks of leaking personal information and fraud or scam, while Trust from users reflects the confidence in using MobilePay.

2.4 Mobile Payment

2.4.1 Definition of mobile payment

One of the outstanding technological inventions is the smartphone. In this modern era, no one can deny the considerable impact that smartphones have brought to our daily lives. Smartphones are the next level of traditional phones due to the fact that they are well equipped with a lot more functionalities exceeding telephony needs, and how they are gradually superseding traditional payment methods. Mobile payments are money transfers typically to a person or payments to a merchant for goods, services, and bills, which are executed on a mobile device (such as a mobile phone, smartphone, or personal digital assistant (PDA)). Mobile payments are applied to a wide range of payment scenarios. For instance, payments for digital content such as ring tones, music and games, payments for tickets, parking fees, transportation costs, invoices, etc. Tangible items are also eligible for mobile payments, both at vending and ticketing machines, and at manned point-of-sale (POS) terminals. (Dahlberg et al. 2007).

Mobile payment apps, also known as digital wallets or mobile wallets, are platforms that allow users to easily conduct financial transactions with their smartphones or any mobile devices. These apps are guaranteed to be security tested thoroughly before officially launching as customers' payment information will be stored, such as their debit or credit card information. Not only can users transfer money back and forth but also make electronic purchases for products and services. Compared to the traditional payment that includes paying by cash, credit card and personal cheque, mobile payment is seen as a much handier payment method as customers can go out with only their smartphones or other mobile devices that have a payment platform. A variety of technologies are implemented in most mobile payment apps which allow swift transaction process and guarantee data security, such as Near Field Communication (NFC), Quick Response (QR) codes, and biometric authentication (Touch ID, Face ID). Thanks to its convenience, mobile payment apps are becoming increasingly popular. Customers are provided with a simple and safe way to make a purchase remotely without the need for their wallets to present with them all the time. (Finance Magnates 2023)

Mobile payment systems have substantially transformed the way consumers conduct transactions by promoting convenience and speed. In addition to enhancing user experience, these systems also encouraged a shift toward the cashless economy by enabling speedy and secure payments via smartphones and digital wallets. Furthermore, the growth of mobile payment systems has promoted financial inclusion, supported small enterprises and facilitated online shopping, especially in regions where traditional banking is less accessible. Another advantage is that customers are provided with more available payment methods as they can freely choose to pay with digital wallets on their phones (Apple Pay, Google Pay, Samsung Pay) or with mobile payment apps (PayPal, Mobilepay, etc.). Compared to the past, consumers usually found it extremely inconvenient to make micropayments, especially with cash. Thanks to the introduction of mobile payment, the process of making micropayments, such as purchasing any item that costs under 1€, has become smoother without the need for carrying and calculating bills and coins at checkouts. As technology certainly continues to advance, the influence of mobile payment is expected to grow and thus, to reshape future commerce and consumer behavior. (Finance Magnates 2023)

According to Hopkins's studies conducted in 2024, mobile payment services are categorized into two forms: proximity payments and remote payments. To clarify, proximity payments refer to the most popular payment method that we usually witness that allows customers to make purchases at close distance. Customers and merchants can interact and conduct transactions using proximity payments by utilizing mobile payment technologies including NFC, BLE (Bluetooth Low Energy), and QR codes. Without needing to physically enter the PIN code or swiping the card, customers can effortlessly make a payment for goods and services at an available POS (Point of Sale) in

stores or at vending machines by an NFC-enabled mobile devices. Remote payments, on the other hand, can be proceeded via either a fixed or mobile telecommunication network (internet), regardless of consumers' location. This payment method is ideal for businesses only operating online or providing digital services and items, such as mobile phone subscriptions and so on. The well-recognised types of mobile payment include mobile wallet, mobile P2P (Peer-to-Peer), SMS payment, mobile e-commerce (m-commerce), and mobile point of sales (mPOS).

2.4.2 History and revolution of mobile payment

The long history of mobile payments can be traced as far back as the early 1980s and late 1990s. One of the first technologies that most mobile payment systems are developed from is RFID – Radio Frequency Identification. A lot of experts contributed their dedication to the invention and advancement of RFID. However, only Charles Walton – an outstanding electrical engineer during the 1970s, was proudly honored at least 10 patents for a wide variety of RFID-related devices with more than 50 patents to his record overall. In 1983, RFID was officially invented by Charles, and it is undoubtedly that he played a vital role in setting the technology on the route to widespread commercialization and deployment (TME 2023). Until 1995, the Seoul Bus Transport Association introduced the world's first-ever contactless payment card which was made with a prepaid travel card – the Upass card. This service was available for only commuters travelling by bus in Seoul. Around the same time, the United States caught up by launching Speedpass – also a kind of keychain developed from RFID technology. This invention allowed consumers to conduct quick and convenient payments for fuel at participating gas stations (Uddin 2023).

The very first mobile payment made via a mobile device was initiated by Coca-Cola. Starting from 1997, Coca-Cola provided customers with an option to make a purchase from its vending machine by text messaging. More particularly, customers could authorize payment by sending a text message (SMS) to a unique number connected to the machine. This acted like a method to instruct the machine to vend the specific products that customers ordered. Nevertheless, this service should be suitable for micropayments, such as payment for one beverage. Although the method seemed outdated, it helped open up more opportunities for further enhancement in the mobile payment systems. And in the same year, Merita Bank – a Finnish bank operating between 1995 and 2001, launching the first form of mobile banking into the Finnish community. Also having the same process method, customers wishing to conduct transactions could send the required information to Merita Bank via SMS, and then their requests would be proceeded. By the end of the 19th century, PayPal was founded and has currently become a leading digital payment platform that allows users to securely transfer money to and receive money from individuals or businesses worldwide. (VIA OpenPlatform 2021)

At the beginning of the 2000s, mobile payments gained fundamental popularity and started becoming the most preferred payment method thanks to its convenience and smart functions. Research showed that in 2003, up to 95 million users around the world were able to use mobile payment or more than willing to adopt this innovative technology (EMS Payments 2017). Until 2011, Google officially entered the race for mobile payment systems by launching its first version of NFC-based digital wallet – Google Wallet (currently known as Google Pay). Not only was it built to store payment card information but also several kinds of passes, such as boarding passes, coupons, gift cards, and so forth. Since its release, Google Wallet has gained compliments and trust from a lot of users due to its convenience and biometric authentication step before making a payment. Over the following years, Apple and Samsung had caught up the pace by also announcing their versions of digital wallet, Apple Pay and Samsung Pay, which also implemented the NFC technology. These milestones have proved the crucial role that digital wallets play and the enormous contribution to the mobile payment revolution. (XSReviews 2023)

2.4.3 Advantages and Disadvantages. Mobile Payment vs. Traditional Payment

This section is analyzed and summarized according to research conducted by Ramya, Sivasakthi and Nandhini in 2017. Additionally, Madari's findings also make a great contribution to the process of concluding the key advantages and disadvantages and a general comparison between two forms of payment.

Advantages

There is no doubt that mobile payment brings various benefits to our daily lives. More particularly, it has transformed the way people conduct transactions and reshaped the landscape of financial technology. More consumers are switching to digital solutions for daily tasks thanks to the rapid enhancement of mobile technology in general and smartphones in particular. There is a wide variety of benefits to this shift, including enhanced security, higher speed, convenience, and integration with other digital services.

One of the remarkable advantages is its convenience. In today's fast-paced world, consumers are likely to prefer whichever service is more helpful and handier. Users no longer need to carry cash, cards, or physical wallets because mobile payments enable transactions with a simple action of tapping or scanning. This is especially helpful for individuals who often make minor and daily expenditures such as groceries, coffee, or public transportation fares. The simplicity of ''tap-and-go'' transactions significantly smoothens the process and reduces checkout time, and thus make the process more efficient for both customers and merchants. Without the need for PIN code or signature, the process is much smoother, and the transaction can be completed within a few seconds.

Additionally, mobile wallets also enable users to store multiple payment cards in one device which helps reduce the hassle of going through the entire physical wallet to look for the right card or a necessary amount of cash. (Ramya et al. 2017)

A primary concern for making purchases with mobile payment solutions is data security. While paying conventionally by credit or debit cards can still pose a risk of being stolen or skimmed, digital wallets implement advanced technologies including encryption and tokenization to secure sensitive and personal data safely. In addition, extra layers of security are also set up with biometric authentication such as fingerprint scanning (Touch ID) and facial recognition (Face ID). These features guarantee a safer and more secure system as it prevents and complicates the intention of getting access to mobile wallets of hackers. In case a phone is lost and stolen, mobile wallets can be remotely locked or disabled to prevent misuse, which proves that mobile payments are significantly more secure than traditional payments. (Ramya et al. 2017)

One of the more innovative aspects of mobile payment systems is the service integration. Not only can payment cards be stored but also other types of documents, such as boarding passes, tickets, coupons, gift cards, and so forth. Some mobile payment platforms also provide notifications or reminders when discounts or rewards are available, and this greatly enhances the customer's shopping experience. Therefore, it is obvious that mobile wallets almost act like a real physical wallet. The only difference which is also a huge advantage is that everything is stored on customers' mobile phones or wearable devices. (Madari s.a.)

Due to the adverse consequences of the COVID-19 pandemic, hygiene has become increasingly important; therefore, the contactless feature of mobile payments has also become valuable. During the outbreak of COVID-19, making payments with cards or cash was also the main reason for the contagion as the virus could spread rapidly through physical contact. Since the concept of mobile payments is simply tap-and-go without having to touch physical buttons or exchange cash, it surely promotes better hygiene while also tackles public health concerns. (Madari s.a.)

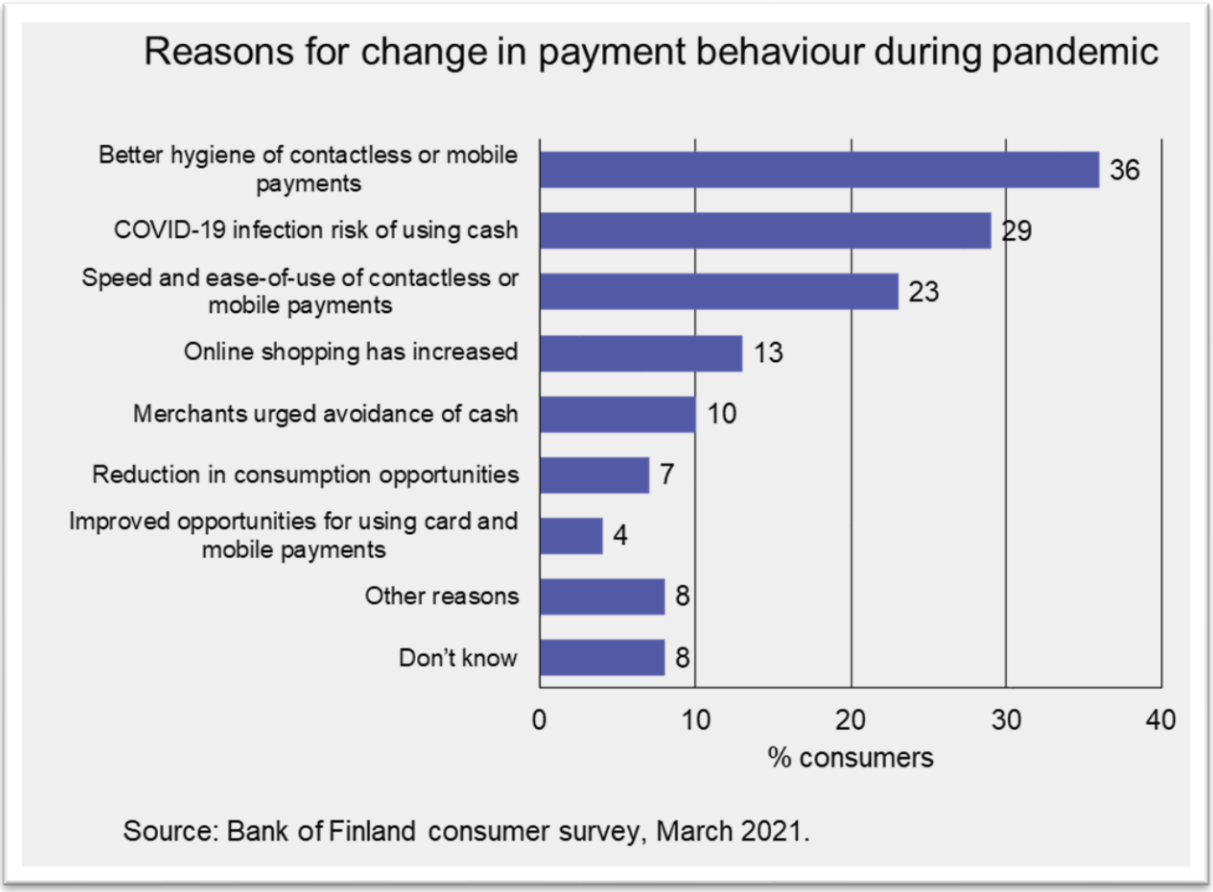


Figure 5. Reasons for change in payment behavior during pandemic (Bank of Finland 2021)

The tracking and record-keeping features of mobile payment applications can be a major advantage for individuals wanting to manage their personal finance. Every transaction performed using a mobile wallet is automatically recorded and can be easily accessed by the user. This function enables users to keep track of their spending habits and thus helps them not overspend their budget as well as avoid unnecessary purchases. Compared to cash payments, keeping track of daily expenses requires manual effort, which can be a discouragement for consumers.

Disadvantages

Despite being considered an advantageous alternative to overcome the drawbacks of traditional payment methods, there are still several drawbacks to digital wallet's security concerns, compatibility, redundancy and adoption process.

