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Merchant Adoption of Mobile Financial Services in Myanmar

Strategies for penetrating the B2C mobile payment market

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Problem description

In this thesis, we review an existing framework for merchant adoption of mobile payment systems (Mallat, N. and Tuunainen, V.P. (2008), 'Exploring merchant adoption of mobile payment systems: An empirical study') and compare it with several other models for technology acceptance and adoption and adapt the framework to better suit real-life applications. From this, we propose an updated version of the original framework and use this to explain and evaluate the launch and diffusion of mobile payment in Pakistan.

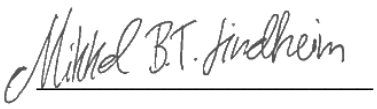
Taking into consideration lessons from Pakistan of successful and unsuccessful processes for merchant adoption of mobile payment services, and our updated framework, we analyse the current state of Mobile Financial Services in Myanmar and propose possible approaches to ensuring merchant adoption of mobile B2C payment services in Myanmar.

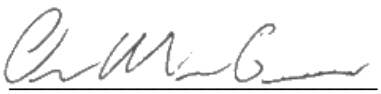
Preface

This master thesis has been conducted at the Norwegian University of Science and Technology's (NTNU) Faculty of Economics and Management during the spring semester of 2017. The thesis marks the end of our studies in Industrial Economics and Technology Management, with a specialisation in Strategy and International Business Development. The research is performed with the aid of Telenor Research, and we would like to thank our supervisor, Per Jonny Nesse, for valuable input and access to Telenor's information and contacts during the research. We would also like to extend our gratitude towards our informants, who have provided us with invaluable insights that we could not have gotten without them.

With this thesis, we hope to aid service providers in understanding the behaviour and decision-making factors of merchants undergoing the process of mobile payment adoption. We especially hope that our assessment and analysis of mobile payment in Myanmar will be of help to Wave Money and Telenor Myanmar in their future endeavours into point of sale retail mobile payment deployment.

Trondheim, 13th June 2017





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Abstract

Financial inclusion is key to combat poverty in developing countries. Diffusion of mobile financial solutions (MFS) can help provide financial inclusion to the previously underserved and unbanked parts of a population. Mobile phones are ubiquitous and personal by nature. Furthermore, they are increasingly present in developing countries. This creates a market opportunity for telecommunication providers and other providers of MFS. Merchant adoption of mobile payment solutions plays an integral part in the diffusion of MFS.

In this thesis, we have refined a framework for merchant adoption of MFS from (Mallat and Tuunainen, 2008) and coupled it with the technology adoption life cycle model (Rogers, 2003) in order to create a dynamic framework that allows us to weigh the drivers and barriers to adoption in accordance with the characteristics of the various merchant adoption groups. The framework for merchant adoption of MFS is specific and static, whereas the model for technology adoption is general and dynamic. Thus, we are able to assess merchant adoption performance from an entirely new perspective.

Based on the refined framework, we provide recommendations on how to progress merchant adoption of mobile payment solutions in Myanmar. Myanmar represents an emerging market for Telenor and their subsidiary, Wave Money, who are the largest provider of MFS in the country. Diffusion of B2C payment solutions for retailers in Myanmar is still in its infancy. In Pakistan, the B2C mobile payment solution from Telenor subsidiary Easypaisa has achieved traction. In order to confirm the validity and applicability of the framework in a developing economy, we evaluate the diffusion process of Easypaisa in light of our framework. In compliance with the drivers, barriers and prerequisites described in the dynamic framework for merchant adoption of MFS, we suggest measures that Wave Money can take in order to penetrate the market of B2C mobile payments in Myanmar.

In the earliest stages of the diffusion process, Wave Money should target their existing OTC retail agents as potential adopters of B2C mobile payment solutions. As Wave Money, according to their current business plan, scale their OTC service, the next target segment for adoption should be the influx of OTC retail agents. These two groups represent the Innovators and the Early Adopters in the technology adoption life cycle model.

Wave Money should take advantage of their high level of brand awareness and high ethical standards in order to stimulate trust and security among merchants. This is essential in a market where the general trust in financial services is low. Merchants associated with Wave Money should be able to enjoy positive recognition from new customers. This will stimulate the adoption rate among the Innovators and Early Adopters. Wave Money should enroll wholesalers and suppliers of merchants to stimulate the uptake of mobile money in the value chain. When suppliers of merchants demand payments via mobile accounts, merchants will be more inclined to adopt due to the two-sided pull effect from both new potential customers and suppliers. To mitigate the risk of infrastructural instability and to include the less technologically literate merchants, Wave Money should ensure that the technical aspects of the payment solution are low in complexity and easy to operate. As of now, the current total addressable market for Wave Money is limited by the number of Telenor subscribers. New competitors are expected to offer multi-operator payment acceptance. To remain competitive, Telenor and Wave Money should investigate the opportunities that lie in multi-operator functionality.

Sammendrag

Finansiell inkludering er en nøkkel til å bekjempe fattigdom i utviklingsland. Utbredelse av mobile finansielle tjenester (MFS) kan bidra til å tilby finansiell inkludering til mennesker som tidligere har stått utenfor det tradisjonelle bankvesenet. Mobiltelefoner er allestedsnærværende og personlige av natur. I tillegg er utbredelsen av mobiltelefoner stadig økende i utviklingsland. Dette åpner markedsmulighet for tilbydere av telekomtjenester og andre tilbydere av mobile finansielle tjenester. Adopsjon av mobile betalingsløsninger blant kjøpmenn spiller en essensiell rolle i spredningen av MFS.

I denne oppgaven har vi bearbeidet og raffinert et rammeverk for adopsjon av MFS blant kjøpmenn. Det originale rammeverket ble først presentert i (Mallat og Tuunainen, 2008). Dette rammeverket har vi koblet sammen med modellen for teknologiadopsjonslivssyklusen funnet i (Rogers, 2003). Sammen skaper dette et dynamisk rammeverk som lar oss vekte drivere og barrierer til adopsjon i henhold til de individuelle karakteristikkene som definerer de forskjellige adopsjonsgruppene av kjøpmenn. Rammeverket for adopsjon av mobile finansielle tjenester blant kjøpmenn er spesifikt og statisk, i motsetning til modellen for teknologiadopsjon som er generell og dynamisk. Med dette teoretiske fundamentet kan vi vurdere effektiviteten i kjøpmenns adopsjonsgrad fra et helt nytt perspektiv.

Basert på det raffinerte rammeverket vil vi komme med anbefalinger til hvordan adopsjon av mobile betalingstjenester kan drives fremover i Myanmar. Myanmar representerer et voksende marked for Telenor og deres datterselskap Wave Money, som er den største tilbyderen av mobile finansielle tjenester i landet. I Myanmar er utbredelsen av B2C mobilbetalingsløsninger fortsatt i en svært tidlig fase, i motsetning til i Pakistan, der Telenors datterselskap Easypaisa har oppnådd en større grad av suksess på feltet. Vi evaluerer prosessen med lansering av mobilbetaling fra Easypaisa i lys av vårt rammeverk for å bekrefte dets validitet og anvendbarhet i en utviklingsøkonomi. Deretter foreslår vi tiltak Wave Money kan gjennomføre for å bedre lykkes med å etablere seg i B2C-mobilbetalingsmarkedet i Myanmar, i samsvar med forutsetningene, driverne og barrierene presentert i vårt dynamiske rammeverk for kjøpmenns adopsjon av MFS.

De første segmentene Wave Money bør sikte seg inn på for adopsjon av mobile betalingsløsninger, er dagens OTC-agenter. Disse har allerede kjennskap til Wave Money og

vil ha lettere for å ta i bruk B2C mobilbetalingsløsninger. Wave Moneys forretningsplan innebærer å øke omfanget på dagens agentnettverk for OTC-løsninger. De nye agentene som strømmer til burde fortløpende bli anmodet om å ta i bruk mobilbetaling. Samlingen av dagens og fremtidens OTC-agenter representerer henholdsvis Innovatørene og de Tidlige Adoptantene i teknologiadopsjonslivssyklusmodellen.

Wave Money bør benytte seg av mulighetene som ligger i deres høye merkevarebevissthet og den høye etiske standarden de jobber under for å øke oppfattelsen av sikkerhet og tillit blant kjøpmenn. Dette vil være essensielt i et marked preget av en generell lav tillit til finansielle institusjoner. Kjøpmenn som assosieres med Wave Money bør bli oppfattet i et positivt lys av nye potensielle kunder. Dette vil stimulere adopsjonsraten blant Innovatørene og de Tidlige Adoptantene. Wave Money bør inngå samarbeid med kjøpmenns grossister og leverandører slik at bruken av mobilbetaling i verdikjeden går opp. Når kjøpmennenes leverandører krever betaling gjennom mobilkontoer, vil kjøpmennenes innstilling til å ta i bruk mobilbetaling øke ettersom de vil oppleve en dra-effekt fra både nye potensielle kunder og sine leverandører til å akseptere mobilbetaling. For å redusere risikoen forbundet med infrastrukturell ustabilitet og for å inkludere kjøpmenn med dårligere teknologisk kunnskap, burde Wave Money sørge for at alle tekniske aspekter ved mobilbetalingsløsningen er lave i kompleksitet og enkle å betjene. Slik det ser ut i dag er det totale tilgjengelige markedet for Wave Money begrenset av antallet Telenor-abonnenter. Det forventes at nye konkurrenter vil tilby betalingsløsninger med aksept for flere telekomleverandører. For å holde seg konkurransedyktige bør også Telenor og Wave Money undersøke mulighetene assosiert med betalingsfunksjonalitet for flere telekomleverandører.

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Abbreviations

ASEAN: Association of Southeast Asian Nations

B2C: Business-to-consumer, in this assignment used when referring to payments carried out at by consumers at retail locations.

BB: Branchless Banking

FMCG: Fast-moving consumer goods

GSMA: The GSM Association, a trade body that represents the interests of mobile operators worldwide.

G2P: Government to Person, a term for payments distributed to individuals from governmental entities.

KYC: Know-Your-Customer, a term used to explain identity check requirements for financial service providers toward their customers.

MFS: Mobile Financial Services.

MMK: Burmese Kyat, the national currency of Myanmar.

MNO: Mobile network operator

NFC: Near field communication, a communication protocol that allows for the transfer of information between two devices in near proximity to each other.

OTC: Over-The-Counter. Used to specify MFS where an agent is used as an intermediary for converting cash to mobile currency.

P2P: Person-to-person, in this assignment used when referring to payment solutions used for transferring money between individuals.

PIN: Personal Identification Number

POS: Point of sales

Rs.: Pakistani rupee, the national currency of Pakistan

SIM: Subscriber identity module

Telco: Telecommunication provider

TALCM: Technology adoption lifecycle model

USD: US Dollars, the national currency of the United States of America

Chapter 1 - Introduction

1.1 What is mobile financial services, and why is it important?

The term ‘Mobile Financial Services’ denotes the use of mobile devices to access financial services and execute financial transactions. This includes, but is not limited to, mobile money (payment), mobile insurance, mobile credit, mobile savings and mobile banking (GSMA, 2016b). Studies indicate that Mobile Financial Services may be a way to ensure financial inclusion of the unbanked in countries where traditional banking services are not that prolific (Assadi and Cudi, 2011). Financial inclusion can have a positive impact on society by allowing more people to partake in economic growth (Khan, 2016). Digital facilitation of financial inclusion increases availability and affordability of goods and services to poor customers, and the transition from cash-based transactions to digital transactions implies formidable cost reductions in the economy as a whole (Kyaw, 2016; CGAP, 2015). To fully benefit from the financial inclusion, the services offered to consumers must include the basic financial services normally offered by a traditional bank, such as an account for effectuating day to day payments, a savings account and the possibility to be granted small loans, also known as microcredit (Assadi and Cudi, 2011). In most successful cases of introducing mobile financial services to a new market, the service provider starts by introducing a service to make P2P payments and then builds on this service to introduce further services (Staykova and Damsgaard, 2015). This helps ensure a critical mass of consumers that already use mobile payment when the service is launched for merchants and POS payments. In a country like Myanmar, where the level of financial inclusion today is low, but the proliferation of mobile technology is high, mobile financial services might be the gateway needed to lift large parts of the population out of poverty.

1.2 Objective and research questions

In our pre-master thesis submitted in December 2016, we suggested that further studies on factors that affect merchant adoption of mobile financial services should be conducted. To accommodate for this suggestion, we are expanding on the theoretical scope of the pre-master thesis, which was solely a desktop study of theoretical articles on merchant adoption of technological innovations. In this master thesis, we want to evaluate which factors influence merchant adoption of mobile payment systems, and to test it out on real life market cases through conducting a qualitative exploratory study. To do this, our first objective is to evaluate the adoption framework for mobile payment systems that was at the core of our pre-master thesis and refine it to suit real life adoption decisions.

Secondly, we aim to further verify and adapt the framework by studying B2C mobile merchant payment diffusion in a country where the service has already had some traction. The adapted framework could then possibly be more apt for explicit usage in a country where mobile payment is in its infancy. We have chosen to look at the Easypaisa mobile payment service in Pakistan, an emerging market for the Telenor Group, as the service is well established and the general market structures are comparable to our main focus market of Myanmar.

Lastly, we use the refined framework, with further adjustments in accordance with the specific case of mobile payment diffusion in Pakistan, to evaluate the state of mobile payment in Myanmar, and recommend possible actions that can be taken in the country to enhance the diffusion process.

To fulfil these objectives, we have formulated three research questions:

- *RQ1: What factors affect merchant adoption of mobile financial services?*
- *RQ2: How can lessons from Pakistan help facilitate the launch of a mobile B2C payment solution in Myanmar?*
- *RQ3: What strategies could Telenor/Wave Money implement in order to achieve B2C payments and merchant adoption in Myanmar?*

1.3 Scope

This thesis focuses on the mobile payment at points of sales aspect of MFS. Mobile payments can be defined as "money rendered for a product or service through a portable electronic device such as a cell phone, smartphone or PDA. Mobile payment technology can also be used to send money to friends or family members" (Investopedia, 2017). In our usage of the term, we mainly focus on B2C mobile payments, or merchant mobile payment, at physical point of sales from merchants that sell fast moving consumer goods, such as food and drink (see figure 1.1). When considering alternatives like mobile payment through online shopping, for instance, you may have a hard time distinguishing what is mobile payment and what is "payment verification through a mobile phone". For simplicity, and to be able to perform an accurate analysis, these use cases for mobile payment will not be discussed. Mobile payment at POS locations can occur in two main ways: Either through the use of a code system or using NFC technology. A code system can comprise of either a text code that is used through SMS to initiate mobile transactions or through a QR code that is scanned with the consumer's mobile device to initiate the transaction. Each QR code will be unique for an individual merchant, and the merchant can verify the transaction by registering the amount that is to be paid at the current time using the QR system. In an NFC scheme, the merchant has a POS terminal that has a built-in NFC chip, and the customer has an NFC chip in their phone or another type of NFC identifier, such as a sticker attached to their phone. When the two chips establish a connection, a transaction process is initiated between the POS terminal and the consumer's mobile account, which in turn can be verified through a mobile payment app or an SMS menu. Other technological solutions to make mobile payment exists, for example through the use of Bluetooth technology, but as these are not applicable to the current situation in our case countries, they will not be discussed further in this thesis.