Although advanced technologies like encryption and tokenization are implemented to develop mobile payment systems, it is still not entirely guaranteed and there is always a potential security risk. Users are susceptible to hacking and privacy violation, malware, and phishing since personal and financial data are saved on mobile devices and transmitted during conducting transactions. Besides, there is a greater chance that hackers would intercept personal information when mobile transactions are

conducted over unprotected Wi-Fi networks, such as public Wi-Fi. Users' personal information can be gathered and shared with third parties or used by the service provider for targeted advertising. Although convenience is a key benefit, the fact that users are required to provide such an amount of their personal data may be a high risk of security and privacy violation. In addition, it has been reported that scammers are likely to come up with sophisticated tricks that make digital wallet fraud become a common crime (PYMNTS 2023). For instance, they can create a fake website of a reputable merchant that has an almost similar appearance and design to the authentic website to deceive customers to purchase items or services online. Same as mobile payment fraud, paying by cash also poses a risk of scams due to the fact that there is always a possibility to swap authentic bills with counterfeits. However, it is more likely that businesses or merchants would be the victim of the fraud in this case because there is a higher chance that buyers would be the ones using counterfeits during transactions. (Ramya et al. 2017)

Mobile payment methods have indeed been considered a major convenience, however, there is also a hidden inconvenience that users may not notice – high technological dependence. If customers are making payments via mobile wallets, it requires a sufficient amount of battery of their mobile devices, and even a stable internet connection is needed if payments are made via mobile payment platforms such as PayPal, MobilePay, etc. This sometimes can be a challenging aspect as not everyone carries along their chargers, or when travelling in rural areas it may be hard to find a stable internet connection. Additionally, even though no one can deny mobile payments' convenience and popularity, not all merchants have adopted this advancement. Several particular businesses, especially small-sized enterprises or merchants in the countryside, may not have the facility to support mobile payments. This may result in an uncomfortable shopping experience where customers are compelled to bring cash or physical cards as backup payment options in case mobile payments are rejected. However, this inconvenience only occurs whenever customers are traveling to somewhere that they are not familiar with, or they are shopping at small-sized businesses. (Ramya et al. 2017)

Another drawback that can be mentioned is the difficulty of learning and adopting this technology. This disadvantage quite depends on a specific group of customers, more specifically, the older generation. Older adults or those who are less tech-savvy tend to find it challenging to adopt mobile payment techniques. Tasks such as downloading the application, setting up, and linking bank accounts or credit cards can intentionally create barriers to adopting this new technology for those who have been accustomed to traditional payment methods. Another unfortunate fact is that not all individuals are able to afford a mobile device or a reliable internet connection. Since smartphones or internet plans may be prohibitively expensive, residents living in low-income areas may not be able to have access to mobile payment technologies. For businesses and enterprises, adopting mobile payment systems often requires a considerable investment in upgrading new technologies and

facilities. After that, there is also the continuous fee for maintaining digital security for mobile payment services. Businesses need to ensure that their payment infrastructure is safe from fraud and hacking, which can lead to extra expenses for software upgrades and IT maintenance. These factors can somehow become an obstacle to the adoption of mobile payment systems, especially when traditional payment methods are still universally accepted. (Madari s.a.)

Table 2. Overall comparison of Mobile Payment vs Traditional Payment (Author)

Features	Mobile Payment / Wallet	Traditional Payment
Convenience	High: Easily accessible from a phone or wearable devices	Moderate: Carrying cash or cards required
Speed	High: quick transactions via tap or scan	Moderate: depends on card / cash handling
Security	High: encrypted, tokenization, biometric authentication	Moderate: cash are easily lost, cards are vulnerable
Privacy	Moderate: digital data may be at risk (in some rare cases)	High: cash is anonymous
Risk of fraud / scam	Moderate: receipts of transaction can be photoshopped	Moderate: counterfeit bills
Universality	Moderate – High: still growing but not universal yet	High: Mostly accepted, but still some places do not accept cash payment
Technological dependency	High: requires mobile devices, internet connection, and battery	Low: no need for devices either internet connection

Integration with services	High: can store multiple forms of documents such as payment cards, passes, gift cards, etc.	Low: no digital integration
Record storing	Automatic record of transactions	Cash: depends mainly on users Card: automatic record of transactions
Hygiene	High: contactless, no physical exchange needed	Low – Moderate: physical exchange needed

According to studies conducted by Madari and research done by Ramya, Sivasakthi and Nandhini in 2017, a general comparison between two types of payment method is made below.

Overall, mobile payment methods and traditional payment methods have their own characteristics and specific benefits and drawbacks. However, to be fair, mobile payment seems to be a stronger candidate in this battle. It is obvious that convenience is a competitive advantage of mobile payment methods, thanks to the ease of access via smartphones or wearable devices while traditional payment requires carrying cash or cards along endlessly. In terms of speed, once again, mobile payment methods are likely to take less time to complete a purchase by tapping the payment machine or scanning the merchant's QR code. There is a higher potential of damaging physical payment methods, for instance, credit or debit cards are vulnerable and can be broken, and cash can be exposed to loss or theft. With mobile payment, advanced technologies are implemented to protect customers' data security, such as encryption, tokenization, biometric authentication, etc. On the other hand, privacy seems to be a strong advantage of traditional payment methods since cash transactions are anonymous, whereas mobile payments may expose digital data to potential privacy risks even though it is very rare for these cases to occur. An important truth to be aware of is that both payment methods carry a moderate risk of fraud or scam. More specifically, receipts of mobile transactions can possibly be photoshopped or faked and paying with cash is always risky to counterfeit bills. Paying by cash or physical cards is widely accepted, while mobile payments are still growing in popularity but still not yet completely universal. In addition, technological dependence may be the biggest drawback of mobile payment methods as customers need to make sure

that their mobile devices have enough battery power and sometimes, a stable internet connection if they plan to make payments via apps like MobilePay. Service integration is another reason that consumers decide to switch to mobile payment. Not only payment cards but most mobile wallets are also able to store various other documents regarding boarding passes, coupons, gift cards, and so on. Lastly, record storing is another benefit of mobile payment methods. Record storing is an automatic feature keeping track of all past transactions, which helps users have their spending habits under control. This feature is also available for consumers paying with physical cards as they can check on their bank's app. With cash payments, record of transactions completely depends on the customer's own tracking effort.

3 MobilePay

3.1 Introduction of MobilePay

As mentioned above, mobile payment has nearly become the most preferred payment method nowadays, especially among the young generation. Besides NFC-based payment services such as Google Pay and Apple Pay, mobile payment applications are also adequate alternatives. Following PayPal's and Venmo's success, Danske Bank introduced MobilePay to be a competitor in the market. Launched in the middle of 2013, MobilePay is considered an enormous success of Danske Bank and rapidly became a game-changer in the Nordic payment landscape. It is offered for devices that are developed based on iOS and Android operating systems. It used to be supported on Windows devices; however, due to an unfortunate fact that there were so few Windows users, Danske Bank had to remove MobilePay from the Windows store in 2017 (MTV News 2017). Originally developed in the Danish market, MobilePay has become a major part of the revolution of payment systems by enabling users to quickly transfer money back and forth with only the need for their phone numbers. Within ten weeks of its public debut, it was reported to have almost 300,000 downloads in Denmark. Following the success in the first weeks, the number of users quickly rose to 600,000 active users in just a few weeks later. Until December 2013, the Finnish community officially had a chance to approach MobilePay. While this platform was still a modern trend for the Finnish to accommodate, by November 2014, the number of MobilePay users in Denmark had reached 1.8 million, which meant that MobilePay was installed on every second passing by. (Trifork s.a.)

Reported from Vipps MobilePay AS's update, in June 2021, a game-changing project for the mobile payment systems in Nordic area was proposed – the partnership between Vipps, Pivo, and MobilePay. These brands are all mobile payment applications but originate from different countries, and all are designed to simplify digital transactions. Vipps was launched in Norway in 2015 by DNB – the largest Norway's financial groups, as a user-friendly mobile payment solution for Norwegian users. Pivo was introduced in Finland in 2013 by OP Financial Group that aims to develop and promote seamless peer-to-peer transactions and online payments. Having the same intention with the neighboring countries, MobilePay was established in Denmark, and it has been Danske Bank's huge success since its release in 2013. Since MobilePay has gained significant popularity, the corporate had a bigger ambition and motivation for turning it into the best and the most comprehensive digital wallet in Europe (Vipps MobilePay AS 2021). Wraa-Hansen, Head of Personal Customers Denmark in Danske Bank and the Chairman of MobilePay shared that, ''it is very expensive to compete with global competitors in this space and to continue to develop the most attractive solutions for our customers, MobilePay must be part of something bigger to gain scale and pool investments for further innovation". In the same interview, Bunkenborg – CEO of MobilePay and future

member of the executive board of the new company, also believed that MobilePay would be strongly positioned in the Nordic market and the ambition to build a competitive European player in the payment industry could possibly be further underpinned, thanks to this potential merger. The merger was announced during the middle of 2021 and until 2022's autumn, it was confirmed that Pivo would not join the party, meaning that OP Financial Group would not be a co-owner of this proposed partnership. A few weeks later, the responsible authorities, including the EU Commission, announced that the merger between Danske Bank and DNB, also known as MobilePay and Vipps, was officially approved (Danske Bank 2022).

In the two following years, which is the current year, it was informed that Vipps MobilePay finally launched its footsteps in Sweden. This development is seen as their next achievement as it has reached one more step closer to the companies' goals of simplifying peer-to-peer transactions and expanding this mobile payment platform to the whole Nordic area. Starting from September 2024, users from four countries regarding Denmark, Norway, Finland and Sweden can easily transfer money to each other within a few seconds via the Vipps or MobilePay app. Therefore, there accepted currencies to process include DKK, SEK, NOK and EUR. (Vipps MobilePay AS 2024a).

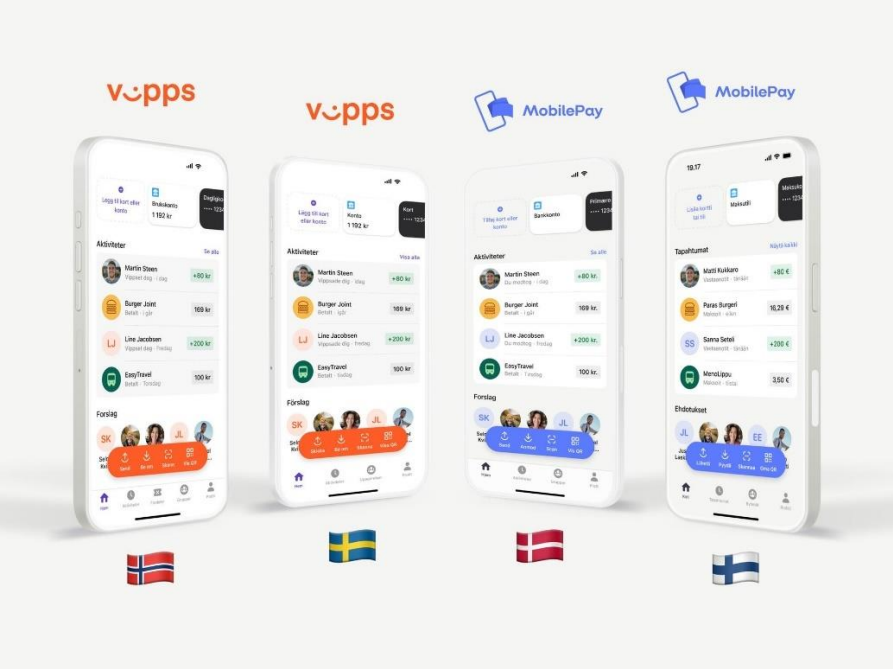


Figure 6. Vipps MobilePay merger, currently in use in Denmark, Norway, Finland & Sweden (Vipps MobilePay AS 2024b)

Since its introduction to the Finnish market a decade ago, there has been a booming shift in the payment services. MobilePay has undoubtedly revolutionized the way people conduct transactions. Initially, it was introduced to be just a convenient peer-to-peer payment method easing the hassle

of performing transactions. As time passed, MobilePay soon evolved into a well-preferred digital wallet which eases the procedure of making a transaction or a payment, including purchases at physical stores and online purchases, and even managing receipts or splitting expenses with friends if needed. One advantage of MobilePay is that it is now widely accessible and compatible with all major banks. The success of Danske Bank was proved by Statista's data analysis conducted in 2024, which showed that most Finnish users voted for MobilePay to be the largest contactless payment brand in Finland and agreed about the obvious benefits that the platform has brought to their daily lives. Vipps MobilePay AS even stated in their annual report in 2023 that by the end of 2023, the number of users in Finland had reached 2.6 million out of 5.6 million residents in the whole of Finland (Worldometer.info 2024), and there were 151 million transactions made with MobilePay. The rate of using MobilePay as a payment method for online purchases had risen to 55%, compared to 2022 (Vipps MobilePay AS 2023). Other statistics from Paytrail Plc also shows that since 2020, MobilePay has become the third most popular online payment method just right after card payments from OP bank and Nordea bank. Reasons for this shift were determined from many of their studies: ''usability, a change in consumer behavior, a forced digital leap in Finland, and payment hygiene'' (Paytrail Plc 2020).

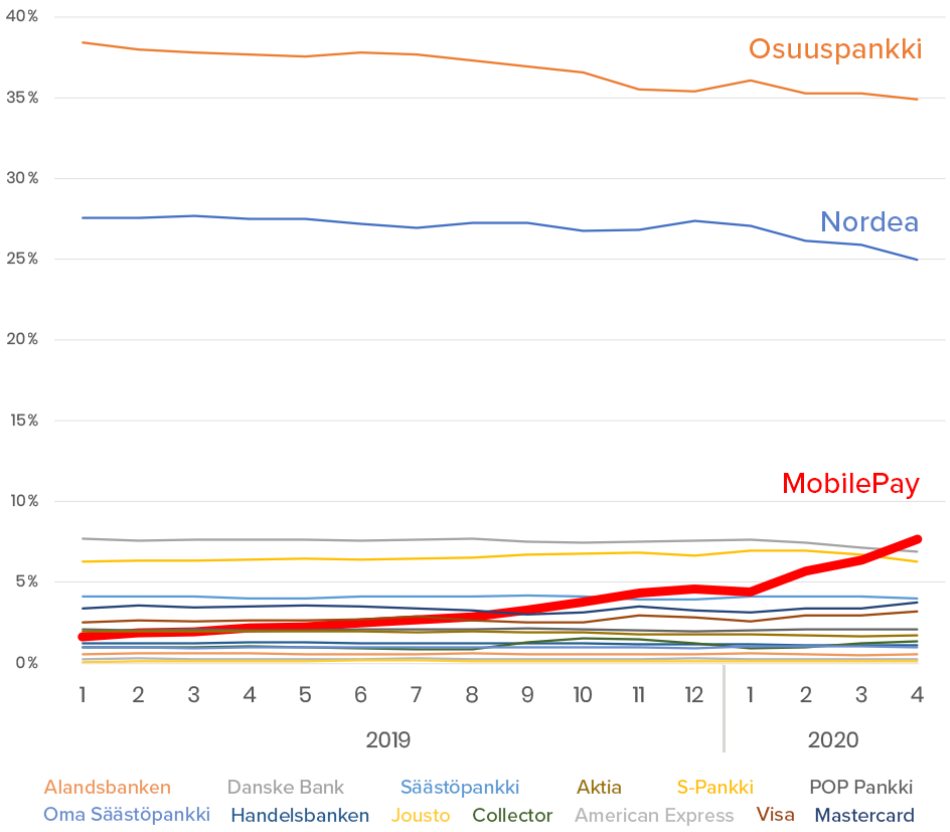


Figure 7. Usage rate of payment methods in Finland (Paytrail Plc 2020)

These records prove the considerable influence that MobilePay has exerted on Finnish residents in a positive way. MobilePay genuinely represents the shift toward cashless economies as an increasing number of users enjoy its convenience and efficiency in both personal and business lives.

3.2 How does it work?

MobilePay is not only considered a convenient payment method but also designed to be quick and easy to use for both simple peer-to-peer transactions and in-store or online shopping. To start using MobilePay, users first need to download the app, provide their phone numbers, and link it to their bank account, debit, or credit card. It is also possible to add more than one payment card and choose which card or banking account that users wish to send and receive the money. Once registered successfully, the app is ready to use immediately. Customers can start trying to conduct transactions by entering the recipient's phone number or scanning the recipient's personal QR code, entering the amount of money needed, and then the app will process the transaction very speedily. MobilePay is also available for online shopping, but customers should be aware that only several online merchants offer it to be one of their payment methods. It is a little different from making peer-to-peer transactions, instead of entering the recipient's phone number, the buyer needs to provide his or her phone number. After that, a request will be sent via the app asking the buyer to confirm the payment by swiping the button. The payment flow is demonstrated through the images below. The first two photos on the left illustrate the initial steps in which the seller requests a payment for the buyer to confirm. The last photo is the last step before swiping to accept the payment. (Paytrail Plc s.a.)

Figure 8. Step-by-step instructions on making a payment with MobilePay for online shopping (Paytrail Plc s.a.)

Another example illustrates the process of paying an invoice via MobilePay. Customers can pay any kind of bill, such as electronic bills, water bills, phone subscription bills, and so on. This also depends on the service provider whether MobilePay is one of their payment methods.

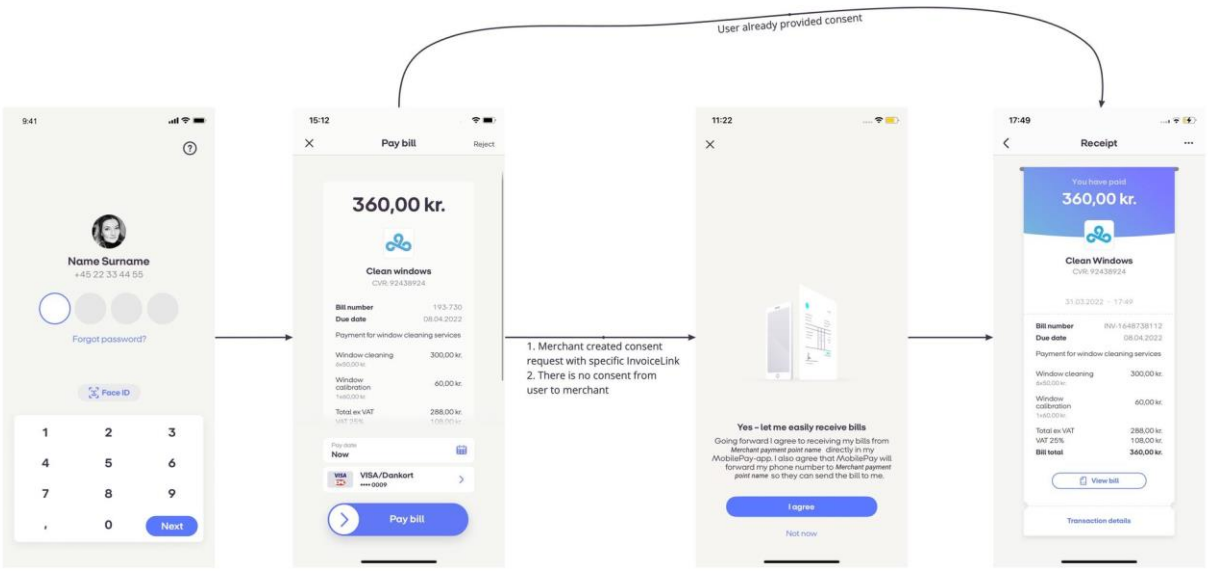


Figure 9. Step-by-step instructions on making a payment with MobilePay for paying a bill from a service provider (MobilePay Developer Denmark s.a.)

To enhance security, MobilePay applies multi-factor authentication, such as PIN codes or biometric verification, as the final step to authorize payments. Besides, it also allows users to set preferred transaction limits and receive transaction notifications that support the app to be convenient and secure for everyday purchases, online shopping, and bill payments. This adaptability and user-friendly design have made MobilePay a reliable and widely adopted payment method across diverse retail environments. (Vipps MobilePay AS 2024b)

One more advantage that makes MobilePay an ideal payment method nowadays is that it is a free-of-charge platform. However, only private users are offered to use the app without having to pay any subscription fee or account maintenance fee. Therefore, users can freely do simple financial tasks such as making transactions and a variety of in-app capabilities, such as bill splitting and requesting money from someone. Registering and using the app requires simply a compatible smartphone or tablet, a valid Danish, Finnish, Swedish or Norwegian phone number, and a bank account in one of these countries. For businesses, participating merchants are charged a minor amount of fees, and the charged amount varies depending on the business type, transaction volume, country, and total income obtained via MobilePay. The valid reason for this fee is to cover the

operational and facility costs associated with the service. According to the pricing model for the Finnish market that the company stated on its website, approximately 1.75% of a transaction will be deducted for payments in physical stores. For online shopping payments, the percentage is higher, which is around 2.49% of the amount and an extra 0.20 EUR per payment. (Vipps MobilePay AS 2024c).

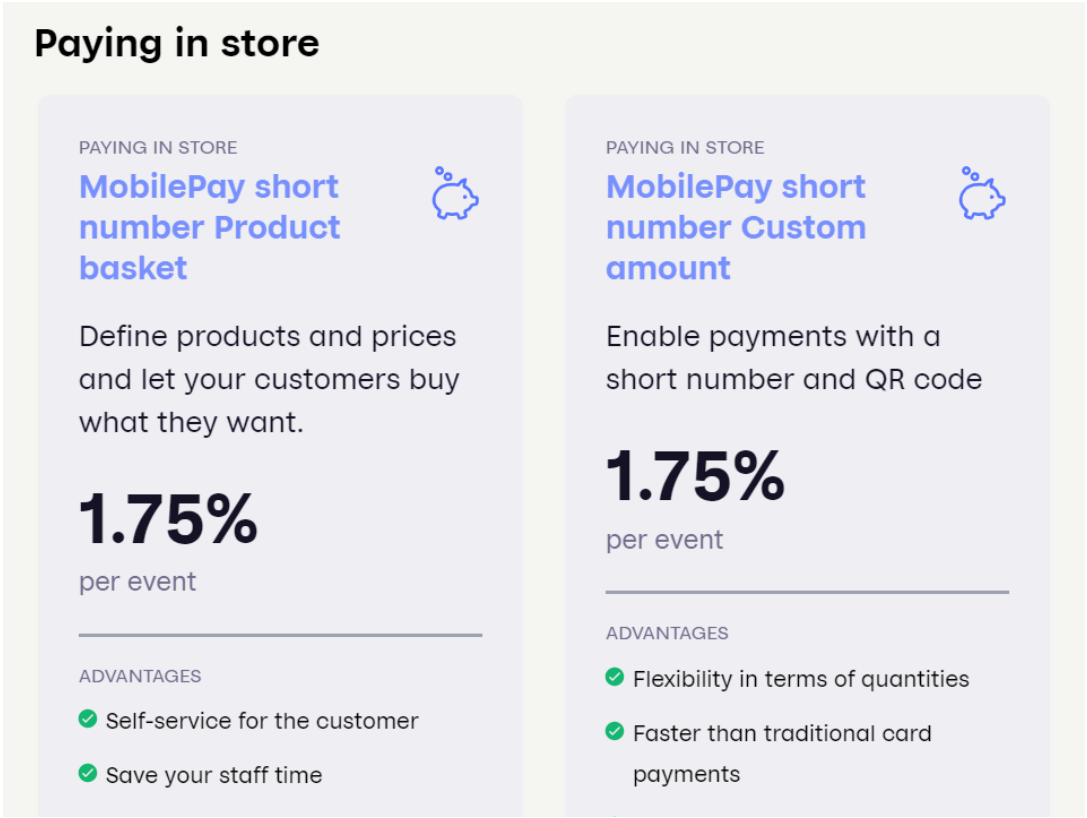


Figure 10. Pricing model for in-store payment for businesses (Vipps MobilePay AS 2024c)

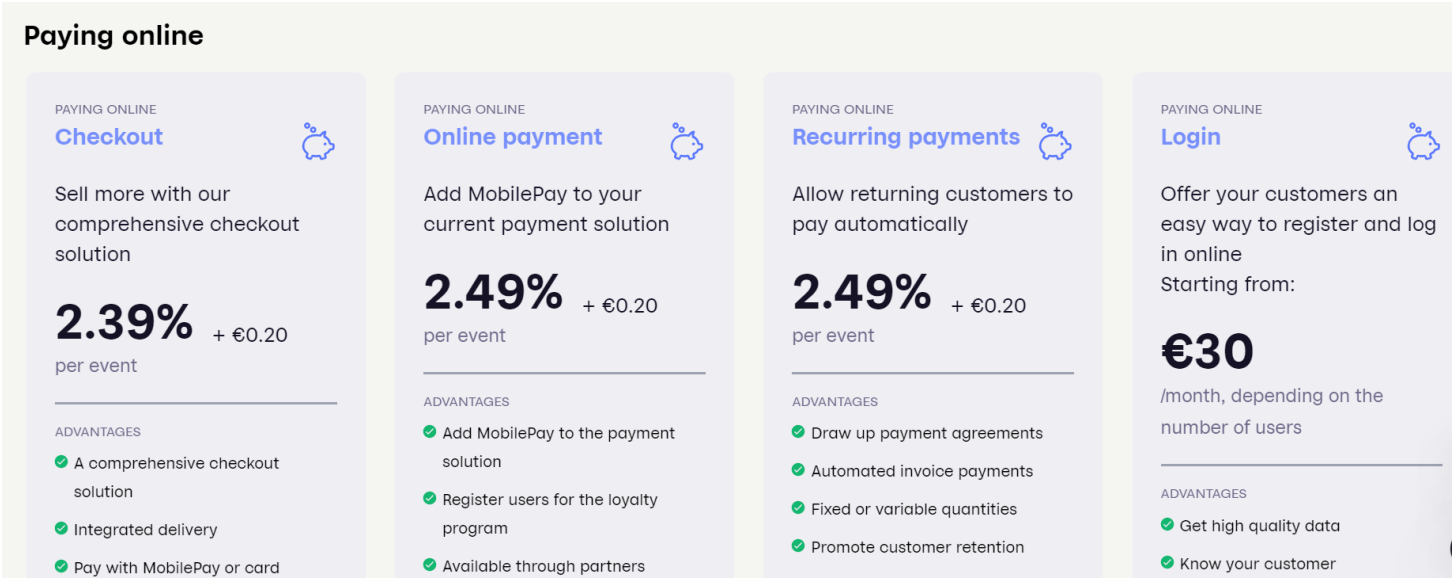


Figure 11. Pricing model for online payments for businesses (Vipps MobilePay AS 2024c)

3.3 Installation & Registration

MobilePay is available for downloading for both iOS and Android so users can easily find the software on App Store and Google Play Store. The app is free to install for users of both systems.

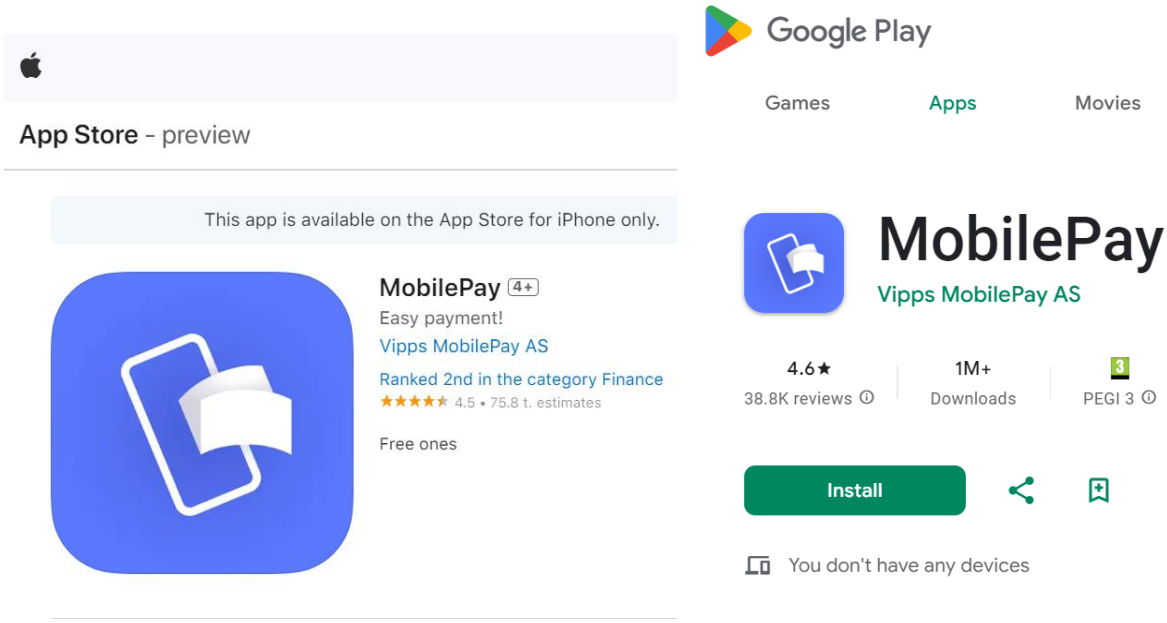


Figure 12. A screenshot of MobilePay app on App Store (iOS) and Google Play Store (Android)

For further moves, step-by-step instructions on registering an account are offered on the website of MobilePay. The first task that users need to do after downloading is to provide their phone numbers. After that, they are asked to proceed to electronic authentication with online banking credentials or the mobile certificate method. The next step is creating a personal profile including adding an email address, a home address and a profile picture if liked, and filling in necessary banking information.