The mobile payment ecosystem consists of both consumers, merchants, service providers, and in some cases financial institutions that collaborate with the service provider, depending on local regulations in a market. Since our thesis treats merchant adoption of B2C mobile payment solutions, we will not examine the other actors directly. However, they will be involved in the discussion indirectly as they have a clear effect on how merchants perceive and use mobile payment systems.

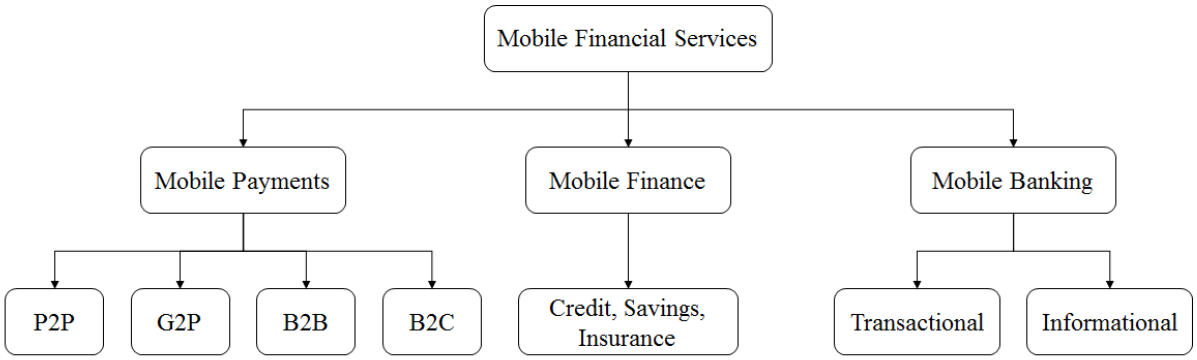


Figure 1.1: Map of mobile financial services (Gencer, 2011)

1.4 Thesis structure

This thesis is divided into 7 chapters, with the overall structure shown in figure 1.1. In chapter 2, we present our methodological approach, both with respect to the theoretical background and empirical data collection. In chapter 3, we present a framework for merchant adoption of mobile payment systems and refine it by validating it against other models for technology adoption and diffusion. In chapter 4, we present a case study of the mobile payment landscape in Pakistan with special attention to the mobile payment service provider Easypaisa. We then use our model to evaluate the diffusion process of Easypaisa and present some measures that should be taken care of to further expand the service's proliferation. In chapter 5, we present a case study of mobile payment in Myanmar and use available information from the launch of Easypaisa in Pakistan to evaluate the future of merchant adoption of mobile payment systems in the country. In chapter 6, we summarise our findings, offer concluding remarks on merchant mobile payment adoption and answer our research questions. In chapter 7, we discuss possible limitations and drawbacks to our research.

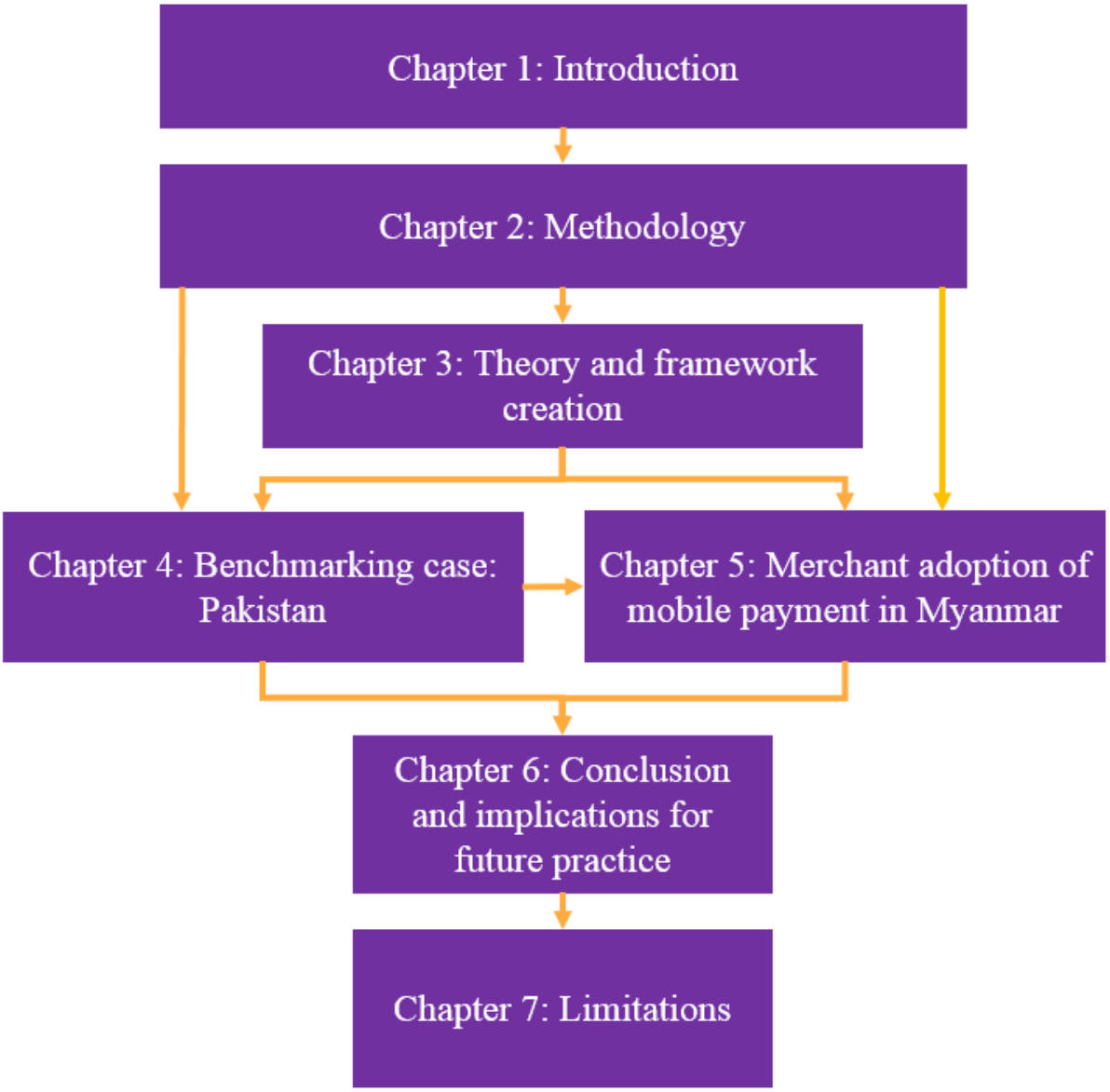


Figure 1.2: Thesis structure

Chapter 2 - Methodology

Our research design for the thesis has been chosen in order to best accommodate for our three research questions. We have performed an exploratory study into the field of merchant adoption of mobile payments systems. We found an exploratory study to be most suited, as we wanted to employ existing theory on technology adoption in a new way, as well as apply it to a new market where merchant payment using mobile technology is not yet present. To reach this goal, we have used two distinct methodological approaches. For our theoretical foundation and analysis, we have performed a desktop study of scientific articles, research reports and industry reports from organisations working with or studying mobile money. In addition to this research, we have supplemented the theory and empirical evidence with relevant news articles, press releases and online information bases concerning our research topics. The details of this theoretical study are elaborated on in section 2.1. For our empirical data collection on our two case countries, we have performed qualitative interviews with experts on our three research fields: Merchant adoption of mobile payment, mobile payment in Pakistan, and mobile payment in Myanmar. The empirical research method and the rationale behind our chosen interview form are elaborated on in section 2.2. In section 2.3, we evaluate our research design and discuss possible limitations.

2.1 Theoretical desktop study

At the core of our thesis is the work of Mallat and Tuunainen (2008), who propose a framework for merchant adoption of mobile financial services. Based on studies of MFS literature reviews, we discovered that the field of merchants in the mobile financial ecosystem was heavily under-researched compared to other parts of the ecosystem such as consumer adoption and technological reviews. For our pre-master thesis conducted in the autumn of 2016, we performed a literature review on merchant adoption of mobile financial services. This was based on related research of technology adoption in general since the available research of merchant adoption of mobile payment systems was limited to a few articles. We also briefly discussed the practical implications of what a mobile payment service provider should consider when attempting to engage merchants in mobile payment in the Burmese market. For our master thesis, we sought to expand on this purely theoretical approach, evaluate possibilities and define strategies for market entry of mobile payment services in Myanmar. To do this, we chose to treat the original mobile payment merchant adoption

framework of Mallat and Tuunainen (2008) and compare it to other theories on technology adoption to see if there were any constructs that should be added to the framework.

The evaluation of the 2008-framework was based on research articles gathered through targeted searches for technology adoption studies using the university library's Oria database, which aggregates scientific papers and articles from a spectrum of domain-specific databases. We wanted to gather highly cited articles with a focus on technology adoption, and the most prominent ones were the Technology Adoption Model (TAM) and its various extensions that have been published over the last 30 years. In addition, while working on our pre-master thesis, we had built up our own collection of 20 articles related to technology and mobile payment adoption. Some of these were revisited when working on this thesis, mainly those who treated elements affecting technology acceptance and mobile payment acceptance that were not covered in our new additions of theoretical articles. These include (Guo and Bouwman, 2016), (Plouffe, Vandenbosch and Hulland, 2001), (Au and Kauffman, 2008), (Apanasevic, Markendahl and Arvidsson, 2016) and (Ondrus, Lyytinen and Pigneur, 2009).

To evaluate the validity of the propositions in the framework from (Mallat and Tuunainen, 2008), we compared them to the characteristics of different technology acceptance models as well as constructs from other articles used in our pre-master thesis. In a conversation with one of our interviewees, we also discussed the importance of influence from a merchant's vertical partners in business decisions. This led us to seek out articles on this field of study as well, including (Iacovou, Benbasat and Dexter, 1995), (Zhu, Dong, Xu and Kraemer, 2006) and (Barua, Konana, Whinston and Yin, 2004).

The framework suggested by Mallat and Tuunainen (2008) should be regarded as static, and therefore not fully applicable to explain merchant adoption for the various types of technology adopters. Therefore, we added a dynamic dimension to the framework by merging it with the technology adoption life cycle from the diffusion of innovation theory by Rogers (2003). This way, it was possible to weigh the propositions in the framework by their level of influence for merchants belonging to the various user groups in the technology adoption lifecycle. To further enhance our research framework with a dynamic contextualization, we consulted one of the diffusion of innovation theory's well-reasoned applications: Crossing the Chasm by Moore (2014). Both the theory and the application from Crossing the Chasm were theories well known by us from a previous project at NTNU where we formulated market entry strategies for an innovative product in a foreign market. By comparing the characteristics of

technology adopter groups in these theories to the propositions in the merchant mobile payment adoption framework, we were able to weigh the propositions by importance for merchants considering adopting mobile payment. Crossing the Chasm provides us with the means to evaluate the transitions from one adopter group to the next.

2.2 Empirical data collection

When planning the empirical data collection for this thesis, we envisioned a situation where we could visit both Pakistan and Myanmar and perform structured interviews and surveys with the major stakeholders for a mobile payment system, the service providers, consumers and merchants. However, due to both practical concerns such as security, organising interviews and language barriers, as well as financial concerns, this was not a possible approach. In accordance with our supervisor, we decided to settle for performing our empirical data collection through semi-structured interviews with a few selected experts on our three research fields: Mobile payment adoption on a theoretical basis, mobile payment in Pakistan and mobile payment in Myanmar. These experts could then act as our proxies for a larger group of interviewees through their in-depth knowledge of their respective fields. We were also advised that direct interviews with merchants about their intention to adopt not necessarily would lead to any findings of significant importance, depending on their previous knowledge of mobile payments.

In addition to the interviews, a desktop study approach was used to gain insight on our two focal markets for mobile payment adoption. Information was mainly gathered from reports, press releases and websites from significant actors in the finance and economy sector, governmental agencies and mobile payment providers in the two countries. Among the organisations behind these reports are large and trustworthy organisations like the GSMA and the World Bank, and the CIA, which have a comprehensive online database of the world's countries and various demographic indicators. In addition, we conferred with some information from news articles, as these offer us the opportunity to access the most up to date information on numbers like mobile phone penetration and bank account proliferation.

2.2.1 Semi-structured interviews

The goal of a semi-structured interview is to have a free and open conversation about one or several pre-defined topics (Tjora, 2012, p.104; Bryman, 2016, p.468). The interviewer has a set of questions prepared in his interview guide, but the interviewee is encouraged to answer the questions broadly and go off topic if it adds to the conversation (Bryman, 2016, p.468). Depending on how the interview unfolds, the interviewer may choose to omit some of his or her prepared questions and ask follow-up questions on the interviewee's remarks and answers (Bryman, 2016, p.468). Semi-structured interviews have a relaxed atmosphere and use broadly formed questions to allow for an open dialogue. This form of interviews is distinct from structured interviews and surveys that have precisely formulated questions where the interviewer is looking for specific answers that can be coded into variables for information analysis (Tjora, 2012, p.104-105). Semi-structured interviews are the most suitable research approach when the interviewer does not have in-depth knowledge of the research field beforehand, when more than one researcher is gathering the empirical data and the access to suitable informants and interviewees is low (Tjora, 2012, p.105; Bryman, 2016, p.487). All of these criteria can be said to describe us and our research, therefore we consider this approach as suitable.

2.2.2 Interviewees and process

Interview format and structure of questions

In total, we performed four semi-structured interviews with four interviewees during the period spanning from the 19th of April to the 6th of June 2017. As we were prevented from travelling, all the interviews were performed through by telephone or video conference using Skype. Both of the authors of this thesis were present during the interviews, one conducting the interview and the other listening in, taking notes and giving input on the conversation when the interviewees discussed topics that should be followed up on. The interviews were all between 1 hour and 90 minutes in length and were recorded with the permission of the interviewees. After conducting the interviews, these recordings were transcribed and used together with the notes taken during the interview to be used in our empirical discussion and analysis. Three of the interviewees were contacted at later occasions through emails for follow-up questions.