3.4 Functions & Features

Peer-to-peer (P2P) payments

Peer-to-peer transactions, or P2P, refers to digital transactions that take place between two people. This type of mobile banking allows funds to be transferred constantly from one person's bank account or payment app to another person's bank account or app. (Stax Payments, Inc s.a.). In the case of MobilePay, users can simply transfer money back and forth using just their phone numbers. This function is especially helpful for splitting expenses, paying friends back, or sending funds to family members. Users can also send messages like a texting app and add notes to each transaction to easily track the transaction's purpose. Another way of paying besides entering the recipient's phone number is scanning the personal QR code. Each user has a personal QR

code automatically generated by the app, which acts as a faster way of determining the recipient. There is also a section called ‘’Activities’’ in the app where users can view the transactions made in the past that helps them keep track of their own spending.

It is quite clear that MobilePay has been known as a booming success for a decade in Denmark, Finland, Norway, and Sweden. The software developers have been working tirelessly to improve the platform and thus, to enhance user satisfaction. Eventually, they proudly announced the cross-border functionality, which makes it possible to transfer money quickly and easily across these four Nordic countries. However, since it is still an international transaction, 4% of the transaction amount will be deducted as an extra transfer fee or a fee for automatic currency exchange. It can be clearly seen that the company’s target of removing the need for IBAN is gradually becoming a reality. Speaking about this latest update, Garborg – the CEO of Vipps MobilePay AS, confidently said ‘’Our users have for a long time asked us to simplify sending money across the Nordics. Now, we have the solution ready. That means goodbye to long IBAN numbers and tedious button-pushing. This is the first of many steps we are taking to bring the Nordics even closer together’’. (Vipps MobilePay AS 2024d)

Bill splitting / Group expense sharing

Not everyone was aware of the fact that MobilePay used to have a little sister named WeShare. Launched in 2016 also by Danske Bank, WeShare was a platform invented with the main purpose of helping users share or split expenses (Trifork 2016). Unfortunately, due to its limited use and the need for contributing significant investments in developing the app, Danske Bank decided to take it off the market at the beginning of 2023. Nevertheless, the company also informed users that they would come back with a better alternative (Telecompaper 2022). Eventually, the promise was fulfilled. The new version of MobilePay brings back the bill-splitting function with a lot of decent updates as well as a more well-developed security system. This function is ideal for managing and splitting shared expenses among friends, family, and colleagues, such as group parties, group presents, and group travels (Telecompaper 2024). To use this feature, the host or any member of the group first need to create a group having all members included in the split added and then enter the total amount of money needed to share. After then, each person’s part will be calculated automatically either equally or according to custom amounts if some members pay more or less. Each member will receive a payment request from the app when everything is configured, and they may continue using MobilePay to finish the transaction. The initiator can track who has paid and receive reminders for unpaid contributions, which makes managing group expenses simple and hassle-free. Another way of splitting expenses that MobilePay has generated is calculating who owes who. This method is called ‘’Settlement’’ in the app and is used when there is no exact amount of

the spent expenses. Also need to set up a group, but in this case, members take turns to add the amount of money that they paid for the event. Once finished, MobilePay's advanced technology helps to combine, calculate and determine who should pay who back. Thanks to this huge improvement step, user experiences have been greatly enhanced as now it is nearly the case that customers can handle most financial tasks in just one application. (Vipps MobilePay AS 2024e)

MobilePay Box

Acknowledging the hassle of managing finance for big events, in the summer of 2021, Vipps MobilePay AS proudly introduced MobilePay Box. Since then, it has been seen as a useful tool that makes people's lives easier. This function acts like a digital collection box, where the participants send the agreed-upon amount contributing to events such as a party, a travel fund, an extraordinary activity program, etc. The funds transferred to the Box are built up in a separate digital wallet nder the Box creator's management. The creator can view and distribute the amounts sent by different participants, which makes the service completely transparent. Thus, the collection of funds does not necessitate additional procedures, for instance, about establishing accounts and access rights because it does not interfere with anyone's personal finances. Transferring money to the Box can be conducted by visiting the link, scanning the QR code, or inputting the Box number. Up to the first 149 euros, the service is free of charge. If the total funds increase to more than 150 EUR, the service fee is 2 EUR for every 150 EUR. To ensure fairness, the software developers made the app to deduct this service fee automatically from the total amount collected in the Box so that all members who have paid into the box share the service fee. On the other hand, the limit of one Box is 4,000 EUR, and one individual can manage three different boxes at a time. (Vipps MobilePay AS 2024e)

4 Research methods

The research methods chosen for this thesis are theoretical studies, qualitative and quantitative methods. As the help for expounding the general idea of the topic, ChatGPT is also used as a guiding tool for building a proper structure for this study and suggesting essential research questions to dig deeper into the topic. This chapter provides further explanations on the way of collecting and anlazying data as well as justifications for the selection of the research methods.

More specifically, research gained from theoretical studies provides a foundational framework of the thesis and fundamental knowledge of mobile payment systems in general and stories of MobilePay in particular. Quantitative methods are applied in the thesis as a consumer survey which is a supporting tool in gathering actual feedback on the experience that users have had with MobilePay in Finland. Meanwhile, personal interviews, which are considered examples of qualitative methods, are also conducted with several MobilePay users to obtain in-depth insights and subjective perspectives for a richer understanding.

4.1 Theoretical studies / Desktop research

Desktop research, also known as secondary research or complementary research, is defined as a measure of obtaining information and data from existing literature, such as books, academic journals, reports, online databases, industry publications, and other published materials. Researchers then analyze the data from the primary sources and exclude unreliable materials (Kiely 2024). Since the initial part of the thesis covers the general idea of mobile payment systems as well as the introduction of the MobilePay application, self-studying on theoretical materials is necessary to build a foundational knowledge of the topic. Secondary data used in this thesis comes from reliable articles, journals, the company’s website, research and reports conducted by educational institutions. Advanced academic research tools such as Google Scholar and the Haaga-Helia Finna library system also support the process of collecting and analyzing data. Theoretical research plays a crucial role in providing existing sources and facts that help solve the investigative questions (IQs) mentioned above. Qualitative and quantitative methods also partially support, which will be interpreted in the following subchapters.

4.2 Quantitative research

According to a study undertaken by Oldroyd, Gutierrez and Jewel in 2021, quantitative research method refers to the process of collecting and analyzing numerical data and execution of statistical to come up with a solution for the research questions. Another elaboration from Creswell’s study in 2014 explained that the quantitative method emphasizes evaluating objective theories by

examining how variables relate to one another. This method's variables are quantifiable and measurable, which allows researchers to collect numerical data for systematical analysis using statistical methods to determine whether the predictive generalizations of the theory hold true (Creswell 2014).

Data collection for this research involves generating a structured survey to gather responses from as many participants as possible. Among a wide variety of survey platforms, Webropol is a reliable software to be chosen for this study. As a matter of fact, Webropol is recognized as a popular survey tool specially designed for academic purposes and trusted by most universities in Finland, including Haaga-Helia University of Applied Sciences. According to Haaga-Helia's policy, before starting the survey, permission of giving consent to contribute to the research from respondents is asked to ensure that none of the participants were forced to take part in. The survey is designed to include a combination of closed-ended and open-ended questions to ensure both quantitative and qualitative data could be captured. Closed-ended questions, such as multiple-choice and slider, provide measurable insights into participants' perspectives. Meanwhile, data gained from open-ended questions provide deeper and more detailed insights since they are expressed in words.

The survey is distributed mainly via the author's social media platforms and social network with the target of attracting as many individuals as possible. In addition to Haaga-Helia community, the survey is sent to the author's professional networks and the Vietnamese community group in Finland which includes social media and MobilePay users from various age ranges, with the aim of diversifying perspectives. Data obtained from responses are systematically recorded, analyzed and categorized in an organized order by Webropol. The collected data reflects respondents' experiences, opinions, and behaviors in various aspects of MobilePay, including convenience, usability, app design, and security. Eventually, it becomes a valuable resource for addressing the research objectives and answering the study's core research question.

4.3 Qualitative research

Qualitative research is a measure of research that explores, investigates, and provides profound insights into real-world issues (Moser & Korstjens 2017). To adopt the qualitative method, realistic aspects like feelings, ideas, or experiences, are the main concerns (Eze 2023). Unlike the quantitative method that collects numerical data points for further analysis, qualitative research helps develop hypotheses by asking open-ended questions. Thus, participants' perspectives are described and understood more clearly. One of the signature characteristics as well as the strengths of qualitative research method is its ability to describe patterns of human behavior that can be challenging to quantify (Tenny et al. 2022). Besides close-ended in the survey, several open-ended questions are offered to gather in-depth feedback on the user experience of MobilePay. Open-ended

questions, as opposed to close-end ones, encourage respondents to share detailed insights, personal experiences, and specific suggestions in their own words.

To gain a wider range of data, in addition to conducting a survey for MobilePay private users, a personal interview is held with a business owner with the aim of collecting feedback and thoughts from the business perspective. The chosen interviewee is the owner of a restaurant named Saigon Café – a Vietnamese restaurant located in Helsinki which has MobilePay as one of its approved payment methods for customers. Agreeing to schedule a meeting on-site, the interview was conducted at the restaurant with the restaurant owner – Thao Phan. Before arranging an interview, a consent form according to Haaga-Helia's template was sent and signed by Thao to ensure that she gave her full consent to be a part of this study. The interview was carried out in Vietnamese and responses were recorded with the interviewee's consent to ensure accuracy while rewriting them into words and translating into English. The results will be clarified in the upcoming chapter where the analysis of survey and interview responses are indicated.

5 Results & Discussion

5.1 Results

5.1.1 Theoretical studies / Desktop research

As mentioned in the 4th chapter, theoretical studies play a key role. Besides providing the audience a general knowledge and build a foundation for the thesis, the findings also contribute to the solution for IQ1: *What are the common motivations for users to adopt MobilePay over traditional payment methods?* and IQ2: *Is MobilePay perceived as safe as physical payment cards?*

Motivations / Reasons for adopting MobilePay

There is no doubt about the impressive benefits that MobilePay brings to users. Since its launch, MobilePay has been popular for its user-friendly interface allowing users to conduct financial tasks easily and rapidly with just a phone number. Another highlighted feature is its assistance for cross-border transactions that enables users to transfer money back and forth between 4 Nordic countries including Finland, Norway, Denmark, and Sweden (White 2023). Luckily, MobilePay is now widely accepted by a huge number of Finnish merchants (most of them are online-operated businesses), which proves that this is a reliable payment method. Additionally, the fact that MobilePay is a free-of-charge platform is another significant benefit encouraging more and more people to use MobilePay (Välijärvi 2021).

Safety / Security system

The doubtfulness whether mobile wallet or physical payment cards is better has always been a dilemma for many customers. While some individuals tend to stick to conventional payment methods like payment cards, mobile payment services are proved to be more secure. Technically expounding, all physical cards are implied an identifiable magnetic stripe, which can be a cause of identity theft in case criminals tamper with a card reader by installing a skimmer to steal customers' card information. On the contrary, paying with a digital wallet does not require actual card number, which prevents customers from leakage of financial information. (Wang et al. 2016)

Privacy and security measures to protect users' information were published in the privacy notice of Vipps MobilePay AS. A key component of providing secure and easy-to-use solutions is information security. Through effective security measures and processes, MobilePay ensures that users' personal data is protected against unauthorized access and alterations and is available when needed. For this, advanced measures have been implemented, including:

- Identity and Access Management

- Secure Software Development and Security Testing
- Encryption
- Network Security
- Security Monitoring and Incident Management
- Safety training and knowledge sharing among employees
- Security requirements and follow-up of Data Processor and suppliers

(Vipps MobilePay AS 2024b)

On the other hand, at the beginning of this year, there were a number of reports filed for remote harassment. The issue arises from one of the app's features that allows users to send messages, images, or money requests, and this unexpectedly creates opportunities for unwanted communication. In 2023, there were 600 fraud reports filed by MobilePay users. However, most of these cases were not about the app's security system but related to scammers selling fictitious items on sales platforms like Facebook Marketplace. The common scam method is making buyers to transfer money in advance as a deposit for the goods. Victims reported being unable to block harassers by themselves, instead they need to reach out to MobilePay's customer service for assistance. Consequently, this misuse has raised concerns about safety and privacy of the app (Yle 2024). Thankfully, unlike the old version, MobilePay now allows users to block a number which helps prevent unwanted messages or threats from scammers or stalkers. This upgrade proves the company's reliability of acknowledging the issues and accommodating users. It is also recommended by the company that users need to take care of their own safety. ''Make sure that no one knows your password. Always lock your mobile phone. Only transfer money to recipients you trust. Track your history of transactions'' (Vipps MobilePay AS s.a.)

5.1.2 Quantitative Research – Survey

The survey consists of 19 questions including both close-ended and open-ended questions. The survey was open for approximately 2 weeks, receiving a total of 108 responses. In the initial pages, the questions focus on exploring respondents generally, such as asking about their age group, occupational status, reasons for using MobilePay, frequency of usage, and their main use among a number of functions. None of the respondents answered ''No'' to the third question – *''Have you already known and used MobilePay?''*, so certainly, all the collected responses are submitted by MobilePay users.

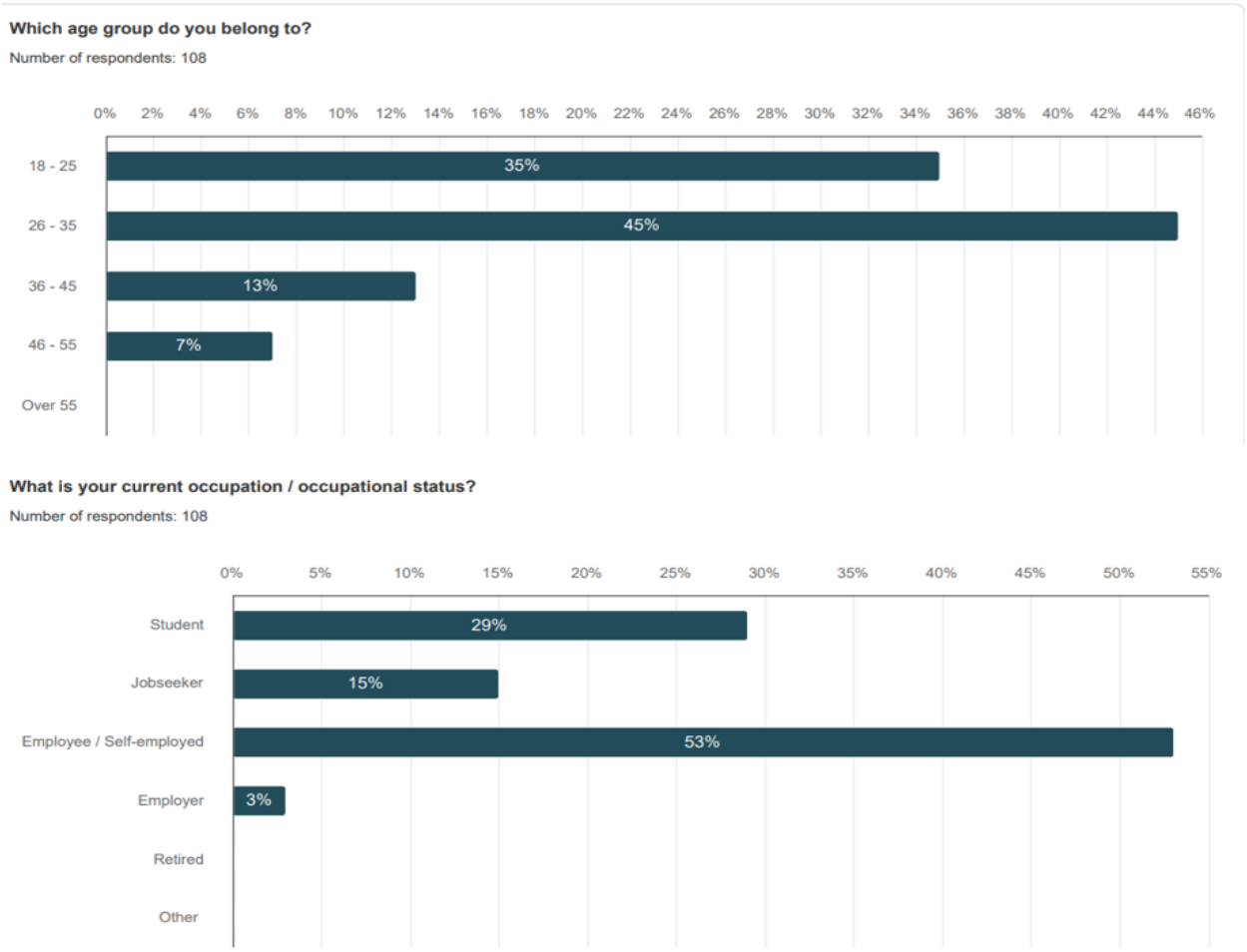


Figure 13. Illustration of age group and occupational status (Survey)

According to the bar chart, more than half of the participants belong to the group of young adults, ranging from 18 to 35 years old. Since this survey was conducted only with mobile device, this number somehow reflects the reality at the moment when technology is taking over almost everything, and it is not surprising that the older generation find it hard to adapt new technological advancement. Most of them are employed or self-employed, the rest are students (36%), jobseekers (13%), and a minor number of employers (3%).

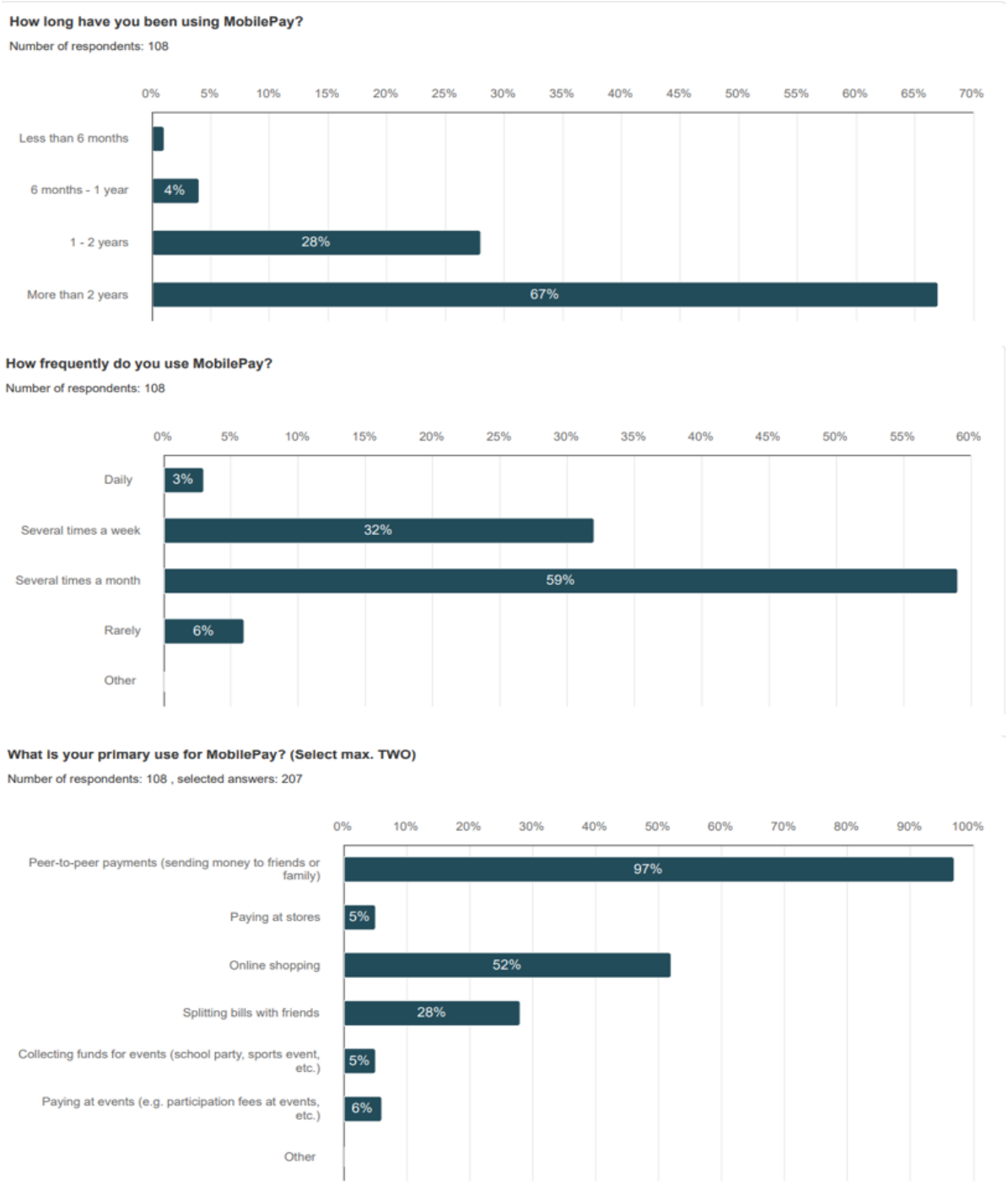


Figure 14. Illustration of length of use, frequency, and primary use (Survey)

It can be seen from figure 21 that very few of the participants are new MobilePay users but most of them have been using the app for more than 2 years. The results show that MobilePay tends to be used occasionally per week or per month whenever needed, since MobilePay is a kind of financial app and not everyone would have the demand to spend or transfer money on a daily basis. No one can deny the main strength of MobilePay is its P2P (peer-to-peer) payment function, which allows users to transfer back and forth only by typing in phone numbers or scanning payee's QR code.

According to the chart, this also seems to be the most favorite feature among others. Besides, MobilePay is also a preferred payment method chosen by customers shopping online thanks to the eliminated need for typing in payment card details. Bill-splitting is the next mainly used function with 36% of the total votes. MobilePay Box is another signature function, but it seems like this is just a secondary function in addition to those functions mentioned above that are more popular. It is sadly obvious that MobilePay is still not very common as a payment method at physical stores or events, with only under 10% of users voting for it to be one of the primary uses.

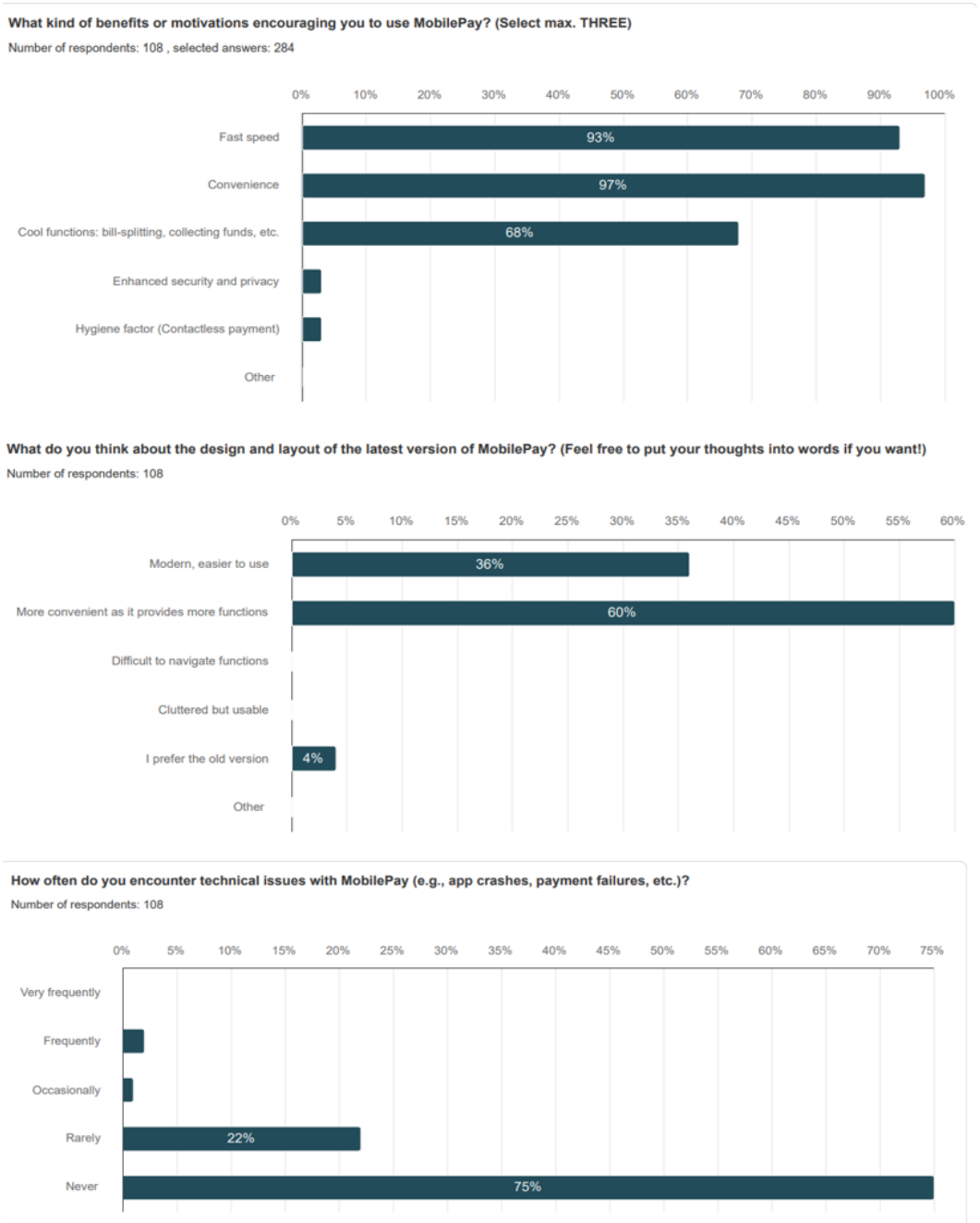


Figure 15. Illustration of user feedback on app's benefits, design, and the frequency of encountering technical issues (Survey)

It seems like almost all the participants are convinced by the convenience and its impressive speed when conducting transactions. Even though MobilePay is a highly secured and hygienic payment method, these seem to be not the main reasons or motivations encouraging people to use MobilePay as its convenience and fast speed have been outstanding. Furthermore, the new version that Vipps MobilePay AS just released has exerted a great influence on MobilePay users. 95% of the voters claimed that the app is more modern, and they were impressed with the addition of new functions such as bill-splitting and MobilePay Box. However, still a very minor percentage of respondents admitted that the older version worked better for them. About technical issues, it could be assumed that users barely experienced any errors related to technical aspects, and it is considered an achievement for the software developers who build and improve MobilePay.

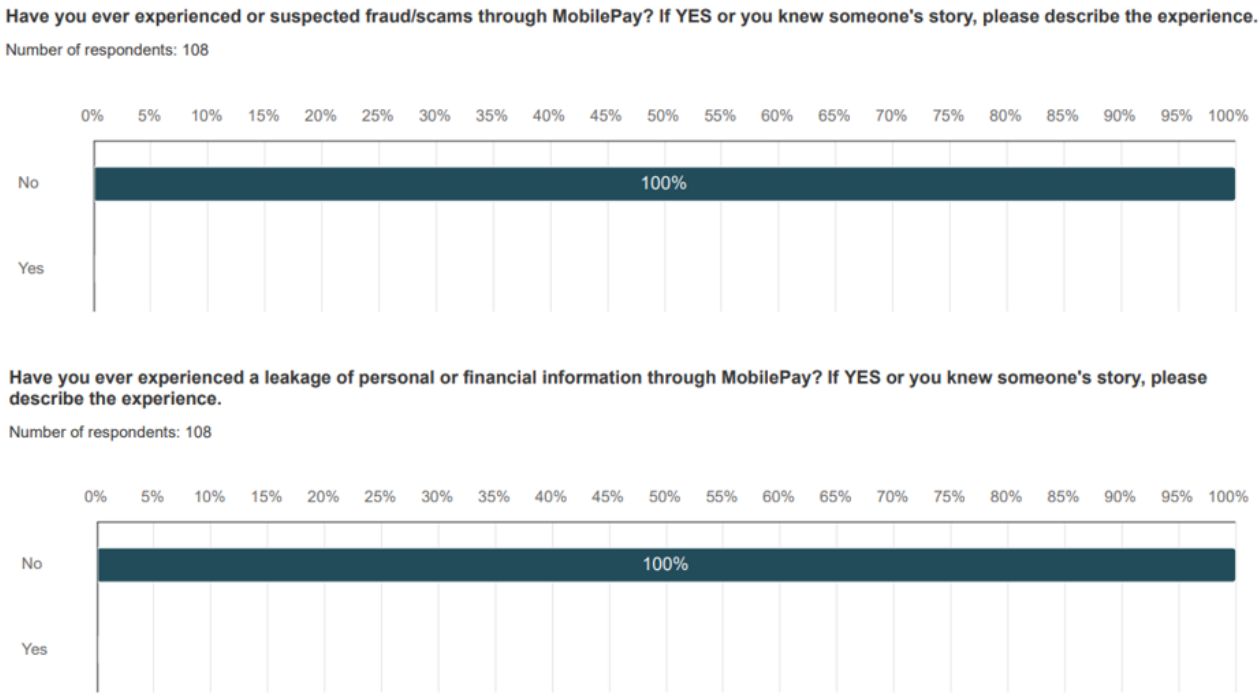


Figure 23. Illustration of the possibility of encountering fraud/scams and leakage of personal information (Survey)

As this survey focused on actual user experience, it had been reported that they have not had unfortunate experience related to the app's privacy like a fraud or a scam either a leakage of personal information through MobilePay before. These responses can act as valid evidence proving a high-quality privacy system that the company had built for the app.