One of the interviews was conducted in Norwegian, and this could result in lesser linguistic alterations when quoted in the thesis, but the content of the quotes remain unchanged.

Prior to conducting the interviews, we developed an overall guide for the questions we sought answers to. All the interviews started out with an introduction from us regarding the background for our thesis and why we wanted to speak with the interviewee. The interviewees were then encouraged to present themselves and their current or their previous work that prompted us to contact them for an interview. The following part of the interview encompassed the interviewee's fields of expertise, either general theoretical knowledge of mobile payment systems or specific knowledge related to mobile payment cases in Pakistan and Myanmar. During this part of the interview, the questions were formulated to fit the interviewee's field of expertise so that it would encourage open talk, digressions and the arisal of new information that we had not anticipated beforehand. Subsequently, we asked more specific questions about elements from our theoretical background and analysis, as we wanted input on how the mobile payment adoption framework would fit in the interviewees' markets of expertise. Finally, we finished the interviews with a discussion about the future of mobile payment, both in general and specific for our case countries.

For the most part, the information we got from the interviews was pertinent to our research, and we were able to corroborate many of our assumptions about the state of mobile money in cash-based economies. Through digression, for example concerning the competitive landscape in Myanmar and the nature of doing business with suppliers in Pakistan, we gained new perspectives that we had not considered before conducting the interviews, and were able to add this to our analysis and enhance the quality of the research. In retrospect, we would have liked to have our theoretical background completely finished before conducting our interviews. Due to unforeseen circumstances, this was not the case. While performing our empirical analyses, we saw that in some cases we have had to make assumptions about certain aspects of the mobile payment landscape. This rings especially true for Pakistan, where we presumably would have obtained clear-cut answers to issues sooner, had we known to ask about them during the time of the interview.

Selection of interviewees

Prior to conducting our empirical research, we wanted to interview one of the authors of (Mallat and Tuunainen, 2008) to discuss the topicality of the article's presented framework in 2017. As previously discussed, this article is one of the few articles on merchant adoption of mobile payment, and by far the most comprehensive. Input from the author of this publication would be of high value in the process of reviewing and refining the framework. We contacted Niina Mallat through her university, and she was positive to help us in our study. After an exchange of emails discussing mobile payments today versus when her research was conducted, we had a longer interview through Skype.

We also wanted to speak with people that have high knowledge of mobile payment in Pakistan and Myanmar, as well as speaking to merchants in the country about their perceptions of mobile money and how it could affect their business. The latter was not pursuable in practice, but with the help of our supervisor we were able to get in contact with a researcher on mobile payment in Pakistan, Dr Farrah Arif, as well as a Telenor employee that has worked close with the Easypaisa team, Oddvar Risnes. These two have an in-depth knowledge about both mobile payment in Pakistan and merchants' perceptions on mobile payments. Their knowledge and experiences from talking to stakeholders in Pakistan was an appropriate substitution for direct contact. We also contacted the Head of Digital Payment at Telenor Microfinance Bank, Omar Malik, but he was not available for an interview. We considered reaching out to a previous employee of Telenor in Bangladesh that we were made aware of through a family member, but after some investigation, we ultimately considered his experience from the Bangladesh to be both inapplicable and out of scope for our case studies.

Lastly, we were put in contact with the CEO of Wave Money, Brad Jones. Wave Money is the market-leading mobile payment service in Myanmar, and a subsidiary of Telenor and therefore perfect for the scope of our research. While we would have wanted to achieve direct contact with mobile payment stakeholders in Myanmar, having access to the insight of the CEO of a service provider is a good proxy. Table 2.1 shows our interviewees, their field of expertise and interview details. Full transcripts of the interviews can be found in the Appendix.

Table 2.1: Interviewees, empirical data collection

Interviewee	**Role**	**Date of interview**	**Key discussion topics**
Dr Farrah Arif	Researcher, University of Lahore, specializes in mobile payment	19.04.2017	Mobile payment in Pakistan, with a special focus on the Easypaisa payment service. State of financial inclusion in Pakistan
Niina Mallat	Researcher, author of our main theoretical source, the framework for merchant adoption of mobile payment	27.04.2017	The state of mobile payment in 2017, applicability of the 2008 framework today.
Oddvar Risnes	Team Leader in financial inclusion project as part of Telenor Digital's program Ignite	11.05.2017	Mobile payment in Pakistan, thoughts about current and future state of the market
Brad Jones	CEO of Wave Money	06.06.2017	Mobile payment in Myanmar, with focus on Wave Money, its user base and possibilities

2.3 Methodological limitations

Our theoretical methodology is limited in scope due to time constraints, a lack of direct contact with stakeholders and complexity issues. We have strived to attain a comprehensive understanding of technology adoption and compare it to the framework formulated for merchant mobile payment adoption by reviewing highly cited publications and well-tested models. We have, to the best of our capabilities, tried to avoid making unfounded decisions in this thesis. However, in order to write a coherent analysis, some assumptions have had to be made. These assumptions should be explicitly disclaimed as they appear in the text.

Verifiability

One major concern about our methodology is the scope of our empirical evidence and interviewees. Using few sources of data could cause biased conclusions. Apart from Pakistan, we only have one source of data for each of our research domains. This is somewhat mitigated by the roles of the interviewees who are all people with a proven insight on their respective fields. Nevertheless, without the ability to cross-reference the information we are given, we must accept the answers and perceptions of our interviewees as reliable. In an ideal scenario, we would have conducted at least three more interviews on each of our research areas, so that we could corroborate their answers for validity. However, industry reports that confirm the information given by the interviewees further strengthen the credibility of their testimonies. Since the verifiable information given by the interviewees has proven to be correct, it might be assumed that the rest of their answers are too. The usage of industry reports and news articles to describe the factual reality in a country might be problematic in some cases, as the individual authors of these reports and articles could have an agenda, or present their empirical data to serve a purpose that is different to ours. In some instances, for example regarding mobile phone penetration in Myanmar, the evolution is so rapidly changing that even recent sources might use misrepresenting numbers. In cases where information is internally incoherent, we have either presented all sources as possible facts or chosen the one with the most subjective credibility.

Validity

The validity of our revised framework for merchant adoption of mobile financial services should also be scrutinised. In order to obtain a framework that accounts for dynamic changes in merchants' preferences and requirements during a continuous adoption process, we had to combine two categorically different models of technology adoption. These two models were: The framework for merchant adoption of mobile financial services (Mallat and Tuunainen, 2008) and the technology adoption life cycle model (TALCM) (Rogers, 2003). Three questions arose from this: Is the action of combing these two models appropriate, why is this interesting, and is the TALCM a model that is suited to describe adoption of new technologies in developing countries.

In our theoretical desktop study, we argue that merchant mobile payment is a disruptive innovation to communities where cash is especially prolific. This argument builds on the

characteristics of disruptive innovations suggested in (Bower and Christensen, 1995). However, it is possible to argue that some criteria for disruptive innovations are not satisfied fully by mobile financial services. Still, we choose to go with the argument that merchant mobile payments are a downright disruptive innovation. If the reasoning holds, combining the two frameworks should be plausible as the TALCM seeks to explain the adoption performance of disruptive innovations.

In the framework describing merchant adoption of mobile financial services, Mallat and Tuunainen (2008) suggest their framework cover most, if not all, of the relevant drivers, barriers and prerequisites for diffusion of merchant mobile payments. All the factors that affect merchant adoption are treated similarly, regardless of how far the entire adoption process has come. Conversely, the TALCM suggests that various adopter groups along the adoption life cycle have different characteristics, preferences and requirements. By combining these two models, we are able to assess merchant adoption performance from an entirely new perspective, as the framework from Mallat and Tuunainen (2008) is specific and static, whereas the TALCM is general and dynamic.

In his conference paper, 'Technology Adoption Life Cycle Model in Different Environment: Exploratory Evidence from Nigerian Telecom Market', Aminu Ahmad raises the question of whether the technology adoption life cycle is applicable for explaining the diffusion process in the Nigerian GSM market (Ahmad, 2011). Nigeria was chosen as the case nation by Ahmad because it is a developing economy; a different environment than the majority of studies on the applicability of TALCM (ibid). Ahmad concludes that, for the middle stages of the adoption life cycle, the early majority and the late majority, the TALCM model interpreted the diffusion of GSM technology in Nigeria in a near perfect manner. For the early stages, the robustness of the model was somewhat weaker, supposedly because of providers' divergent marketing strategies and the researchers corresponding diverging empirical data. In summary, Ahmad's conclusions support the view that the TALCM model is more than partially able to describe proliferation of mobile technologies in developing countries. We regard this study as highly relevant for our thesis because it confirms that the TALCM model is applicable for developing countries in general, and as the article concerns itself with the diffusion of mobile technologies (ibid), the relevance to our thesis is strengthened.

Chapter 3 - Ensuring merchant adoption of MFS

Historically, research and studies on mobile financial services have largely had a focus on consumers, technology and the mobile payment ecosystem. Literature reviews by Dahlberg, Mallat, Ondrus and Zmiljevska (2008) and Dahlberg, Guo and Ondrus (2015) show that out of 261 articles on MFS published in journals and conference papers between 1999 and 2014, 133 discuss these subjects. This leads to an unbalanced field of research, where especially the role merchants play in the mobile payment ecosystem and their needs are somewhat neglected. The same literature reviews identified only four articles treating the role of merchants in the mobile payment ecosystem, all published before 2006. Although we have identified more recent articles on the role of merchants in the mobile payment ecosystem ourselves, the trend is clear, underscoring the importance of studying how merchants adopt and use mobile payment systems. Studies by Staykova and Damsgaard (2015) show that the most successful providers of mobile payment systems have followed a multisided approach to their market entry strategy. Therefore, an understanding of both merchants, consumers and service providers is needed to succeed in the mobile payment industry.

In this chapter, we use concepts and theory from publications to formulate a framework for merchant adoption of mobile payment systems in the technological landscape of 2017. Section 3.1 presents the mobile payment ecosystem and discusses the merchant's role. Section 3.2 reviews current models and frameworks for technology acceptance, with a focus on Mallat and Tuunainen's (2008) framework for merchant adoption of mobile financial services. We also present other important factors and theories that we believe will have an impact on merchants' mobile payment adoption decisions, and discuss whether the rapid evolution of technology will affect the framework's relevance or not. We then use these combined insights to present a reviewed version of the framework. In section 3.3, we present the diffusion of innovation theory and one important application, Crossing the Chasm, in order to contextualise the revised framework in a dynamic context. This dynamic context, with the framework for the distinct adopter groups in the technology acceptance life cycle, is presented in section 3.4 before we summarise the chapter with some considerations that need to be taken in real life applications of the framework in section 3.5. The dynamic framework will be used

later in chapter 4 and chapter 5 to evaluate the mobile payment diffusion process and future in our two case markets, Pakistan and Myanmar.

3.1 The merchant in the mobile payment ecosystem

In a general sense, a technological ecosystem is a common term for all stakeholders involved in the usage of a technology. For example for credit card usage, the ecosystem consists of the consumer who uses his credit card, the merchant who accepts the payment, the bank that issues the card, the credit card company responsible for the payment technology and possible technology providers for any of the three former members (Chen, 2016). Mobile payment ecosystems are more complex, as there might be multiple financial institutions, technology providers and mobile network operators involved in a system, depending on the technological solutions chosen for the system. In this thesis, we view the mobile payment ecosystem at its most general structure, with focus on four main stakeholders: (1) the consumer who makes payments, (2) the merchant who accepts the mobile payment, (3) the mobile network operator (MNO), and (4) the bank.

The consumer is the base element and the core of the ecosystem. The consumer uses the mobile payment systems to make payments, make interpersonal fund transfer and other financial services offered by the service provider such as bill payment or insurance. The two main types of consumer usage are OTC solutions where consumer deposits money with an agent that transfer the money to another agent for the recipient to withdraw, and m-wallet usage where the consumer itself has a wallet on his cell phone used to effectuate payments.

When it comes to the bank and service provider, their roles vary depending on which model is used for the mobile payment system. There are three main models for mobile payment systems, bank-led, telco-led and hybrid models (Nesse, Risnes, Hallingby, Munch-Ellingsen, and Canright, 2016). In the bank-led model, the bank controls the value chain, both the service itself and the agent network, while the MNO provides a communication channel and usage of their network for the mobile payments to be effectuated through. In the telco-led model, the MNO controls the value chain and the bank provides a place to store funds. In the hybrid model, control of the value chain is shared between the MNO and the bank, where banks manage the financial aspects of transactions and MNOs provide the mobile communication aspects. The different models place most regulatory and legal responsibilities accordingly on the actor with control over the value chain (Nesse et al., 2016).

Merchants play a dual role in the mobile payment ecosystem, both as individuals that adopt a mobile payment system and as actors that incentivise consumers to adopt mobile payment as more locations for mobile payment become available to them (Guo and Bouwman, 2016). Merchants are providers of the payment channel that consumers use, and are subject to both consumer demand and bank/MNO/government regulations (ibid). Guo and Bouwman (2016) classifies the mobile payment ecosystem from the merchants' perspective in a three-tiered model. At the core tier, the merchants experience the ecosystem as consisting of themselves, the consumer and the mobile payment platform. This is at the core business that they experience with every mobile payment transaction. The merchant might have different alternatives to choose from between different mobile payment platforms, and consumer demand and product offering from the service provider might affect their choices. At tier 2, the merchants must relate to the provider of the mobile payment platform, as well as their suppliers. The suppliers may or may not be mobile payment adopters themselves. Suppliers might be viewed as the merchant's vertical partners, and merchants will be more inclined to adopt a mobile payment system if their suppliers have adopted the same platform (Guo and Bouwman, 2016). In tier 3, the government, competitors and interest groups of consumers, workers or trade unions affect how the merchants view mobile payment. If regulatory bodies insist on a common standard for mobile payment, the merchant will be more likely to adopt it, as there is less risk associated with choosing the "wrong" platform for their business. Research suggest that the lack of standard solutions and the presence of heterogeneous interests in groups tasked with finding common standards instigates a braking effect on mobile payment uptake (Guo and Bouwman, 2016). Figure 3.1 shows the ecosystem from the merchant's perspective.