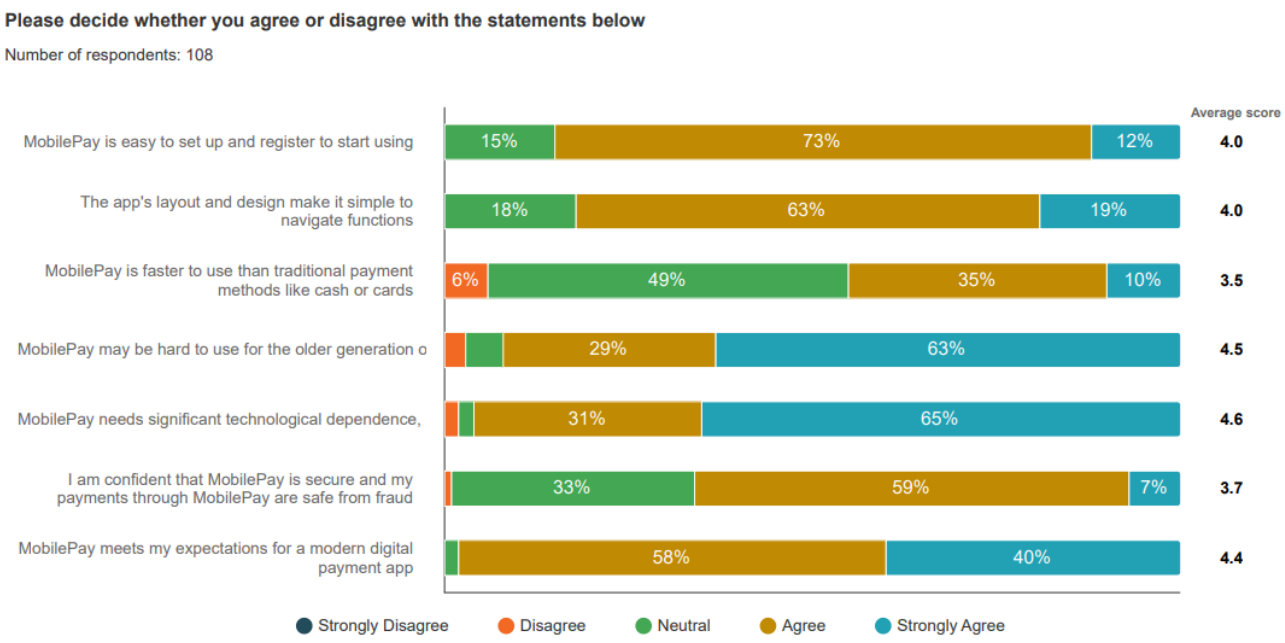
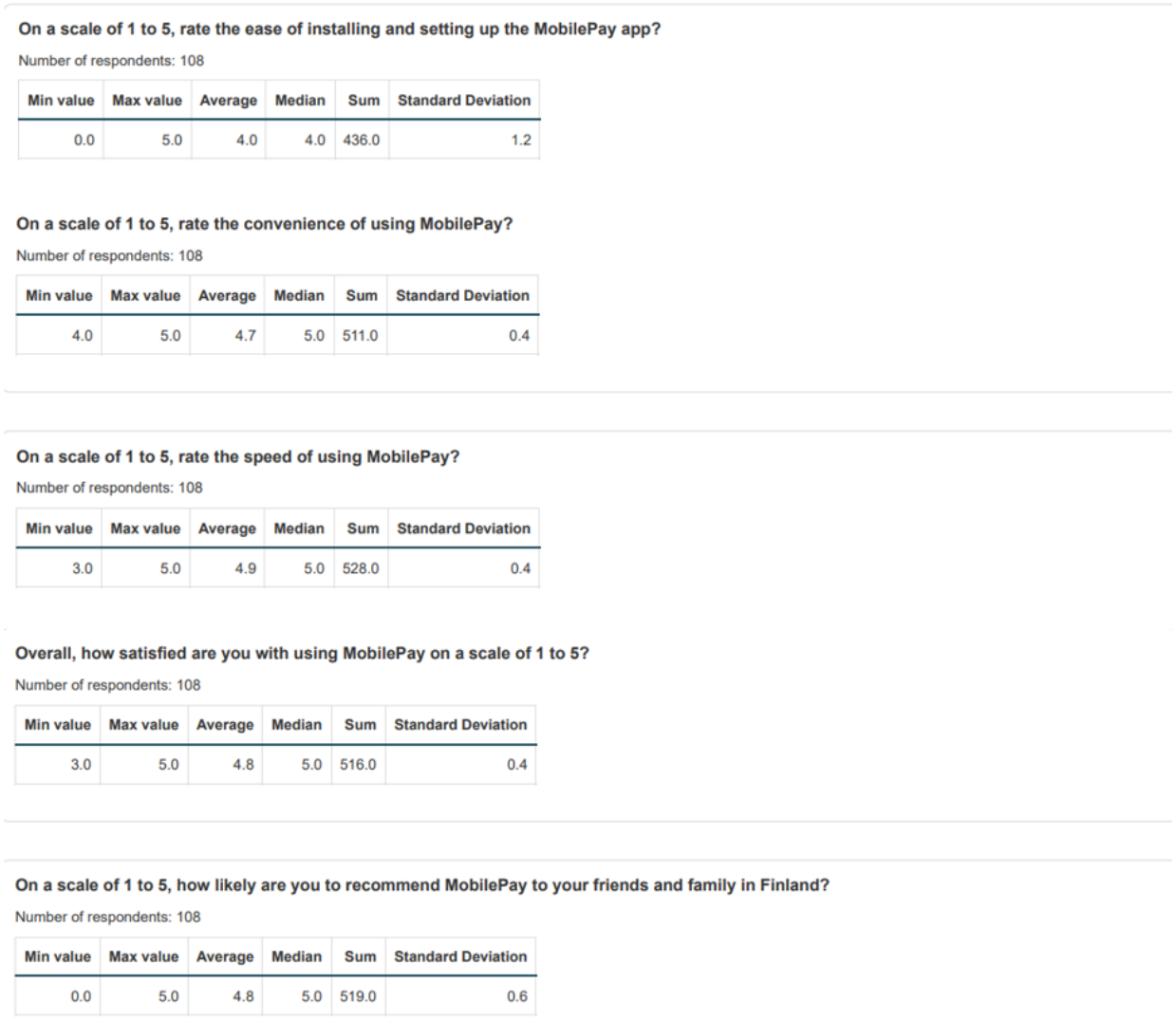


Figure 16. Illustration of votes on Likert scale (Survey)

Figure 24 illustrates user feedback evaluated on a five-point Likert scale ranging from ‘’Strongly Disagree" to "Strongly Agree" with seven hypothetical assumptions. With this type of model, participants were allowed to measure how much they agree or disagree with the given statements. Key findings indicate that most users agree that MobilePay is easy to set up and navigate, with 73% agreeing and 12% strongly agreeing. Similarly, the app’s layout and design were positively ranked for its simplicity, receiving a high average score of sharply 4.0. A confirmation for MobilePay’s fast speed when comparing to traditional payment methods is quite hard to make since the proportion of ‘’Neutral’’ voters is almost the same as ‘’Agree’’ voters. These numbers show that respondents are not so certain if MobilePay would take over traditional payment methods in the speed, which eventually reflected in a lower average score of 3.5. According to the numbers shown in the 4th statement, it is undeniable that almost everyone has concerns about challenges that the older generation or less tech-savvy individuals may encounter when trying to adopt MobilePay into their daily lives. Meanwhile, the fact that MobilePay has such high technological dependence is also agreed, with a good average score of 4.6. User confidence in MobilePay’s security system scored moderately with an average of 3.7, whereas the score of respondents’ overall satisfaction with the app as a modern digital payment app is 4.4, proving that MobilePay is still a decent mobile wallet for the Finnish community.



On a scale of 1 to 5, rate the ease of installing and setting up the MobilePay app?

Number of respondents: 108

Min value	Max value	Average	Median	Sum	Standard Deviation
0.0	5.0	4.0	4.0	436.0	1.2

On a scale of 1 to 5, rate the convenience of using MobilePay?

Number of respondents: 108

Min value	Max value	Average	Median	Sum	Standard Deviation
4.0	5.0	4.7	5.0	511.0	0.4

On a scale of 1 to 5, rate the speed of using MobilePay?

Number of respondents: 108

Min value	Max value	Average	Median	Sum	Standard Deviation
3.0	5.0	4.9	5.0	528.0	0.4

Overall, how satisfied are you with using MobilePay on a scale of 1 to 5?

Number of respondents: 108

Min value	Max value	Average	Median	Sum	Standard Deviation
3.0	5.0	4.8	5.0	516.0	0.4

On a scale of 1 to 5, how likely are you to recommend MobilePay to your friends and family in Finland?

Number of respondents: 108

Min value	Max value	Average	Median	Sum	Standard Deviation
0.0	5.0	4.8	5.0	519.0	0.6

Figure 17. Illustration of overall feedback through sliders (Survey)

Figure 25 provides a detailed assessment of user feedback on various aspects of MobilePay on a scale of 1 to 5. The process of installing and setting up the app is rated an average of 4.0 while the score of 1 stands for the most challenging and the score of 5 stands for the easiest. This process can be uncomplicated for the young generation; however, it can be quite difficult to familiarize for low-tech individuals like the elderly. It can be seen clearly from the results that most of the participants are impressed by the convenience as well as the rapid speed when conducting financial tasks via MobilePay, which is proved by such high average score 4.7 and 4.9. Overall, it seems that users are indeed satisfied with the app and most respondents are highly likely to recommend MobilePay to their friends and family. These results indicate a constantly positive user experience, particularly in terms of speed, convenience, ease of use, and overall satisfaction.

What improvements or additional functions would you like to see in MobilePay for the Finnish market?

Number of respondents: 12

Responses
Hope in the future I can pay with MobilePay without internet
Mobilepay should provide its customers information about some common problems/ issues that might arise in cases such as changing phone number, losing phone, losing apple ID, etc.
Paying without internet
allow to make payment without the need for internet connection :)
add one more step of authentication before confirming a payment (like NordeaID for example) to prevent false payments that are not made by you. Sometimes I feel it's so fast to make a payment, so it is convenient and somehow unsafe at the same time
the ability to categorize expenses, e.g. for entertainment I spent abc, for supermarket I spent xyz....
I hope one day it will be possible to pay with MobilePay without the need for internet, like Apple Pay Google Pay Samsung Pay
None
Overall it's a good application and functional. Quick payments and everything. I couldn't think of anything for the improvement but I wouldn't be 100% sure with any applications since there are numerous cases of fraud. There might be something to confirm the payment in order to prevent the user from being scam again.
Add more functions such as divide or sum to allow users to calculate the amount of money they want to send in transactions.
I just hope that MobilePay will be a more popular payment method in physical stores, otherwise the latest version is good enough for me
Usability of credit option as well (now in my knowledge only the debit)

Is there anything else you would like to share about your experience with MobilePay?

Number of respondents: 6

Responses
Really love the bill splitting feature, very useful!
I love the updated version with a lot of new functions!!
I really like the fact that the money comes right away after paying no matter how big the amount is, unlike transfer money through bank apps that can take 1-2 days for money to arrive
I like the colors and app functionalities :) good luck with your thesis!
The experience was good and I'm still using it so it's a good application
No

Figure 18. Illustration of open-ended questions in the survey (Survey)

In addition to the list of close-ended questions, two open-ended questions are provided allowing respondents to share and express their thoughts into words. In general, it seems that users are having great experience with the application. in the additional feedback form, some users specifically expressed their high satisfaction with MobilePay's functionalities such as bill-splitting, and the fact that it only takes seconds for a transaction to be completed. Regarding future improvements, being able to use the app without the need for internet connection is the first wish. Besides the app's variety of features, some users still look forward to being able to conduct more tasks on MobilePay. According to the results, two of the respondents wished to categorize expenses spent via MobilePay and have the calculation feature added to the app. About privacy and security, a respondent believed its security system can be enhanced by adding one more step of authentication before swiping to confirm a payment or a transaction. Currently, users are only asked to provide the password that they set for the app before confirming a transaction. Even though fast speed is a great advantage, it is sometimes a disadvantage as if it is too fast and too easy to conduct a

transaction, it may cause a great chance of false payments that are not made by the user, for example, when the user's phone is stolen and their password is easy to guess.

5.1.3 Qualitative Research – Interview

The interview took place within half an hour between Thao and the author at her restaurant. The conversation was recorded with her full consent There were approximately more than five questions in the list, but four of them were the key questions related to MobilePay's operation for businesses, which will be explained further below.

To begin with, the author would like to investigate the reason that Thao approves MobilePay to be one of the available payment methods for her customers. As Thao stated, *"I have experienced some customers forgetting their wallets and they had no other payment methods than physical cards or cash, even Apple Pay or Google Pay, but they had MobilePay on their phones"*. For that reason, she decided to adopt MobilePay into her business operation as she believed that it is always ideal to provide customers more than one option of payment methods. Fortunately, up to the present, there has not been any difficulties with MobilePay such as technical failures, and her customers also say that it is not challenging at all to pay with the app as they only need to scan the QR code printed out.