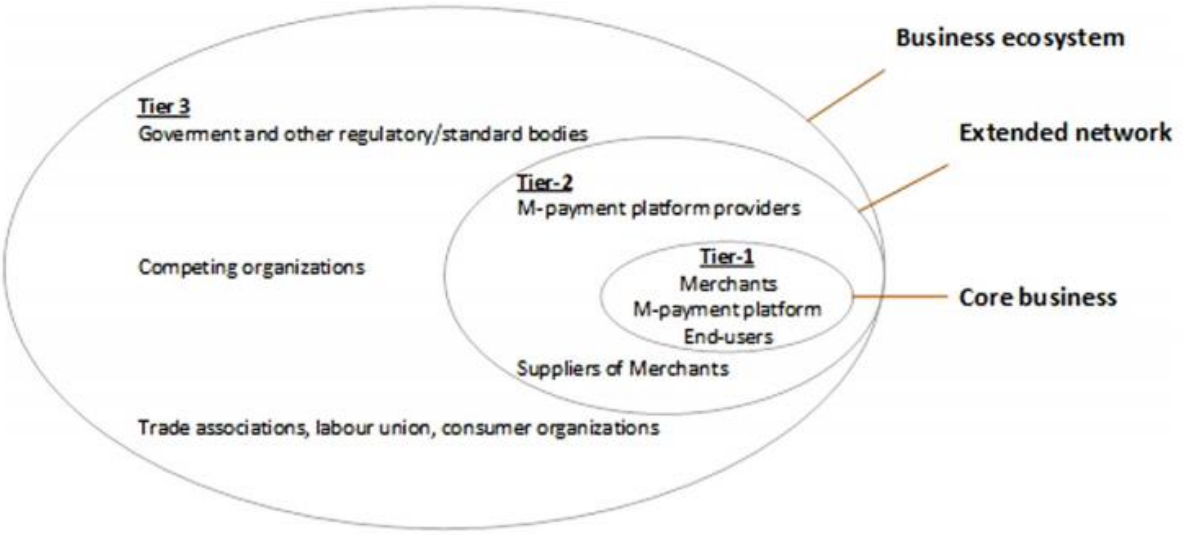


Figure 3.1: The m-payment ecosystem from the merchants' perspective (Guo and Bouwman, 2016)

3.2 Models for technology acceptance and adoption

In this section, we form a theoretical basis for evaluating approaches to merchant adoption of mobile financial services, and diffusion of adoption. The goal of this section is to present general frameworks for technology acceptance and find what factors are most commonly identified. In addition, we discuss other relevant social and economic theories that affect technology acceptance decisions. We will use our findings to attempt to evaluate and weigh the propositions in an existing framework for merchant adoption of mobile financial services presented in (Mallat and Tuunainen, 2008) based on their relevance and impact.

3.2.1 The Technology Acceptance Model and Extensions

The Technology Acceptance Model (TAM) was developed by Davis (1986) in his doctoral dissertation at the Massachusetts Institute of Technology, and validated by Davis, Bagozzi and Warshaw in their 1989 article "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models". The model is an extension of Ajzen and Fishbein (1975 cited Davis et al., 1989)'s Theory of Reasoned Action, adapted to explain actions of taking technology and information systems in use.

The purpose of the model is to predict if a new technology will be accepted by its intended users, and which modifications need to be made to make the technology more acceptable to those users. This acceptability is defined by two main metrics: perceived ease of use and perceived usefulness (Davis et al., 1989). Perceived ease of use denotes the degree to which the system seems effortless to use, while perceived usefulness denotes to what extent the system is believed to increase performance. These two metrics forms a potential user's opinion of an information system and his attitude towards use. The model can be read as a linear decision process from initial consideration about using a new information system to the final decision of taking it into use. Some external variables need to be in place, for example a need for a new system, or a perceived need to keep up with recent technology, maintain a competitive advantage or as a result of marketing. The prospective user will then evaluate if the system seems easy to use and if it meets his needs. Together, these form his attitude towards using the new system, which then, in turn, affects behaviour, for example actually ordering the system for his business.

In Davis et al. (1989) the relationship between the different factors in the model are presented as the following equations:

$A = U + E$

E = External variables

U = E + External variables

(Abbreviations are shown in figure 3.2)

We see from the linearity of the equations that when given the choice between two systems that have the same level of usage difficulty, a user will choose the one that provides the most perceived usefulness in functionality. Conversely, when choosing between two systems that offer the same functionality, the one that is easier to use will be chosen. The perceived usefulness also affects intention to use directly, as a user is less likely to use a system that does not meet any substantial needs.

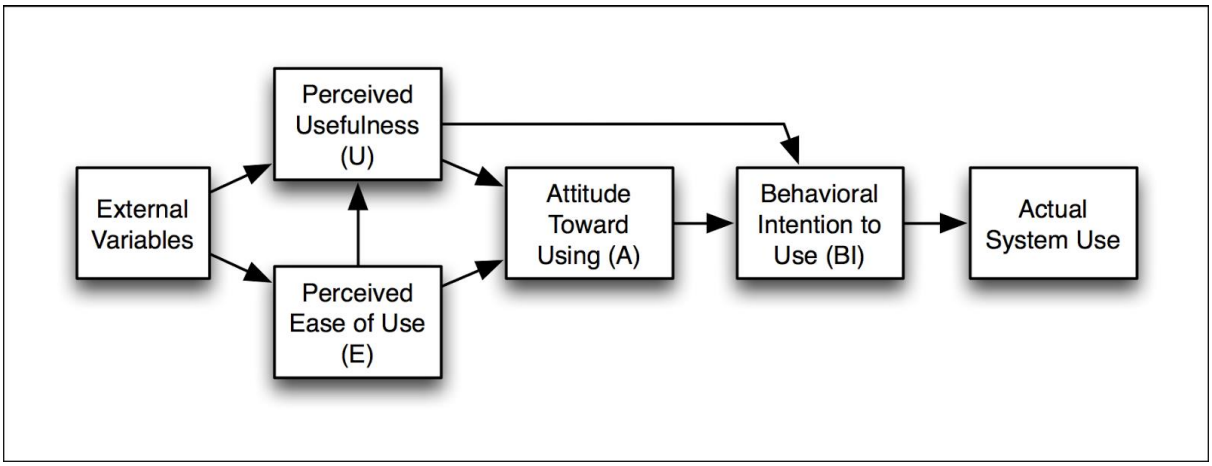


Figure 3.2: Technology Acceptance Model (TAM) (Davis et al., 1989)

Since its initial publication in 1986, the model has been continuously studied by other researchers and undergone two major expansions. The first one is TAM2 (Venkatesh, 2000; Venkatesh and Davis, 2000) which expands on what elements the perceived usefulness metric is composed of. The researchers identified two processes with six sub-elements that influence the perceived usefulness of an information system. These are social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality and result demonstrability). In addition, they confirmed that the perceived ease of use is both an influence on intention to use and on perceived usefulness, and evaluated the impact of experience (Venkatesh and Davis, 2000).

This extension of the model is important because it allows us to have more insight into how a creator of an information system should focus their marketing efforts of the system. Table 3.1 below explains the rationale behind each of the added elements in the extended model.

Table 3.1: Elements added in TAM2 to the original TAM

Subjective norm If a person believes that most people who are important to her wants her to perform a behaviour, she is more likely to do it, even if she herself is not favourable to do it. In layman's terms, subjective norm can be viewed as "peer pressure" to perform a task.
Voluntariness and compliance with Social Influence Influences subjective norm in that subjective norm plays a larger role in decisions that are seen as mandatory than in decisions seen as voluntary. Subjective norm is a stronger incentive to use an information system if the user thinks he or she might be punished for not using the new system.
Internalization of Social Influence When a person perceives that an important referent thinks she should use a system, she incorporates this belief into her own belief structure. Internalization might happen both in mandatory and voluntary system usage decisions.
Image and Social Influence Subjective norm positively influences image because a person believes that following others' intentions to use a system will elevate her standing in a group. Increased status will then in turn lead to more power in a group, which is seen as a positive position.
Changes in Social Influence with Experience Before implementation of a system, the potential users have a limited basis of information, and thus, the effects of subjective norm on individuals diminish after a given time of using a system. This means social influence is more important pre-implementation than post-implementation.
Job Relevance An individual's perception of whether or not the system is applicable to perform his job. This has direct influence on perceived usefulness.
Output Quality Above and over the capabilities of an information system, how well the system performs job relevant tasks. When choosing between multiple relevant systems, a prospective user will choose the one with the highest output quality.
Result Demonstrability The degree to which performance enhancements and results can be visibly attributed to the new system. It must be clear that the positive results are from the use of the new system, or else the users will not understand the usefulness of the system.
Perceived ease of use As in the original TAM, systems that are easier to use will be perceived as more useful, compared to as effective, but less easily used systems.
Changes in cognitive instrumental influences with experience Contrary to the impact of social influences that diminish over time, the cognitive influences will maintain the same level of impact, as their effect on job performance will remain the same.

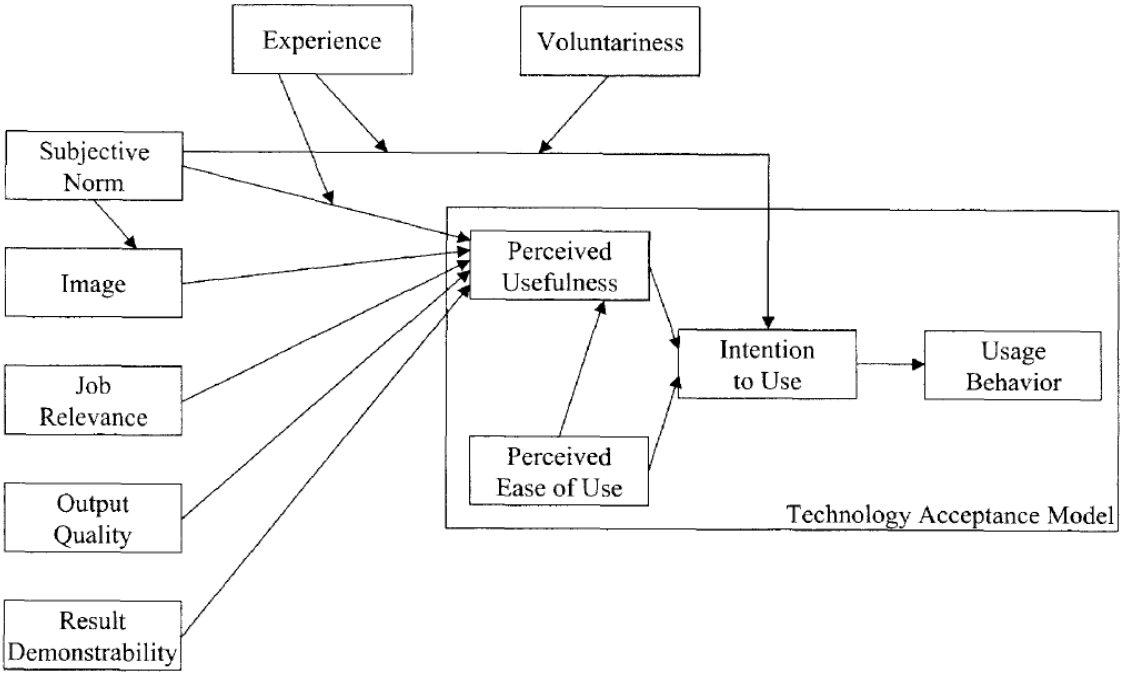


Figure 3.3: Proposed TAM2 - Extension of the Technology Acceptance Model (Venkatesh and Davis, 2000)

In another article published later the same year, Venkatesh (2000) studies the determinants of perceived ease of use. These are not included in the later cited versions of TAM2 (see e.g. Sullivan, 2016), but adds clarity to our understanding of the Technology Acceptance Model. According to (Venkatesh, 2000), the determinants for perceived ease of use are divided into two categories: Anchors, pre-existing beliefs about computers and computer usage that affects perception when no further information is available, and Adjustments, changes in perception that occur after trying a system out. These can be further dissected into six determinants, presented below:

Anchors

- Computer Self-Efficacy (Internal control)
    - The level of knowledge a prospective user has about computer technology in general will affect how easily they find a new system to use. Conceptualized as an individual difference variable that represents one's beliefs about her/his ability to perform a specific task/job using a computer (*sic*, Venkatesh, 2000)
- Perceptions of External Control
    - The level of help and guidance a prospective user believes they will get from support staff, co-workers or the developer when using a new system. In organizations, this is often formed from previous experience with introduction to new technology in the organization.
- Computer Anxiety (Emotion)
    - An individual's apprehension, or fear, of being faced with having to use a computer. If a person believes that computers in general are hard and even scary to use, they will perceive a new system to be more difficult to use, and reluctant to do so.
- Computer Playfulness (Intrinsic motivation)
    - The internal motivation for using the new system, based on what one may learn and achieve with usage. Those who are more playful and open to using new technology will try out new systems just for the sake of using it, and not only because they are told to. This internal motivation to use a system often lead to an underestimation of the system's level of difficulty to use, and it will be perceived as easier to use.

Venkatesh (2000) points out that some research suggests that there are internal relationships between the different anchors, such as computer playfulness and computer self-efficacy. A priori, this seems reasonable, as one can assume that someone who has an interest in exploring the opportunities offered by information systems will be more secure of their abilities when facing new systems. These internal relationships between the anchors are not explored further in the article but should be considered when developing marketing strategies for new information systems, such as mobile payment systems.

Adjustments

- Perceived Enjoyment
    - Intrinsic motivation to use a system might increase over time if the system in its own right is perceived as enjoyable to use. With increasing use of a system, the role of computer playfulness will be less important, in favour of perceived enjoyment.
- Objective Usability
    - Based on the actual efforts needed to use a system, as opposed to initial perceptions. For a user with computer anxiety and low self-efficacy, a system which does what it is supposed to without problems will appear more and more easy to use. On the other hand, a user who has high levels of computer playfulness and self-efficacy might find the ease of use of a system to decrease if it is hard to get the system to deliver the wanted results.

The second major expansion of TAM is the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis and Davis, 2003). This model reviews eight earlier models for user acceptance of technology, to form an integrated model for technology acceptance. The models reviewed are the Theory of Reasoned Action (the basis for TAM), TAM, The Motivational Model (Davis et al. 1992 cited Venkatesh et al., 2003), the Theory of Planned Behaviour (Ajzen, 1991 cited Venkatesh et al., 2003), the Model of PC Utilization (Thompson et al. 1991 cited Venkatesh et al., 2003), the Diffusion of Innovation Theory (Rogers, 1995) (discussed section 3.3.1), and the Social Cognitive Theory (Bandura, 1986; Compeau and Higgins, 1995b cited Venkatesh et al., 2003). The reason for creating a unified model was the multitude of available models explaining technology acceptance, that often lead to researchers needing to choose constructs from different models, or choosing their favourite, omitting some important characteristics of technology acceptance (Venkatesh et al., 2003). From the total of 32 constructs explaining user behaviour across the eight models, seven appeared significant direct determinants of either intention, actual usage or both in one or more of the models. *Attitude towards using technology, self-efficacy* and *anxiety* were theorised not to be direct determinants of intention. Self-efficacy and anxiety were omitted because they are indirect determinants of use that are a component of the construct of effort expectancy (ease of use) (Venkatesh et al., 2003).