Despite the stable situation since adopting MobilePay, Thao still showed her worry when being asked about the possible concerns that she might have for the system. Her concerns were mainly related to technical aspects. For example, if there is any technical problems or downtime about MobilePay in the future, it will require third-party assistance since MobilePay is a third-party service provider, which can somehow waste specific amount of time and disrupt the restaurant's operations. In addition, using MobilePay also requires stable internet connection, and this is known as another disadvantage. Although internet is available for customer use here, it is not guaranteed that the internet system can be stable all the time. Thinking about whether MobilePay will become the main payment method in the restaurant industry, Thao believes that there is a potential, but she is not certain since the biggest drawback of MobilePay is a requirement for internet connection to use. If MobilePay introduces the offline mode, it may encourage and motivate customers to use MobilePay more and businesses may start considering adopting MobilePay to their operations in the near future.

5.2 Discussion

This subchapter discusses the findings of the whole research process. By filtering and analyzing information, a comprehensive evaluation of MobilePay user experience is produced, and thus solving the research questions.

What are the common motivations for users to adopt MobilePay over traditional payment methods?

The outcome shows a number of good reasons for using MobilePay, while the likeliness to adopt the app is still affected by demographic factors such as age group, technological proficiency, etc. The first benefit and probably the most obvious one is convenience. According to the survey, almost everyone appreciates the fact that they can conduct transactions within seconds with only the need for a phone number. It is the same level of ease for customers wanting to pay at physical stores or restaurant that they only need to scan that business's QR code. Most of respondents also enjoy the new version with a more user-friendly interface and an addition of a lot of new features such as bill-splitting, MobilePay Box, cross-border payment, etc. Another advantage is its universality. Currently, MobilePay is still not a common payment method at physical merchants; however, it is often offered by most Finnish online-operated businesses. Last but not least, the app is a free-of-charge service. Considering the superb offer of functions and the fact that it is a free app, MobilePay surely has good reasons to attract more new users in the future.

Is MobilePay perceived as safe as physical payment cards?

Although the answer for this IQ mainly relies on theoretical materials, data collected from the survey also make a partial contribution. 100% of respondents claimed that they had not experienced any unfortunate situations related to security and privacy system of MobilePay like fraud or leakage of personal information. Research also points out that digital wallet is still a more secure payment method compared to physical payment cards since the possibility of identity theft is reduced when paying with digital wallet. The findings indicate that Vipps MobilePay AS have implemented advanced measures to enhance the app's security and privacy systems. Overall, MobilePay is considered a safe and secure payment method.

How do the design and appearance of MobilePay impact the user experience in Finland?

The company just launched the updated version of MobilePay which looks almost like a brand-new application. According to the survey, majority of respondents agrees that the new app design is more convenient and easier to navigate functions. On the other hand, a minor proportion of participants prefer the old version to the updated one. In general, MobilePay still maintains its user-friendly interface throughout years.

6 Conclusions

Mobile payment is one of the outstanding inventions in the FinTech industry in Finland. This thesis explores one aspect of the mobile payment system – the digital wallet MobilePay. MobilePay has been a booming success for Danske Bank in Denmark since its release. In this thesis, the app's launch to Finland is investigated, and thus create a comprehensive evaluation of MobilePay user experience. Thanks to the findings, MobilePay's strengths and weaknesses are highlighted, which helps provide valuable insights as well as point out areas needing improvement. In general, it can be seen that MobilePay has succeeded in meeting most users' expectation for a digital wallet application and has the potential to become a strong competitor in the market for mobile payment services.

The study reveals numerous factors that are likely to exert an influence on users' feedback for MobilePay, including both benefits and drawbacks that the app brings to our daily lives. The most obvious advantages are convenience, fast speed, ease of use, and various signature functionalities. and good reasons encouraging more users to adopt MobilePay. According to the survey's results, the app's layout and helpful functionalities have earned high levels of user satisfaction, which are proved by strong ratings in usability and willingness to recommend the service to others. Besides, several drawbacks are also clarified. The most noticeable drawback is its high technological dependence, and this can cause hesitation for the old generation or the low-tech individuals about using MobilePay. The survey states that several respondents wish the app to have offline mode in the near future, and this proposal from the actual users can be considered for the next plan of improvement. In addition, users are looking forward to the day when MobilePay becomes one of the offered payment methods available at physical stores and restaurants.

To sum up, MobilePay has established itself as a user-friendly and efficient digital payment solution. The introduction to the Finnish market has considerably influence people's daily lives in a positive way. After conducting a through study and research, it can be concluded that MobilePay user experience varies, depending on various aspects and each personal perspective as well. Overall, the survey shows that users are quite happy with MobilePay up to this moment. Looking at a broader point of view, this study can be leveraged to gain a foundation and knowledge for further research on improving mobile payment systems and their role in fostering a cashless economy.

Sources

Arner, D. W., Barberis, J., & Buckley, R. P. 2015. The Evolution of FinTech: A New Post-Crisis Paradigm? Research Paper No. 2015/047, Hong Kong: University of Hong Kong, Faculty of Law. URL: https://dx.doi.org/10.2139/ssrn.2676553. Accessed: 10 November 2024.

Ahmed, T. 2019. Segments of the FinTech industry. URL: https://www.researchgate.net/figure/Segments-of-the-FinTech-industry_fig1_331303690. Accessed: 10 November 2024.

Bank of Finland 2021. COVID-19 pandemic causing permanent change in payment habits. URL: https://www.bofbulletin.fi/en/2021/2/covid-19-pandemic-causing-permanent-change-in-payment-habits/. Accessed: 7 October 2024.

Bank of Finland 2021. Change in use of payment methods in Finland. URL: https://www.bofbulletin.fi/en/2021/2/covid-19-pandemic-causing-permanent-change-in-payment-habits/. Accessed: 7 October 2024.

Bank of Finland 2022. Payment statistics. URL: https://www.suomenpankki.fi/en/Statistics/payments-statistics/paymentsstatistics/. Accessed: 7 October 2024.

Cathcart Associates Group 2023. How Finland is leading the charge in FinTech. URL: https://cathcarttechnology.com/insights/how-finland-is-leading-the-charge-in-fintech/#:~:text=Finland%20is%20becoming%20a%20hotspot,of%20the%20Finnish%20Fintech%20market. Accessed: 7 October 2024.

Creswell, J. W. 2014. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 5th ed. Designing Research. s. 38. SAGE Publications. URL: https://spada.uns.ac.id/pluginfile.php/510378/mod_resource/content/1/creswell.pdf. Accessed: 5 November 2024.

Davis, F. D. 1989. Technology Acceptance Model (TAM). Perceived usefulness, perceived ease of use, and user acceptance of information technology. Journal Article, 13, 3, pp. 319–339. URL: https://www.jstor.org/stable/249008. Accessed: 10 November 2024.

Dahlberg, T., Mallat N., Ondrus, J. & Zmijewska, A. 2007. Past, present and future of mobile payments research: A literature review. URL: https://www.sciencedirect.com/science/article/abs/pii/S1567422307000075. Accessed: 7 October 2024.

Danske Bank 2022. Merger of MobilePay and Vipps approved by all relevant authorities. URL: https://danskebank.com/news-and-insights/news-archive/company-announcements/2022/ca21102022. Accessed: 20 October 2024.

Danske Bank s.a. Our history. URL: https://danskebank.com/about-us/our-history. Accessed: 8 October 2024.

Eze, U.V.H. 2023. Qualitative Research. URL: https://www.researchgate.net/publication/367221023_Qualitative_Research. Accessed: 6 November 2024.

Finance Magnates 2023. The Rising Popularity of Mobile Payment Apps: Fueling the Cashless Economy. URL: https://www.financemagnates.com/fintech/payments/the-rising-popularity-of-mobile-payment-apps-fueling-the-cashless-economy/. Accessed: 8 October 2024.

Garborg, R. 2024. Vipps MobilePay launches easy person to person payments between Denmark, Norway and Finland. URL: https://vippsmobilepay.com/en/news/2024/06/19/vipps-mobilepay-launches-easy-person-to-person-payments-between-dk-no-and-fi?gad_source=1&gclid=Cj0KCQiA-oae5BhCNARIsADVLzZelBtJOTgc_Xo71Dz_pq9nIQeCeGeY-tiN0c2RcQwiUCgKfn_W08FwAaAq60EALw_wcB. Accessed: 27 October 2024.

EMS Payments 2017. The History of Mobile Pay. URL: https://emspayments.com/history-of-mobile-pay/. Accessed: 10 October 2024.

Hopkins, M. 2024. What Are Mobile Payments: Everything You Need to Know. https://e-complish.com/blog/what-are-mobile-payments-everything-you-need-to-know/. Accessed: 12 October 2024.

Kiely TJ, 2024. What Is Desk Research? Meaning, Methodology, Examples. URL: https://www.meltwater.com/en/blog/desk-research. Accessed: 1 November 2024.

Lee, J., 2020. The coronavirus pandemic has caused a surge in demand for contactless payments, accelerating the shift from cash to digital options. URL: https://www.cnbc.com/2020/12/03/covid-19-pandemic-accelerating-the-shift-from-cash-to-digital-payments.html. Accessed: 7 October 2024.

Mallow, J. 2023. ChatGPT For Students: How AI Chatbots Are Revolutionizing Education. URL: https://elearningindustry.com/chatgpt-for-students-how-ai-chatbots-are-revolutionizing-education. Accessed: 19 November 2024.

Mimnagh, L. s.a. What is mobile payment? URL: https://stlpartners.com/articles/consumer/what-is-mobile-payment/. Accessed: 8 October 2024.

Moser A. & Korstjens I. 2017. Series: Practical guidance to qualitative research. Part 1: Introduction. Eur J Gen Pract. s. 271-273.

MobilePay Developer Denmark s.a. Step-by-step instructions on making a payment with MobilePay for paying a bill from a service provider. URL: https://developer.mobilepay.dk/MobilePay-Invoice/api_reference. Accessed: 22 October 2024.

Madari, S. s.a. Mobile Payment. URL: https://www.educba.com/mobile-payment/. Accessed: 17 October 2024.

MTV News 2017. An unexpected solution from Danske Bank: the MobilePay service is no longer supported on Windows Phone devices. URL: https://www.mtvuutiset.fi/artikkeli/danske-bankilta-odottamaton-ratkaisu-mobilepay-palvelua-ei-enaa-tueta-windows-phone-laitteilla/6500522. Accessed: 20 October 2024.

Paytrail Plc 2020. Usage rate of payment methods in Finland. MobilePay's share is growing rapidly as a method of payment for online purchases. URL: https://www.paytrail.com/en/blog/mobilepays-share-is-growing-rapidly-as-a-method-of-payment-for-online-purchases. Accessed: 23 October 2024.

Paytrail Plc s.a. Step-by-step instructions on making a payment with MobilePay for online shops. URL: https://www.paytrail.com/en/this-is-how-mobilepay-works. Accessed: 22 October 2024.

PYMNTS 2023. Digital Wallets Exhibit Highest Increase in Fraud Among All Payment Methods. URL: https://www.pymnts.com/fraud-prevention/2023/digital-wallets-exhibit-highest-increase-in-fraud-among-all-payment-methods/. Accessed: 15 October 2024.

Ramya, N., Sivasakthi, D. & Nandhini, M. 2017. Cashless transactions: Modes, advantages and disadvantages. URL: https://www.researchgate.net/profile/Ramya-N/publication/316429963_Cashless_transaction_Modes_advantages_and_disadvantages/links/58fd7c384585152eded4adbc/Cashless-transaction-Modes-advantages-and-disadvantages.pdf. Accessed: 17 October 2024.

Statista 2022. Smartphone penetration rate in Finland 2017-2022. URL: https://www.statista.com/statistics/564602/share-of-smartphone-users-in-finland/#:~:text=According%20to%20the%202022%20survey,reached%2097%20percent%20in%20Finland. Accessed: 7 October 2024.

Statista 2024. Biggest contactless payment brands at POS in Finland as of September 2024. URL: https://www.statista.com/forecasts/1188111/biggest-contactless-payment-brands-at-pos-in-finland. Accessed: 23 October 2024.

Stax Payments, Inc. s.a. What Are P2P Payments and How Can You Use Them in Your Business. URL: https://staxpayments.com/blog/what-are-p2p-payments/#Q_What_are_Peer-to-Peer_P2P_payments. Accessed: 25 October 2024.

Schueffel, P. 2016. Taming the Beast: A Scientific Definition of Fintech. URL: https://www.researchgate.net/publication/314437464_Taming_the_Beast_A_Scientific_Definition_of_Fintech. Accessed: 10 November 2024.

Scherer, R. & Teo, T. 2019. Educational Research Review. Unpacking teachers' intentions to integrate technology: A meta-analysis. URL: https://www.sciencedirect.com/science/article/pii/S1747938X18303622. Accessed: 11 November 2024.

Streefkerk 2019. Comparison of Qualitative vs. Quantitative research methods. Qualitative vs. Quantitative Research | Differences, Examples & Methods. URL: https://www.scribbr.com/methodology/qualitative-quantitative-research/. Accessed: 6 November 2024.

TME 2023. Charles Walton and the beginnings of radio frequency identification. URL: https://www.tme.eu/en/news/library-articles/page/56920/charles-walton-and-the-beginnings-of-radio-frequency-identification/. Accessed: 10 October 2024.

Trifork s.a. Innovating Digital Transactions. URL: https://trifork.com/?cases=mobilepay. Accessed: 20 October 2024.

Trifork 2016. WeShare – MobilePay's little sister. URL: https://trifork.com/?cases=weshare-app#:~:text=WeShare%20is%20an%20app%20that,and%20invite%20the%20desired%20participants. Accessed: 28 October 2024.

Tuner, M., Kitchenham, B., Brereton, P., Charters, S. & Budgen, D. 2010. Information and Software Technology. Does the technology acceptance model predict actual use? A systematic literature review, s. 464. Elsevier B.V. URL: https://romisatriawahono.net/lecture/rm/survey/information%20systems/Turner%20-%20Does%20the%20technology%20acceptance%20model%20predict%20actual%20use%20A%20SLR-%202010.pdf. Accessed: 11 October 2024.

Telecompaper 2022. MobilePay discontinue bill splitting service WeShare in February. URL: https://www.telecompaper.com/news/mobilepay-to-discontinue-bill-splitting-service-weshare-in-february--1443530. Accessed: 28 October 2024.

Telecompaper 2024. Vipps MobilePay brings out new app version in Denmark, aims for iPhone and Android in-store payments this year. URL: https://www.telecompaper.com/news/vipps-

mobilepay-brings-out-new-app-version-in-denmark-aims-for-iphone-and-android-in-store-payments-this-year--1494212. Accessed: 28 October 2024.