The only model that found the two to be direct determinants of intention to use was Social Cognitive Theory, and this model does not have a construct similar to effort expectancy. Self-efficacy and anxiety by themselves do not add to explaining intention to use above and beyond effort expectancy.

Attitude towards using technology and similar cognitive constructs in the reviewed models were shown to be significant determinants of intention in some models, and insignificant in others. When looking into this, Venkatesh et al. (2003) found that the models where the attitude towards technology was a significant determinant did not include specific cognitions related to performance and effort expectancy. Cognitive measures are often captured by these constructs, and therefore attitude towards using technology could be omitted from the model.

The remaining four constructs, performance expectancy, effort expectancy, social influence and facilitating conditions were deemed direct determinants of usage and included in the model. In addition, Venkatesh et al. (2003) include four key moderators affecting the determinants in the model. These are gender, age, experience and voluntariness of use. Table 3.2 elaborates on the constructs and key moderators, and why they were included in the model. Figure 3.4 shows the UTAUT model, how the constructs affect behavioural intention and usage behaviour, and how the key moderators affect the constructs.

Table 3.2: Constructs and key moderators determining behavioural intention and use behaviour, UTAUT

Construct	**Definition**	**Key Moderators**
Performance Expectancy	The degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh et al., 2003). Derived from constructs related to extrinsic motivation in five of the reviewed models, and is the strongest predictor of intention across all these models. Remains significant as time goes on, and in both voluntary and mandatory usage settings.	*Gender:* Research indicates that men tend to be highly task-oriented (Minton and Schneider, 1980 cited Venkatesh et al., 2003) and therefore performance-oriented constructs are likely to affect them more than women. *Age:* Research (e.g., Hall and Mansfield, 1975; Porter 1963 cited Venkatesh et al., 2003) suggests that younger workers are more concerned with extrinsic rewards than their older co-workers, and will therefore be more affected by performance-oriented constructs.

Effort Expectancy	The degree of ease associated with the use of the system. Derived from constructs related to perceived ease of use and complexity in three of the reviewed models. Significant in both mandatory and voluntary usage settings, but diminishing over time as the user becomes more acquainted with the system.	*Gender:* Venkatesh and Morris (2000 cited Venkatesh et al., 2003) suggest that the impact of effort expectancy is more prominent for women than for men, possibly associated with perceived gender roles. *Age:* Increased age often mean more difficulty with processing complex stimuli and slower learning speed. Therefore, older workers will find new systems more difficult to use than their younger co-workers will. *Experience:* Previous and accumulated experience with the system lowers perception of difficulty. Connected to gender and age due to the aforementioned reasons.
Social Influence	The degree to which an individual perceives that important others believe he should use the new system. Derived from constructs on social norm and image in four of the reviewed models. Significant in mandatory usage settings, and not in voluntary settings, as there is no "social fallout" from refraining from using a voluntary system. Becomes insignificant over time, as increasing experience becomes more instrumental in determining use than extrinsic social pressure.	*Gender:* Theory suggests that women are more sensitive to the opinion of others than men (Miller 1976; Venkatesh et al.,2000 cited Venkatesh et al., 2003) *Age:* The need to be a part of a group is stronger in older workers, and therefore social influence affects them more (Rhodes, 1983 cited Venkatesh et al., 2003). *Voluntariness:* Social influence is only significant in mandatory usage settings. *Experience:* The effect of social influence diminishes as the user gains more experience with the system.
Facilitating Conditions	The degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system. Derived from constructs on perceived behavioural control, facilitating conditions and compatibility from three of the reviewed models. Significant in both voluntary and mandatory settings, but only in the period following training until a few weeks into usage. Significant on actual usage of a system, but not on behavioural intention.	*Age:* Older workers attach more importance to being able to receive assistance on the job (Hall and Mansfield 1975 cited Venkatesh et al., 2003). *Experience:* The effect of facilitating conditions increases with increased experience, as users find more ways to get help and support throughout the organization.

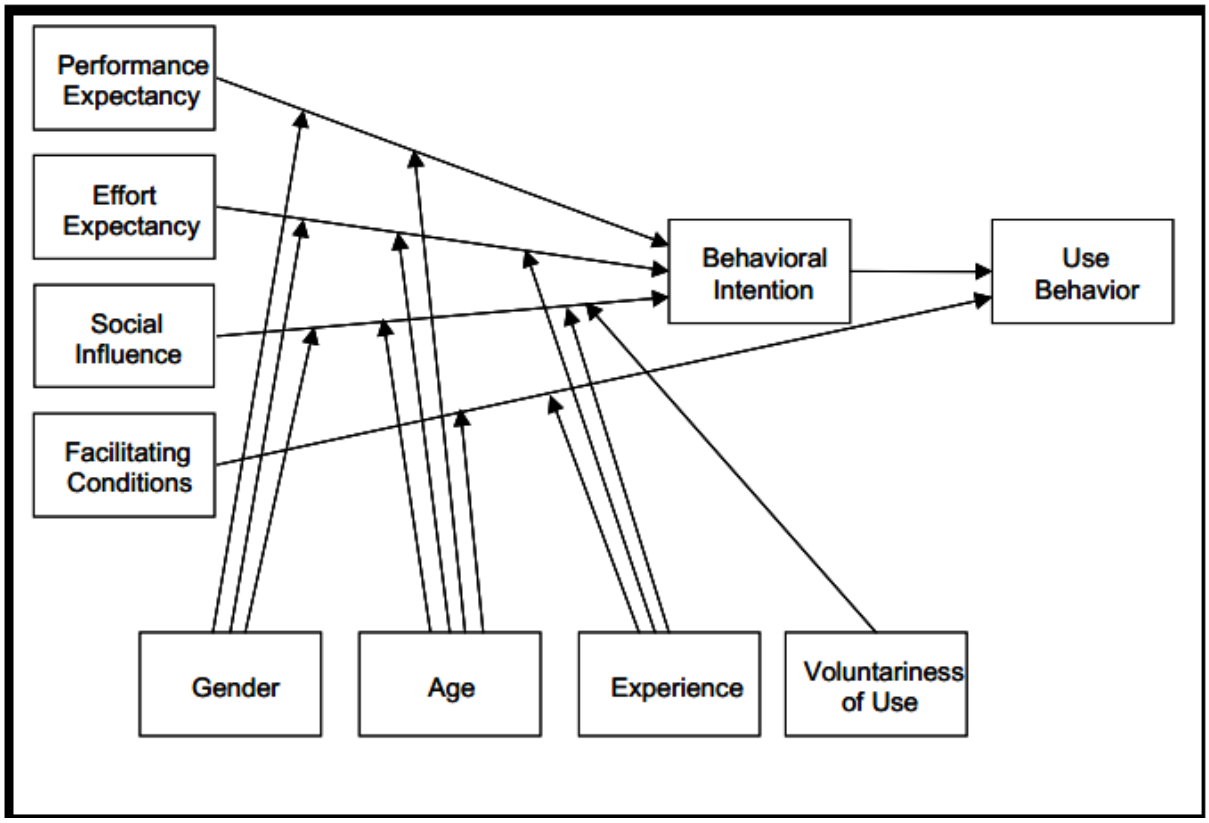


Figure 3.4: Research Model, UTAUT (Venkatesh et al., 2003)

Using data from four organisations over a six-month period, two where usage of the information system was perceived to be voluntary and two where it was perceived mandatory, the original eight models explained between 17 and 53 percent of the variance in user intentions to use information technology. Using the same data, UTAUT were able to explain 69 percent. In a separate test of two organisations, UTAUT explained 70 % of the user intentions (Venkatesh et al., 2003). Having outperformed the other models, the researchers concluded that UTAUT was a good fit for explaining usage intentions of information systems.

A TAM 3 has also been proposed in the context of e-commerce with an inclusion of the effects of trust and perceived risk on system use (Venkatesh & Bala 2008). To our knowledge, the only empirical testing of this model is the doctoral dissertation of Jeffrey (2015), and we, therefore, do not view TAM3 as an established model, and will not discuss it further.

3.2.2 Perceived Characteristics of Innovations and Multigroup Adoption

Successful diffusion of a payment system, such as mobile payment technology, is dependent on establishing a critical mass of both merchants and consumers. Consumers need to take the payment system into use, and the merchants need to install necessary hardware and software to process mobile payments. Plouffe, Vandenbosch and Hulland (2001) discuss what affects adoption intentions of new payment systems for both groups, and find common characteristics for both. At the time, there were few studies that focused on this multigroup view of an intermediating technology, and the article can be seen as a critique of the notion that there is only one adopting group, the end user.

Their research model is based on the work of Rogers (1995) (which is an earlier edition of Rogers (2003), presented in section 3.3.1), Davis et al. (1989) and Moore and Benbasat (1991). The latter, which we have not discussed earlier, is presenting the Perceived Characteristics of Innovations. This theory can be seen as a complement to the Technology Acceptance Model and explains which elements affect an adoption decision of an innovation. The measures are shown in figure 3.5 below; while a brief explanation for each measure is presented in table 3.3, as most of them are discussed before.

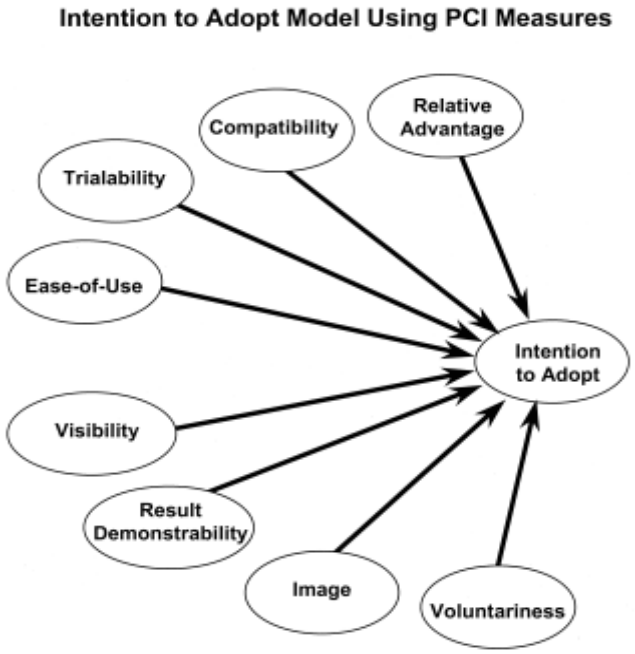


Figure 3.5: Intention to adopt model using PCI measures (Plouffe et al. 2001)

Table 3.3: PCI measures contents (Moore and Benbasat, 1991)

Measure	**Explanation**
Relative Advantage	The degree to which an innovation is perceived as being better than it's precursor
Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters
Trialability	The degree to which an innovation may be experimented with before adoption
Ease-of-Use	The degree to which an individual believes that using a particular system would be free of physical and mental effort
Visibility/Observability	The degree to which the results of an innovation are observable to others
Result Demonstrability/ Observability	The degree to which the results of an innovation is observable to the user (as better than the precursor)
Image	The degree to which use of an innovation is perceived to enhance one's image or status in one's social system
Voluntariness	The degree to which use of the innovation is perceived as being voluntary, or of free will

According to Plouffe at al. (2001), these characteristics of innovation adds to the user's value or perceived value from using the payment system. Value is a major driver for change and is, in B2B transactions, measured in monetary terms as the sum of the technical, economic, service and social benefits a customer gets from a supplier in exchange for the price they pay for a market offering (Anderson and Naurus, 1998). However, in the consumer market, which a mobile payment system is a part of, the definition is more complex. Here value is defined as perceived value, a combination of the monetary and emotional aspects that affects a transaction (Anderson and Naurus, 1998). Since consumers perceive the emotional aspects that give value to a market offering differently, a service provider must cover a lot of bases to ensure that their product is perceived as the best for all or most consumers. In addition, since value is a combination of monetary and emotional aspects, changing the price of a market offering might not affect the value, as the price change might affect other emotional perceptions for the user. It must also be noted that value takes place in a specific context, where the customer always has an alternative market offering to consider. Plouffe et al. (2001) agrees with these assertions and speculates that, in the multigroup view of payment

system adoption, consumers experience value as the degree to which the innovation improves the utility they receive from their consumption experience, while the merchants' value primarily is dependent on whether or not the innovation improves profit potential.

Plouffe et al. (2001) propose that there are five main constructs that might act as antecedent predictors to a decision to adopt a payment system. 1) Relative advantage, 2) compatibility, 3) trialability, 4) complexity and 5) observability. These or a subset of these are the same characteristics used by Rogers (2003) as the frame for technology adoption and the value proposition of each adopting group, depending on the specific nature of the innovation and the specific characteristics of the adopting group. This is proven effective and accurate for consumers, but to predict merchant adoption rate has in the past been shown to be more difficult, and the authors, therefore, suggests that market research is necessary preceding a launch of a payment system. The market research will aid the service provider in understanding the merchant's needs and what will provide value for them, as what is important for one merchant in one market might be completely different from one in a different market.

Plouffe et al.'s research model was empirically tested on a group of merchants and consumers in a Canadian city that participated in a pilot project on smart card usage. Merchants and consumers, both those taking part in the trial and those who were not, answered a survey on their experiences or thoughts about smart card usage and utility. The survey results showed support for the antecedents to smart card adoption proposed by the authors. The most significant antecedents to usage for consumers taking part in the trial were the relative advantage of smart cards versus other payment systems and the compatibility of using them with existing payment infrastructure. This was supported by the responses from non-participating consumers, who also valued the visibility of the innovation (underscoring the importance of marketing of new technological solutions) Consumers also appreciated the voluntariness of participating in the smart card trial, as they highly value being in control of their adoption decision. Both participating and non-participating merchants cited the relative advantage of the smart cards as the most important factors. Merchants want to see how implementing the new payment system will add to their profits. Other key results from the participating merchants were the importance of compatibility with existing business and the image enhancing effects accepting smart card payment had to their business offering. The authors also noted some differences between merchant perception of the smart cards and how

it would affect their business. This means that a service provider should have two different marketing strategies ready to attract both early and late adopters of a new payment system.