Tenny S., Brannan M. J. & Brannan G. D., 2022. Qualitative Study. URL: https://www.ncbi.nlm.nih.gov/books/NBK470395/. Accessed: 7 November 2024.

Uddin, N. 2023. A history of contactless payments. URL: https://www.bluetrain.co.uk/blog/history-of-contactless-payments#:~:text=Contactless%20payments%20began%20with%20RFID,up%20called%20a%20Upass%20card. Accessed: 10 October 2024.

Välijärvi, A. 2021. Mobile payments in Finland – These services are available right now. URL: https://qvik.com/news/mobile-payments-in-finland-these-services-are-available-right-now/?utm_source=chatgpt.com. Accessed: 24 November 2024.

VIAOpenPlatform 2021. The Evolution of Mobile Payments: From the past, into the future. URL: https://viaopenplatform.com/article/11-60a78b55fe0cf15682777abf/the-evolution-of-mobile-payments-from-the-past-into-the-future. Accessed: 15 October 2024.

Vipps MobilePay AS 2021. MobilePay to merge with Norwegian Vipps and Finnish Pivo, creating one of Europe’s largest bank-owned mobile payment providers. URL: https://mobilepay.fi/artikkelit/2021/06/30/mobilepay-to-merge-with-norwegian-vipps-and-finnish-pivo. Accessed: 20 October 2024.

Vipps MobilePay AS 2024a. Vipps MobilePay merger, currently in use in Denmark, Norway, Finland, and Sweden. URL: https://mobilepay.fi/artikkelit/2024/09/24/heja-ruotsi. Accessed: 20 October 2024.

Vipps MobilePay AS 2024b. Privacy notice. URL: https://mobilepay.fi/app/legal/privacy-notice/en#:~:text=Through%20effective%20security%20measures%20and,Software%20Development%20and%20Security%20Testing. Accessed: 21 November 2024.

Vipps MobilePay AS 2024c. Clear pricing model – You only pay when your customers use MobilePay to pay. URL: https://vippsmobilepay.com/fi-fi/hinnasto. Accessed: 25 October 2024.

Vipps MobilePay AS 2024d. Vipps MobilePay launches easy person to person payments between Denmark, Norway and Finland. URL: https://vippsmobilepay.com/en/news/2024/06/19/vipps-mobilepay-launches-easy-person-to-person-payments-between-dk-no-and-fi. Accessed: 27 October 2024.

Vipps MobilePay AS 2024e. Use – How do I start using MobilePay? URL: https://mobilepay.fi/asiakastuki/mobilepay-kayttajille/kayttaminen/kayttaminen#scroll. Accessed: 25 October 2024.

Vipps MobilePay AS s.a. Is it safe to use MobilePay? URL: https://mobilepay.fi/asiakastuki/mobilepay-kayttajille/turvallisuus/onko-mobilepayn-kaytto-turvallista. Accessed: 24 November 2024.

Vipps MobilePay AS 2023. Annual Report Vipps MobilePay 2023. URL: https://regnskaber.cvrapi.dk/64900334/amNsb3VkczovLzAzL2U5LzYxLzFjLzE2LzMyOG-MtNDVkOC1iZDE4LTYxMTRjMDc4OTEzNA.pdf. Accessed: 23 October 2024.

Wang, Y., Hahn, C. & Sutrave, K. 2016. Mobile payment security, threats, and challenges. URL: https://ieeexplore.ieee.org/abstract/document/7440226/authors#authors. Accessed: 24 November 2024.

Worldometer.info 2024. Finland population. URL: https://www.worldometers.info/world-population/finland-population/#:~:text=The%20current%20population%20of%20Finland,5%2C617%2C310%20people%20at%20mid%20year. Accessed: 23 October 2024.

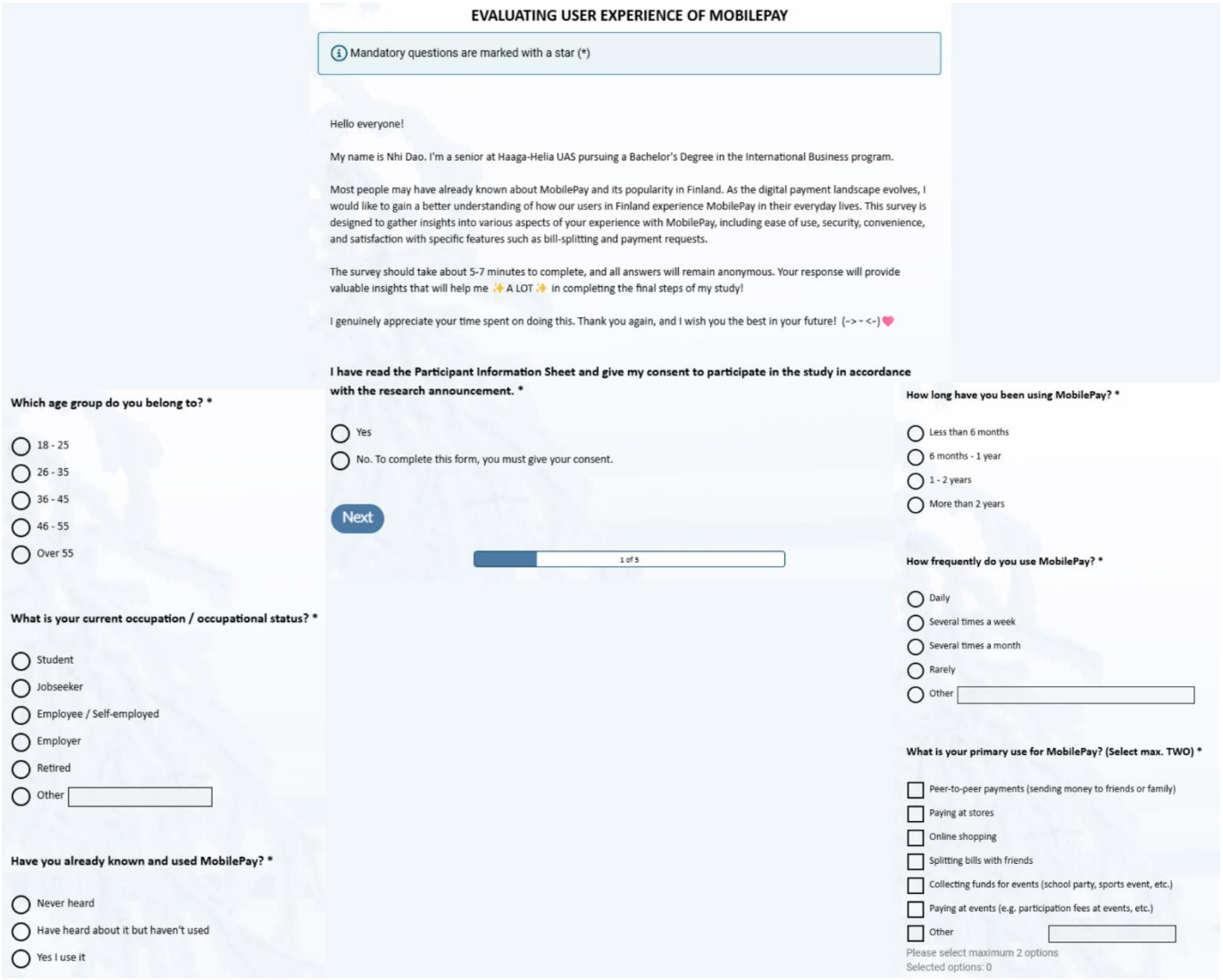
White, J. M. 2023. 7 Top Payment Methods in Finland. URL: https://pay.com/blog/top-payment-methods-in-finland. Accessed: 24 November 2024.

XSReviews 2023. The history of mobile payments. URL: https://xsreviews.co.uk/editorial/the-history-of-mobile-payments/. Accessed: 15 October 2024.

Yle 2024. MobilePay vows to improve security after misuse emerges. URL: https://yle.fi/a/74-20069999. Accessed: 21 November 2024.

Appendices

Appendix 1. Survey form



EVALUATING USER EXPERIENCE OF MOBILEPAY

Mandatory questions are marked with a star (*)

Hello everyone!

My name is Nhi Dao. I'm a senior at Haaga-Helia UAS pursuing a Bachelor's Degree in the International Business program.

Most people may have already known about MobilePay and its popularity in Finland. As the digital payment landscape evolves, I would like to gain a better understanding of how our users in Finland experience MobilePay in their everyday lives. This survey is designed to gather insights into various aspects of your experience with MobilePay, including ease of use, security, convenience, and satisfaction with specific features such as bill-splitting and payment requests.

The survey should take about 5-7 minutes to complete, and all answers will remain anonymous. Your response will provide valuable insights that will help me ✨A LOT✨ in completing the final steps of my study!

I genuinely appreciate your time spent on doing this. Thank you again, and I wish you the best in your future! (~> - <~)

I have read the Participant Information Sheet and give my consent to participate in the study in accordance with the research announcement. *

- Yes
- No. To complete this form, you must give your consent.

Next

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Which age group do you belong to? *

- 18 - 25
- 26 - 35
- 36 - 45
- 46 - 55
- Over 55

What is your current occupation / occupational status? *

- Student
- Jobseeker
- Employee / Self-employed
- Employer
- Retired
- Other

Have you already known and used MobilePay? *

- Never heard
- Have heard about it but haven't used
- Yes I use it

How long have you been using MobilePay? *

- Less than 6 months
- 6 months - 1 year
- 1 - 2 years
- More than 2 years

How frequently do you use MobilePay? *

- Daily
- Several times a week
- Several times a month
- Rarely
- Other

What is your primary use for MobilePay? (Select max. TWO) *

- Peer-to-peer payments (sending money to friends or family)
- Paying at stores
- Online shopping
- Splitting bills with friends
- Collecting funds for events (school party, sports event, etc.)
- Paying at events (e.g. participation fees at events, etc.)
- Other

Please select maximum 2 options
Selected options: 0

What kind of benefits or motivations encouraging you to use MobilePay? (Select max. THREE) *

- [ ] Fast speed
- [ ] Convenience
- [ ] Cool functions: bill-splitting, collecting funds, etc.
- [ ] Enhanced security and privacy
- [ ] Hygiene factor (Contactless payment)
- [ ] Other

Please select maximum 3 options
Selected options: 0

On a scale of 1 to 5, rate the convenience of using MobilePay? *

Very Inconvenient — 0 — Very Convenient (0 to 5)

On a scale of 1 to 5, rate the ease of installing and setting up the MobilePay app? *

Very Easy — 0 — Very Difficult (0 to 5)

How often do you encounter technical issues with MobilePay (e.g., app crashes, payment failures, etc.)? *

- ◯ Very frequently
- ◯ Frequently
- ◯ Occasionally
- ◯ Rarely
- ◯ Never

Have you ever experienced or suspected fraud/scams through MobilePay? If YES or you knew someone's story, please describe the experience. *

- ◯ No
- ◯ Yes

Have you ever experienced a leakage of personal or financial information through MobilePay? If YES or you knew someone's story, please describe the experience. *

- ◯ No
- ◯ Yes

On a scale of 1 to 5, rate the speed of using MobilePay?

Very Slow — 0 — Very Fast (0 to 5)

What do you think about the design and layout of the latest version of MobilePay? (Feel free to put your thoughts into words if you want!) *

- ◯ Modern, easier to use
- ◯ More convenient as it provides more functions
- ◯ Difficult to navigate functions
- ◯ Cluttered but usable
- ◯ I prefer the old version
- ◯ Other

Please decide whether you agree or disagree with the statements below

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
MobilePay is easy to set up and register to start using *	◯	◯	◯	◯	◯
The app's layout and design make it simple to navigate functions *	◯	◯	◯	◯	◯
MobilePay is faster to use than traditional payment methods like cash or cards *	◯	◯	◯	◯	◯
MobilePay may be hard to use for the older generation or low-tech individuals since it requires technological proficiency *	◯	◯	◯	◯	◯
MobilePay needs significant technological dependence, such as enough device battery, stable internet connection, etc. *	◯	◯	◯	◯	◯
I am confident that MobilePay is secure and my payments through MobilePay are safe from fraud *	◯	◯	◯	◯	◯
MobilePay meets my expectations for a modern digital payment app *	◯	◯	◯	◯	◯

Overall, how satisfied are you with using MobilePay on a scale of 1 to 5? *

Very Unsatisfied — 0 — Highly satisfied (0 to 5)

On a scale of 1 to 5, how likely are you to recommend MobilePay to your friends and family in Finland? *

Very Unlikely — 0 — Very Likely (0 to 5)

What improvements or additional functions would you like to see in MobilePay for the Finnish market?

Is there anything else you would like to share about your experience with MobilePay?

Previous Submit

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Appendix 2. Summary of the interview

- **Why did you choose MobilePay as a payment method for your business?**

‘’Well, in my opinion, it is always good to provide your customers more than one option of payment method. I have MobilePay in use for customers eating at my restaurant because I have experienced some customers forgetting their wallets and they had no other payment methods than physical cards or cash, even Apple Pay or Google Pay, but they had MobilePay on their phones. After several times experiencing that, I thought, maybe allowing customer to pay with MobilePay was not a bad idea’’.

- **How would you describe the overall ease of use of MobilePay for you and your customers?**

‘’Customers only need to scan the QR code that I have printed out and then continue confirming the payment, so it is literally effortless to make a payment with MobilePay, and my customers also confirmed this’’.

- **Are there any challenges or concerns that you encounter while using MobilePay?**

‘’One thing that I’m considering is that paying with MobilePay still has not become a common thing. Unlike private users, MobilePay charges merchants and businesses like my restaurant some fees, and the fee depends on the income gained through the system. I’m just afraid that if it is not that common, my adoption will not be worth it and affect the profit. Plus, paying with MobilePay requires a stable internet connection. Internet is available for customer use here, but it is not guaranteed that the internet system can be stable all the time. One more concern of mine is the technical issues. Since this is a third-party service provider, any downtime or technical problems requires third-party support, which could somehow disrupt the restaurant’s operations’’.

- **Do you see mobile payments becoming a main payment method in the restaurant industry in the future?**

‘’I would say that there is a potential, but I’m not certain since paying with MobilePay still requires internet connection, I think people are more likely to pay with card or mobile payment services like Apple Pay or Google Pay or Samsung Pay. But let’s see, what if the service would be upgraded soon’’.