From this, we can conclude that innovations must prove an advantage faced with existing technology and that they must be compatible with existing infrastructure. It is also important to perform a good marketing campaign, and make visible that the new technology is an available payment option at points of sale.

3.2.3 Other factors contributing to merchant adoption decisions

Many researchers (Au and Kauffman, 2008; Apanasevic, Markendahl and Arvidsson, 2016; Ondrus, Lyytinen and Pigneur 2009) underscores the importance of network externalities in the diffusion and adoption of payment technologies. Colloquially referred to as the "chicken or egg problem" the common perception is that merchants will not adopt a new payment system unless there is a significant amount of customers using the system, while on the other hand, consumers will not adopt new payment system if the amount of locations they can pay using the system is too low. Solving the problem of network externalities is important to secure a stable user base of both consumers and merchants in a payment system landscape. Studies by Staykova and Damsgaard (2015) suggest that a viable way to ensure two-sided adoption is to launch a payment system as a pure P2P platform first, which consumers can use to make payments amongst themselves to split bills, send money home etc. When the amount of users reach a sustainable level, the service provider should expand on the service to feature more payment options, including retail payment. This way, merchants are more inclined to take the system into use because the market potential for customers is already significant.

In addition to motivational and network factors affecting merchant adoption of mobile payment systems, there are economic factors to consider. Au and Kauffman (2008) explores stakeholder issues in relation to payment technology adoption, and identify six key economic theories that affect merchant adoption of new payment schemes. Network externalities are already covered in this section. The next economic theory affecting merchant adoption of payment systems is Consumer choice and demand theory, which dictates that consumers have a set of preferences, in this case for payment systems, that guides them in the choice of a payment system. Consumers choose the one that gives them the most utility, which might be derived from time spent to perform transactions, monetary costs or bonuses (as is the case with credit cards connected to loyalty programs).

Users may also prefer multi-homing in their payment patterns, where they use multiple payment systems interchangeably (Au and Kauffman, 2008). For merchants, this means that them accepting mobile payments must appear as the most favourable alternative for customers. Third, the merchant must consider the switching costs associated with adopting a new payment system. Switching costs might include both monetary costs associated with installing or upgrading existing payment hardware and software to accommodate mobile payments and intangible costs associated with learning how to use the new system (Au and Kauffman, 2008). These learning costs might be a high barrier to a adopting a new payment system for a merchant that does not experience an extrinsic motivation to do so. The monetary costs might also be associated with contractual costs from losing current benefits from a previous provider of a payment system. However, in the case of adopting mobile payments in a cash-based society, this should not pose a problem unless the change happens in a society where suppliers reward merchants for using cash instead of using electronic payment systems. To our knowledge, this is not the case in any market.

Next, there is the theory of complementary goods, which states that two products offered together mutually increase the value of each of them (Au and Kauffman, 2008). For a merchant adopting a mobile payment system, he might offer other mobile financial services, which will make his business more attractive for consumers. Lastly, there are theories connected to adoption and diffusion, already covered in this chapter, and theory on information technology value. As mentioned in section 3.2.2 value for a merchant is directly associated with the monetary benefits from changes in his market offering. Au and Kauffman (2008) differentiates between potential value that the merchant perceives and use as a guide to his decision on whether or not to adopt, and realised value after the adoption and a period of usage when the merchant can evaluate if the adoption decision was favourable to his income or not.

In addition to these economic theories, Au and Kauffman (2008) discuss the interplay between the actors in a financial transaction system, noting how governmental regulations might work for or against the success of mobile payment systems. If legal bodies are in support of mobile payment and make it easy for service providers to reach a critical mass of users, merchants will be more inclined to take part in the payment system. They also predict that mobile payment is likely to substitute current payment technologies. According to Au and Kauffman (2008), credit cards represent an inferior system that works “well enough” and that

when more consumers and merchants use mobile payments, the shortcomings of credit card will become more evident and boost mobile payment uptake. It is worth noting that their empirical examples all derive from developed economies where credit cards are the preferred mode of payment, and therefore this example might not be applicable everywhere. However, the inferiority of credit cards might be a good incentive for cash-based societies to skip this phase of payment technologies entirely and switch directly from cash to mobile payments. The switch to mobile payment also rises legal issues (Au and Kauffman, 2008). If mobile payments are connected to credit cards, the mobile transactions act as an instrument for credit card payments, with credit cards still being the de-facto dominant payment system. This can be counteracted with having a disconnected digital currency, but this raises the question of regulation. Should electronic currency be governed by a central bank, or should it be self-governed, as is the case with most cryptocurrencies today? The fear of having a non-governed currency is that it might be used to finance criminal activity since the money is harder to trace and connect to specific individuals. The most likely case is that mobile money will still be connected to the currency laws and regulations of a country, as we see today with banks being a stakeholder in most mobile payment systems (Nesse et al., 2016). In systems where mobile accounts are not connected to a conventional bank account, the accounts are still subject to the bank's financial rules and regulations, and a part of the country's financial system.

3.2.4 Two-sided pull motivation and influence from vertical partners

As pointed out earlier, merchants are not motivated to adopt a new payment system if they do not see a demand from customers for mobile payment or believe that it will be beneficial for them to offer mobile payment to their customers. In addition to this, there might be a motivational effect coming from other actors in the merchant's value chain that incentivise adoption of a new payment system. Dr Farrah Arif (interview 19.04.2017) mentioned the potential gains that are to be had if a merchant might be able to pay his wholesaler through mobile payments.

Iacovou, Benbasat and Dexter (1995) explores Electronic Data Interchange (EDI) adoption in small organisations, meaning how firms adopt technology used to share data between them. Since electronic payments from a technical point of view is transfer of information, their findings can be applied to mobile money usage between organisations, for example a merchant and his supplier. According to the authors, there are three main major factors that

influence EDI adoption among small firms: organisational readiness, perceived benefits and external pressure to adopt. For mobile payment, the implications of the first two are already covered in this chapter. The factor of external pressure to adopt resonates well with what Dr Arif identified as a possible motivational factor for merchant adoption of mobile payment systems in our interview and is supported by other researchers (Zhu, Dong, Xu and Kraemer, 2006; Barua, Konana, Whinston and Yin, 2004).

External pressure can be divided into two different types of influence: Influence from competitors' actions and imposition from trading partners (Iacovou et al., 1995). Pressure to adopt a new technology if a competitor does can be seen as an internal motivation and arise from a merchant's fear of being outdated in a competitive setting, as he believes the competitor will be able to outperform him in the market due to usage of the new technology (Iacovou et al., 1995; Zhu et al., 2006). Pressure from trading partners can arise in three different ways, which all serve as external motivation for the merchant. In the first scenario, the trading partner recommends the merchant to adopt the new technology, giving advice on how it could improve business vis-a-vis both customers and the trading partner (Iacovou et al., 1995). In the second scenario, the trading partner, usually a large supplier or customer responsible for a lot of the merchant's revenue promises specific rewards if the merchant adopts the new technology. The rewards might include better prices for goods sold, better prices for goods bought, or increased business cooperation (Iacouvou et al., 1995). In the third scenario, the trading partner threatens the merchant with sanctions, such as ending their business dealings or worse trade conditions, if the merchant does not adopt the new technology (Iacouvou et al., 1995).

Zhu et al. (2006) indicate that partner readiness might positively influence a decision to adopt a new technology. This means that a merchant might be more inclined to adopt a new technology if their trading partners are already using it. In a mobile payment scenario, we may imagine that cross-industry adoption of mobile payment among wholesalers will act as a powerful incentive for merchants to adopt mobile payment themselves.

3.2.5 Framework for Merchant Adoption of Mobile Financial Services

As pointed out by Dahlberg et al. (2015), research on merchants in the mobile financial services ecosystem is scarce. One notable exception is the research presented in (Mallat and Tuunainen, 2008), that uses empirical qualitative and quantitative date from Finnish companies and their thoughts about mobile payment to formulate a conceptual framework for merchant adoption of mobile payment services. The framework contains 18 propositions, separated into enablers, drivers and barriers to merchant adoption of mobile payment systems. Strangely enough, the article is omitted from Dahlberg et al.'s (2015) literature review, but the 2005 conference paper in which the research was first presented is included in Dahlberg et al. (2008). To our knowledge, this framework represents the most comprehensive and specialised model analysing merchant adoption of mobile payment systems, and therefore this is the framework we want to base our refined model on.

The framework was created based on a multimethodolical approach, with both qualitative and quantitative data. The qualitative data was collected from leading personnel from 15 different Finnish companies in vending (2), content providers (4), mobile vendors (1), ticketing (3), restaurants (3) and grocery stores (2) (Mallat and Tuunainen, 2008). The interviewees were asked about their company's adoption of, or intention to adopt, mobile payment systems, and what barriers, benefits and drawbacks they associated with accepting mobile payment for their goods and services. The quantitative data was collected from a survey sent out to 1549 Finnish companies across 19 different industry groups deemed most likely to use mobile payment (Mallat and Tuunainen, 2008). The questionnaire got a low response rate of only 9,2 % or 143 acceptable responses. A low response rate is usual for surveys sent out to companies, and the fact that the authors were investigating an, at the time, emerging technology may also contribute to the low response rate. The responses combined with a literature review of other technology acceptance studies together made up the basis for making the framework.

Based on their quantitative and qualitative studies, Mallat and Tuunainen formulated 18 propositions for merchant mobile payment adoption, shown in figure 3.6.

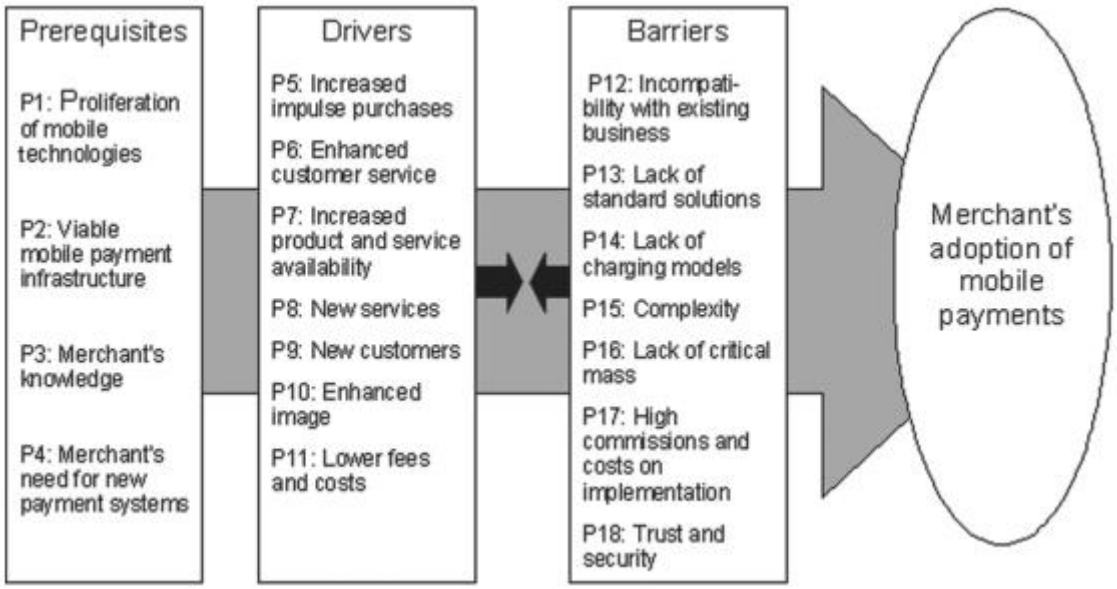


Figure 3.6: Research framework for merchants' adoption of mobile payments (Mallat and Tuunainen, 2008)

Prerequisites

The prerequisite-category described by Mallat and Tuunainen (2008) includes factors that neither could be defined as incentives for mobile payment adoption or surmountable challenges related to adoption. Rather, the prerequisites are defined as factors that are required to be in place in order for mobile payment adoption to take place; they are prohibitive challenges.

- *P1: Wide proliferation of mobile technologies is a prerequisite for merchant adoption of mobile payments.*

Mallat and Tuunainen (2008) state that the penetration of mobile phones was double that of broadband internet access in Finland in 2008. One of the interviewees that also pointed this out was a mobile content distributor, meaning a provider of wallpapers, ringtones, screensavers etc. The usage of mobile phones was not listed as a problematic factor, a barrier, due to the fact that mobile proliferation was already very high in Finland in 2008.

- *P2: A viable mobile payment infrastructure is a prerequisite for merchant adoption of mobile payments.*

According to Mallat and Tuunainen (2008), the reliability of the technical infrastructure in a given region is imperative for the proliferance of any mobile payment solution. Frequent downtime, rejected transactions and connectivity issues would render deployment of mobile payments extremely difficult, if not impossible. Propositions 1 and 2 are closely related to the concept of facilitating conditions from (Venkatesh et. al., 2003), which states that the adopter's perception of the organisational and technical infrastructure of a system influences his or her decision on whether to adopt or not. The concept of facilitating conditions directly affects the actual use behaviour of the system rather than the behavioural intention, supporting P1 and P2's prerequisite-categorisation.

- *P3: Knowledge on the mobile payment systems is a prerequisite for merchant adoption of mobile payments.*

All of the 15 interviewees and most survey respondents from Mallat and Tuunainen's study (2008) indicated that they would like to test out a mobile payment solution before deciding on whether to adopt it or not. In this proposition, the term 'knowledge' concerns first-hand experiences a merchant has prior to the adoption decision. This proposition is akin to the concepts of perceived usefulness (Davis et al., 1989), perceived ease of use (Davis et al., 1989; Venkatesh and Davis, 2000; Moore and Benbasat, 1991), anchors and adjustments (Venkatesh, 2000), effort expectancy, facilitating conditions (Venkatesh et al., 2003), and trialability (Moore and Benbasat, 1991).

- *P4: A need for an alternative payment system is a prerequisite for merchant adoption of mobile payments.*

According to Mallat and Tuunainen (2008), merchants that were in need of an alternative payment solution were more susceptible to adopt some sort of mobile payment solution. The authors defines this proposition as a prerequisite. It does however, share characteristics with the drivers presented in the following paragraph. As this proposition addresses a merchant's perception on whether or not a mobile payment solution can be applicable for their business and consumer demands, the most closely related concepts are perceived usefulness (Davis et al., 1989), job relevance (Venkatesh and Davis, 2000) and consumer choice and demand (Au and Kauffman, 2008).

Drivers

The driving factors identified in Mallat and Tuunainen (2008) are described as possible benefits that mobile payments will offer to merchants. If a driving proposition is true, the proposition works as an incentive for a merchant's decision to adopt mobile payment solutions. In essence, the drivers are instruments to enable increased sales, reduced costs and provide new services for merchants.

- *P5: The potential increase in impulse purchases drives merchant adoption of mobile payments.*
- *P6: Expected enhancement in customer service drives merchant adoption of mobile payments.*
- *P7: Expected increase in the availability of products/services drives merchant adoption of mobile payments.*
- *P8: An expected possibility to offer new services drives merchant adoption of mobile payments.*
- *P9: An expected possibility to have new customers drives merchant adoption of mobile payments.*

Increasing impulse purchases would increase the merchant's overall revenues, and Mallat and Tuunainen (2008) argue that having additional methods for paying for goods and services could increase the number of impulse purchases in various ways. In the context of mobile payments and televised advertisements, for example, an individual might be able to purchase a product the moment that individual decides that he or she has a need for it. This could lead to interesting developments in the field of customer behaviour, and merchants could potentially exploit the feature in a way that their revenue is increased. Mallat and Tuunainen (2008) argue that the possibility to choose between various forms of payment alternatives could be regarded as increased customer service. Often times, customers have a preferred payment method, and failing to meet the needs of a customer could prove disadvantageous for a merchant. Furthermore, they found that for merchants in the vending machine business, sales would increase as a consequence of enabling mobile payments if consumers did not have cash at hand. The ability for merchants to offer new kinds of services is also highlighted as a potential driving factor.

Mallat and Tuunainen (2008) found that merchants expect that use of mobile payments would attract new customers, such as young people who have a lot of experience using mobile phones and tech-savvy people who prefer digital payments to conventional cash.

- *P10: Expected positive effects on company image drive merchant adoption of mobile payments.*
- *P11: Expected reduction of fees or payment processing costs drives merchant adoption of mobile payments.*

Companies that care about company image may also find mobile payment solution compelling. Adoption of a brand new payment solution could be regarded as a forward-leaning move by consumers who are fascinated by innovation and technology, thus contributing positively to the company brand/image. The last driver suggested by Mallat and Tuunainen (2008) revolves around fees and costs. The more merchants perceive mobile payment solutions to be more cost-efficient compared to alternative payment methods, the more likely they are to adopt.

Propositions P5-P11 are linked with the concepts of perceived usefulness from (Davis et al., 1989), image and social influence (Venkatesh and Davis, 2000), complementary goods (Au and Kauffman, 2008), output quality (Venkatesh and Davis, 2000), result demonstrability (Venkatesh and Davis, 2000; Moore and Benbasat, 1991), performance Expectancy (Venkatesh et al., 2003), network externalities (Au and Kauffman, 2008; Apanasevic, Markendahl and Arvidsson, 2016; Ondrus, Lyytinen and Pigneur 2009), relative advantage (Moore and Benbasat, 1991), and switching costs (Au and Kauffman, 2008).

Barriers

In the same way that a driver creates incentives for merchant adoption of mobile payments, a barrier causes friction in the adoption process. In their qualitative interviews, Mallat and Tuunainen (2008) found that if the barriers outweighed the drivers, merchants were less susceptible to adopt mobile financial services. Furthermore, if barriers are present for merchants already utilising mobile payments, they impede increased use of MFS.

- *P12: Incompatibility with existing business inhibits merchant adoption of mobile payments.*
- *P13: Lack of standardization inhibits merchant adoption of mobile payments.*

- *P14: Lack of suitable charging models inhibits merchant adoption of mobile payments.*

The three barriers P12, P13 and P14 concern themselves with the lack of compatibility and standardisation with regard to merchants' existing business models. In their interviews, Mallat and Tuunainen (2008) found that this was especially an issue for merchants in the POS and retail business. The interviewed merchants believed that mobile purchases were mostly apt for use in low-value transactions. Furthermore, competing mobile payment solutions, and implicitly lack of standardisation could cause confusion among consumers and merchants and consequently impede the adoption rate. The proposition regarding a lack of suitable charging models also addresses the issue of incompatibility. Depending on how the mobile bank account is set up, the method for billing will vary. A charging model that is inapt for making POS purchases could be a significant barrier to adoption.

Compatibility and standardisation related issues are closely connected with the concepts of perceived ease of use (Davis et al., 1989; Venkatesh and Davis, 2000; Moore and Benbasat, 1991), perceived usefulness (Davis et al., 1989), job relevance (Venkatesh and Davis, 2000), result demonstrability (Venkatesh and Davis, 2000; Moore and Benbasat, 1991), performance expectancy (Venkatesh et al., 2003), effort expectancy (Venkatesh et al., 2003), facilitating conditions (Venkatesh et al., 2003), compatibility (Moore and Benbasat, 1991), Lack of standard solutions (Guo and Bouwman, 2016), output quality (Venkatesh and Davis, 2000), and consumer choice and demand (Au and Kauffman, 2008).

- *P15: Complexity inhibits merchant adoption of mobile payments.*

Mallat and Tuunainen (2008) use the term 'complexity' to describe difficulties related to the act of performing a transaction between a consumer and a merchant. In Finland in 2008, the most prolific mobile payment solution was by using SMS. In this paradigm, the consumer has to remember or obtain the merchant's identification number (phone number) and code for identifying the transaction itself. This is a cumbersome process with many steps. The interviewed merchants claimed that speed mattered, and one of the interviewed merchants stated that mobile payment solutions should be as easy to use as cash payments. Being able to easily integrate a mobile payment solution into the pre-existing transaction systems was also considered of importance. Perceived ease of use (Davis et al., 1989; Venkatesh and Davis, 2000; Moore and Benbasat, 1991), effort expectancy (Venkatesh et al., 2003) and facilitating

conditions (Venkatesh et al., 2003) are all relevant concepts to consider when evaluating this proposition. The propositions regarding complex systems are closely related to theoretical concepts such as perceived ease of use (Davis et al., 1989; Venkatesh and Davis, 2000; Moore and Benbasat, 1991), effort expectancy (Venkatesh et al., 2003), and facilitating conditions (Venkatesh et al., 2003).

- *P16: Lack of critical mass inhibits merchant adoption of mobile payments.*

Lack of critical mass represents another important barrier to merchant adoption of mobile payment solutions. The interviewed merchants expressed concern that if consumers did not use mobile payment solutions, the customer base for merchants and the associated revenues would be limited. The issue of critical mass is also present for consumer adoption of mobile financial services. The same principles apply: If the consumer cannot utilise a mobile payment solution for merchant/purchasing purposes, the consumer will be more hesitant to adopt the solution itself. This is what is often referred to as the 'chicken or egg problem' (Nesse et al., 2016). (Au and Kauffman, 2008) address the issue of critical mass in relation to merchant adoption of mobile financial services, and thus substantiate proposition 16.

- *P17: High costs inhibit merchant adoption of mobile payments.*

The costs associated with mobile payment solutions can take various forms. Not only do the (often inconspicuous and large) transaction commissions to telecom operators play a role in a merchant's willingness to adopt mobile solutions, but the distinct costs of training personnel and acquiring hardware and software also have an impact (Mallat and Tuunainen, 2008). If a mobile payment solution incur additional costs for a merchant, and as long as cash and card payments are more cost efficient compared to mobile payment solutions, merchants will undoubtedly be hesitant to enable mobile payments for their ventures. The concept of switching costs (Au and Kauffman, 2008), described in general terms in section 3.2.3 support Mallat and Tuunainen's (2008) suggested proposition. Normally, competition contributes to a cost decrease for end users. Still, competition in the mobile payment scene could prove challenging for the ecosystem, and the end user by implication. If more telcos or banks enter the mobile payment scene, one could expect to see competition driving end users' costs down. However, as more entrants arrive and new (yet similar) solutions are introduced, it is reasonable to believe that standardisation and cross-platform compatibility may suffer. This affects propositions P12 and P13.

- *P18: Lack of perceived security and trust in mobile payment service providers inhibits merchant adoption of mobile payments.*

Banks and financial institutions rely on being trusted by their customers. The concepts of trust and security also apply to mobile financial services. In their interviews, Mallat and Tuunainen (2008) found that the interviewees' perceived trust in banks and telcos was relatively high. Intuitively, this seems reasonable, as Finland in 2008 was a developed country with a high proliferance of both bank accounts and mobile subscriptions in the population. However, we believe this to be an interesting barrier to shed new light on in an international context, as trust in banks and financial institutions vary greatly across borders. As Demirguc-Kunt et. al. (2015) states, the lack of trust is often caused by discrimination against certain population groups, corrupt governments interfering with bank's business or economic uncertainty. Restoring or gaining trust in financial institutions can be an inconvenient challenge (Demirguc-Kunt et. al., 2015). Issues with trust, security and legality are emphasised upon by Au and Kauffman (2008) as crucial for the adoption process.

3.2.6 The topicality of the 2008-framework

Mobile phone technology is rapidly evolving, and a lot has happened since the publication of Mallat and Tuunainen (2008)'s research and merchant adoption framework for mobile payment systems. Although smartphones with internet access first were launched in the late 1990's in Japan (Rose, 2001) and the Blackberry had moderate success in the US in the early 2000's, one can argue that large-scale worldwide smartphone adoption started with the launch of the Apple iPhone in 2007. The iPhone was one of the first phones with a large touch screen surface instead of using a keyboard or a stylus to perform tasks. When Mallat and Tuunainen performed their research, new communication protocols such as NFC were still in their infancies, with the first phone supporting NFC being released in 2010 (Hildenbrand, 2010).

In our empirical research, we conducted an interview with Niina Mallat, co-author of (Mallat and Tuunainen, 2008), on the relevancy of the original framework. In this section, we will present her views on the topicality of the 2008-framework. It should be noted that 1) Niina Mallat no longer has mobile payment as her research area and 2) her first-hand experiences and empirical observations are based on her perceptions of mobile payment in Finland. Still, as one of the only authorities on merchant adoption of mobile payment research, her insights are well reasoned and valuable for our research topics.

Mallat states that the biggest change in the mobile payment business has been of technological nature. At the time of the empirical surveys, smartphone proliferation was in its infancy. The mobile phones that were dominating at the time were feature phones that had small screens, limited processing power and very specific and simple functionality. The mobile content scene has changed drastically with the introduction of smartphones, where content is mainly distributed through native apps such as Google Play or Apple Store and not through SMS-based services. Today, smartphones are more like computers, with tablets, PCs and smartphones sharing much functionality (Niina Mallat, interview 27.04.2017). After the introduction of the smartphone, screens have become larger and the computational power of the personal phone has increased significantly. This has paved the way for new functionality. The large screen interface and the touch screen functionality is debatable more intuitive to operate in comparison to a 'classical' mobile input interface with 3x4 numerical buttons. This also changes the possible interfaces that may be offered for a mobile payment solution.

The development of mobile payment solutions have has been stagnant compared to the development in mobile technology, Mallat says. The available technology enables much more today than it did in 2008, but the service offering is lacking in terms of what is possible and what is useful for customers, and therefore merchants as well. Looking back on the past nine years, the degree of innovation in mobile financial services, and especially merchant payments, has been lower than expected. One of the factors contributing to the low degree of innovation is the low level of apparent value added for banks. A possible explanation might be the that the magnitude of competition and competitiveness to provide mobile payment services between banks has been low, resulting in few incentives to develop services that disrupt the status quo. Both consumers and merchants in Finland seem to be satisfied with their current product offering when it comes to payment solutions, and there is next to no push or pull motivation from any direction that can disturb this sense of complacency (Mallat, interview).

Mallat states that most of the constructs and propositions suggested in the original framework are relevant today. The prerequisites listed in the original framework still form the foundation for wide mobile payment penetration among merchants, and the drivers and barriers address issues of timeless nature. What may have changed since 2008 is how the propositions are interpreted. More businesses are compatible with mobile payments today than in 2008

because of technological development, the introduction of apps, the improved user interface, the ease to present a product and the payment process itself (Mallat, interview).

3.2.7 Refining the framework for merchant adoption of mobile financial services

As we have seen in the previous section, the propositions in Mallat and Tuunainen's (2008) framework cover the discussed concepts from section 3.2.1, 3.2.2, 3.2.3 and 3.2.4 to a large extent. In order to substantiate the validity of the propositions in the framework, we have made an assessment of concepts from other theory that correlate with the propositions in the framework. With this assessment, we extract the common denominators between the general technology adoption models and the framework for merchant adoption of mobile financial services. The concepts, C1 to C22, are explained in sections 3.2.1 through 3.2.4.

If any of the propositions from the framework suggested in (Mallat and Tuunainen, 2008) are not reflected by the above-mentioned concepts, their validity should be evaluated. Along the same lines, if any of the discussed theoretical concepts, C1 to C22, are not reflected in the propositions from the framework in (Mallat and Tuunainen, 2008), propositions that do cover these concepts may need to be added to account for this discrepancy. Furthermore, validating the concepts against the propositions in the framework will give an indication as to if any of the frameworks prerequisites, drivers and barriers to merchant adoption might be misplaced in a current setting. A visualisation of the comparison between theoretical concepts and the propositions in the framework is shown in table 3.4.

Table 3.4: Cross-references of theoretical concepts on technology acceptance

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22
P1			x																			
P2			x																			
P3	x	x		x	x	x																
P4		x					x	x														
P5											x											
P6		x							x	x												
P7		x							x		x	x										
P8		x										x	x									
P9		x							x			x	x	x								
P10		x							x													
P11		x										x	x		x	x						
P12	x		x		x		x					x	x				x					
P13	x	x						x		x								x				
P14	x																					
P15	x		x		x																	
P16		x												x								
P17																x						
P18																			x			

C1: Perceived ease of use

C2: Perceived usefulness

C3: Facilitating Conditions

C4: Anchors and Adjustments

C5: Effort Expectancy

C6: Trialability

C7: Job Relevance

C8: Consumer Choice and Demand

C9: Image and Social Influence

C10: Output Quality

C11: Complementary goods

C12: Result Demonstrability

C13: Performance Expectancy

C14: Network Externalities

C15: Relative Advantage

C16: Switching costs

C17: Compatibility

C18: Lack of standard solutions

C19: Legal issues, regulations

C20: Subjective norm

C21: Internalization of Social Influence

C22: Influence from vertical partners

We see from table 3.4 that the topics not covered by Mallat and Tuunainen's (2008) framework are those that explore extrinsic and intrinsic motivation stemming from a merchant's relationship with their vertical partners. The concepts of subjective norm (Venkatesh and Davis, 2000), internalization of social influence (Venkatesh and Davis, 2000) and influence from vertical partners (Iacovou et al., 1995; Zhu et al., 2006; Barua et al, 2004) discussed in sections 3.2.1 and 3.2.4, address these topics.

The possible benefits of using suppliers and wholesalers as a motivational pull factor to induce merchant uptake of mobile payment systems were also pointed out by two of our interviewees. Therefore, we want to add another proposition to the existing framework:

- *P19: The influence from vertical partners favourable to adopting a mobile payment system may act as a driver for merchant adoption of mobile payment.*

In the original framework, proposition 2, a viable mobile payment infrastructure is a prerequisite for merchant adoption of mobile payments, is categorised as a prerequisite. We suggest that the term 'viable' in this context should be interpreted as a bare minimum. In our interviews, Dr Farrah Arif and Oddvar Risnes both pointed out the challenges related to a faulty technical infrastructure in Pakistan.

"There are multiple problems. It is not just that the merchants are not ready. Even if merchants take the leap of faith, the technology still fails. The same goes for the customers. If they take this leap of faith and are innovative customers, the technology fails."

- *Dr Farrah Arif (interview 19.04.2017)*

"You might experience issues with the electric grid. This is especially true in rural areas."

- *Oddvar Risnes (interview 11.05.2017)*

Electricity is a key component for mobile payment infrastructure. These examples demonstrate that even though the core infrastructure to allow digital payments are in place, instability and inconsistency could act as a deterrent for merchants who could potentially adopt new forms of payment services. While the basic infrastructure could be present, the reliability could also be compromised. Because of this, we suggest splitting proposition 2 into a 'need to have'-proposition (fundamental infrastructure) and a 'nice to have'-proposition (reliable infrastructure). We, therefore, recommend adding another barrier to the original framework:

- *P20: Infrastructural technical instability and inconsistency inhibit merchant adoption of mobile financial services.*

Additions and alterations to the framework proposed by Mallat and Tuunainen (2008)

In the original framework, proposition P4, a merchant's need for a new payment system, is categorised as a prerequisite. However, it could be argued that a merchant could choose to adopt a new payment system even when satisfied with their current solution for payment acceptance. For instance, given that mobile payment solutions are more cost efficient than cash payments, a transition from cash to mobile would be perceived as very appealing to the merchant. One could argue that a 'need' for a new payment system encompasses both cost efficiency and other incentivising propositions, but if we were to follow this logic, it would effectively undermine the remaining drivers in the original framework. Furthermore, we believe that the introduction of a new payment system by itself may instil a sense of curiosity with the merchant and that this curiosity will act as a driver to adopt the system. This resonates well with the different aspects affecting perceived usefulness in TAM2 (Venkatesh and Davis, 2000). If merchants perceive the adoption of mobile payments to be useful in any way, they might choose to adopt it regardless of an outspoken need for a new payment system. As Dr Arif contemplated in our interview:

> *"Think about a merchant. He or she has a lifestyle, and mobile wallets should be an important part of his or hers lifestyle. He or she is getting a kick out of it, he is the fashionable dude around, he is technology driven and not handling cash."*
>
> - *Dr Farrah Arif (interview 19.04.2017)*

Thus, we suggest that proposition 4 should be re-labelled as a driver, and not a prerequisite.

Consumer trust is a prerequisite for financial institutions (EY, 2016). In the original framework, proposition 18, lack of perceived security and trust in mobile payment service providers inhibits merchant adoption of mobile payments, is categorised as a barrier:

> *"The interviewees described trust in payment service providers and the security of payment solutions as important* ***prerequisites*** *for the adoption of mobile payments. (...) The findings suggest that trust in mobile payment service providers is currently not the most significant* ***barrier*** *for merchant adoption in the Finnish market. However, there were some doubts about the security and technical reliability by the merchants who had no adoption intentions."*
>
> - *Mallat and Tuunainen (2008, p. 46-47)*

To our understanding, Mallat and Tuunainen (2008) justify the categorization by referencing the interviewees' high level of trust in financial institutions. All other propositions in the original framework have a higher degree of abstraction and are generalizable for all markets. We do not believe that this proposition should be regarded in any other manner, as trust and security are such vital elements for financial institutions. There are no evident drawbacks of categorising trust and security as prerequisites. For merchants with little trust in financial institutions, service providers must be aware of and cater to this prerequisite before even attempting to launch a mobile payment system. Total diffusion of mobile financial services can not happen if the general level of trust in financial services is low.

In summary, we believe that the framework would be improved by adding a proposition concerning motivational factors from vertical partners, separating the proposition on technical infrastructure into fundamental infrastructure and reliable infrastructure and re-categorising the proposition on trust and security from a barrier to a prerequisite. Our refined framework is shown in figure 3.7.

Revised framework for Merchant adoption of MFS		
Drivers	**Barriers**	**Prerequisites**
P5: Increased impulse purchases P6: Enhanced customer service P7: Increased product and service availability P8: New services P9: New customers P10: Enhanced image P11: Lower fees and costs P4: Merchant's need for new payment systems P19: Influence from vertical partners incentivise uptake of mobile payment	P12: Incompatibility with existing business (including vertical partners) P13: Lack of standard solutions P14: Lack of charging models P15: Complexity P16: Lack of critical mass P17: High commissions and costs on implementation ~~P18: Trust and security~~ P20: Infrastructural instability	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge ~~P4: Merchant's need for new payment systems~~ P18: Trust and security

Figure 3.7: Refined framework for merchant adoption of mobile payment systems

3.3 Diffusion of mobile payment technology

In addition to understanding the cognitive processes behind an individual merchant's decision to adopt a mobile payment system, it is important to understand how a mobile payment system is spread through a market and how different user groups are influenced to accept new technology. This section reviews the Diffusion of Innovation theory, and one of its most used applications: "Crossing the Chasm"

3.3.1 Diffusion of innovation theory

One of the most cited works within diffusion research is the Diffusion of Innovation Theory by Rogers (2003). Initially published in 1962, his book contains extensive research in how innovations are diffused, synthesised from 508 studies of diffusion across scientific fields. According to Rogers (2003), diffusion is defined as the process in which an innovation is communicated through certain channels over time among the members of a social system. This means that the main elements or actors in a diffusion process are (1) the innovation, (2) the formal and informal channels through which information about the innovation is spread, (3) the time it takes for information and usage to spread, and (4) the social system through which information about the innovation is spread. (Rogers, 2003, p.40)

An innovation, as perceived by adopters, is characterised by (1) relative advantage to the technology that precedes it, (2) the compatibility it has with existing values, past experiences and needs of adopters, (3) the complexity of perceived usage, (4) the trialability or degree to which the innovation can be tested before full adoption, and (5) observability, the degree of visibility in results of an innovation (Rogers, 2003, p.43). These characteristics resonate well with the elements discussed in the models for technology acceptance.

According to Rogers (2003), diffusion of an innovation is carried out through five user groups, with members of the same degree of innovativeness: Innovators, Early Adopters, Early Majority, Late Majority and Laggards. The progress from one user group to another is driven by change agents who communicate with opinion leaders; influential people in a user group that through their words or actions influence people in the next adopter group to take part in usage of the innovation (Rogers, 2003, p. 51). The change agents may be members of the social group or be outsiders who gain access to the group through the opinion leader or a gatekeeper (ibid).

Diffusion of innovation follows an S-curve, with the Early and Late Majority contributing to the most rapid increase in market share (see figure 3.8). This model is also known as the technology adoption life cycle model (TALCM).

Innovators are the first group to make use of an innovation and make up 2,5 % of the potential user base (Rogers, 2003, p.239). They are characterised by having a venturesome mind and being interested in new business opportunities. Their social network is more often based on geographically dispersed similar-minded people and not their local community. They often have access to financial resources that makes it possible to accept a loss from failed ventures and have the ability to understand complex technical aspects of the innovation. They are risk takers who can accept setbacks when a plan fails. They may not be respected in their community, but their role as gatekeepers in introducing new ideas and innovation to a community is vital for it to be generally accepted later (Rogers, 2003, p. 248). The role of an Innovator may well be filled by a Lead User (Von Hippel, 1986), a type of intermediary link between a manufacturer and a user, who often contribute their feedback through the development of an innovation, of who themselves create the innovation to fill a need they experience in their life or business (ibid).

Following the Innovators, the next group to adopt an innovation are the Early Adopters, they see early the potential in the new technology or product, and make up 13,5 % of the potential user base (Rogers, 2003, p.239). They are characterised by observing a high degree of respect in their local communities, and often fulfil the role of opinion leaders. Potential adopters look to the Early Adopters for information and guidance about innovations and they are considered as "the person to check with" before deciding to adopt or not. They have a close level of innovativeness to the majority, and therefore their opinions are easy to comply with for the later adopters. The position of respect the Early Adopters have in their communities may also be a driver to adopt new technology, as the adoption decision demonstrates a willingness to try new things, and at the same time justify to the community why the decision was a good one (Rogers, 2003, p. 248).

When the Early Adopters have made a technology mainstream, they are followed by the Early and Late Majority, each making up 34 % of the potential user base each (Rogers, 2003, p.239, 246). The Early Majority adopt the innovation just before the average user of the system and provide a connection between the Early Adopters and those who adopt relatively late. This is crucial in the diffusion process.

The Early Majority are more deliberate in their decision process than the Innovators and Early Adopters, taking their time in making the adoption decision. (Rogers, 2003, p. 249).

The Late Majority are sceptics and make their adoption decision right after the average user. In contrast to the earlier group, who are driven by an interest to explore the innovation, the Late Majority are often driven be economical necessity or peer pressure to adopt the innovation. They also have the advantage of observing real life results from the previous adopters before making their decision, although this comes at the price of lacking first-mover advantage. The Late Majority are cautious about investing their scarce resources without ensuring that the investment will pay off (Rogers, 2003, p.249).

Lastly, we find the user group of Laggards, making up 16% of the potential user base (Rogers, 2003, p.239, 246). These are risk averse, slow movers whose point of reference is the past, what has been traditionally done, and what other traditionalists think of an issue. The Laggards tend to be suspicious of innovations and change agents and have a lengthy decision process where the adoption decision takes far longer than earlier adopters due to a long time spent acquiring information. Their economic situation commands total certainness that the innovation will not fail before investing, and this can rationalise the lengthy decision process (Rogers, 2003, p. 250).

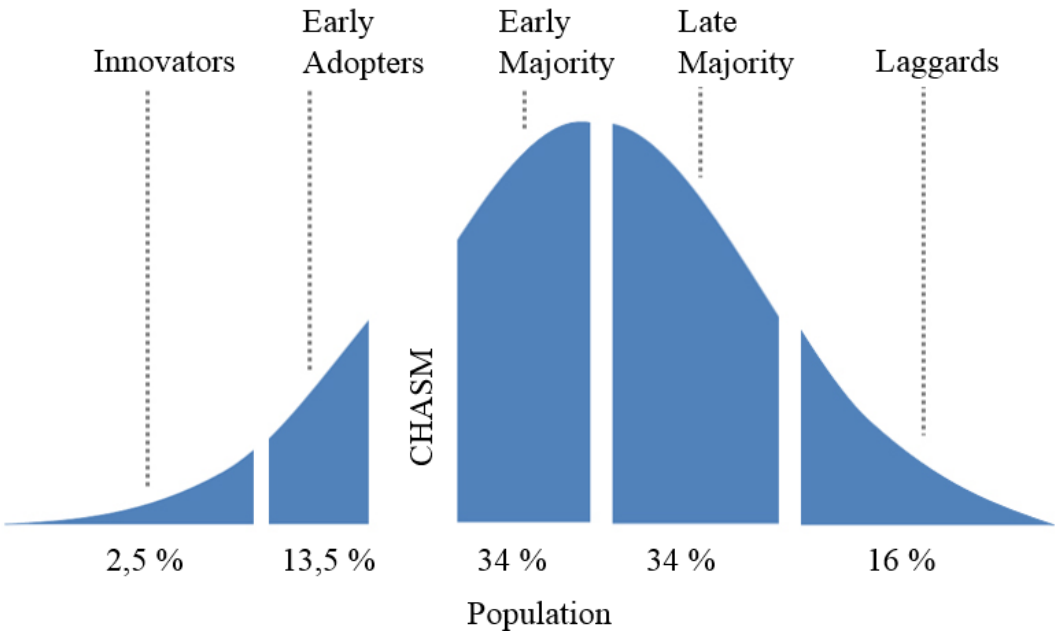


Figure 3.8: Diffusion of innovations, the technology adoption lifecycle, showing successive adopter groups and market share

Understanding of the diffusion process shown in figure 3.8 is fundamental for a manufacturer or service provider launching an innovation. Without critical mass, and a diffusion process that is moving from one group of adopters to another, market success is highly improbable, of not impossible. Possible strategies for transitioning between adopter groups are explained in the next section.

3.3.2 Crossing the chasm

Diffusion of Innovation theory explains how innovations spread through a population and categorises adopter groups according to their adoption characteristics. In his book, Crossing The Chasm (2014), Geoffrey Moore presents strategies that companies could implement in order to ensure a successful transition from the Early Adopters to the Early Majority. Crossing the Chasm focuses on disruptive innovations, a concept that was introduced by Joseph L. Bower and Clayton M. Christensen in 1995 (Bower and Christensen, 1995). In order for an innovation to be regarded as disruptive, it must comply with a set of characteristics. A disruptive innovation could be classified as a product or a service that generates new value, has a momentous impact on society, undermines traditional value networks and uproots companies who currently hold positions as market leaders in associated industries (ibid).

Mobile financial services and B2C mobile merchant payment solutions comply with these characteristics in several ways. New market value is created by enabling merchants to offer new services (as discussed in section 3.2.5). Furthermore, payment solutions have been dominated by two methods in recent history: cash and card-based payments. Mobile financial services allow consumers to perform peer-to-peer transactions and merchant payments through their mobile phone, a ubiquitous device that "everyone" has at hand at all times, possibly eliminating the need for cash at hand or a credit/debit card. This could contribute to a destabilisation and displacement of several established actors within selected value networks such as Visa, MasterCard and actors in the business of cash-based money transfers. In the West, we have seen an incredible development in the amount of banked individuals. In most OECD countries, 90-100 % of the adult population were registered with their own bank accounts. This development has happened over the course of a few decades (World Economic Forum, 2015). However, in many less developed countries, the amount of financially excluded unbanked individuals is high (Demirguc-Kunt et. al., 2014). Cash-based payments are the dominating monetary transaction method. At the same time, trends show that mobile

phone penetration is high in these countries. A high proliferation of mobile phones combined with the possibility of mobile payment solutions creates an opportunity for providers of mobile financial services to be at the frontlines of the battle for financial inclusion. Because of mobile financial services, the path to financial inclusion for underserved countries may not be paved in the same way as it has been in more developed countries.

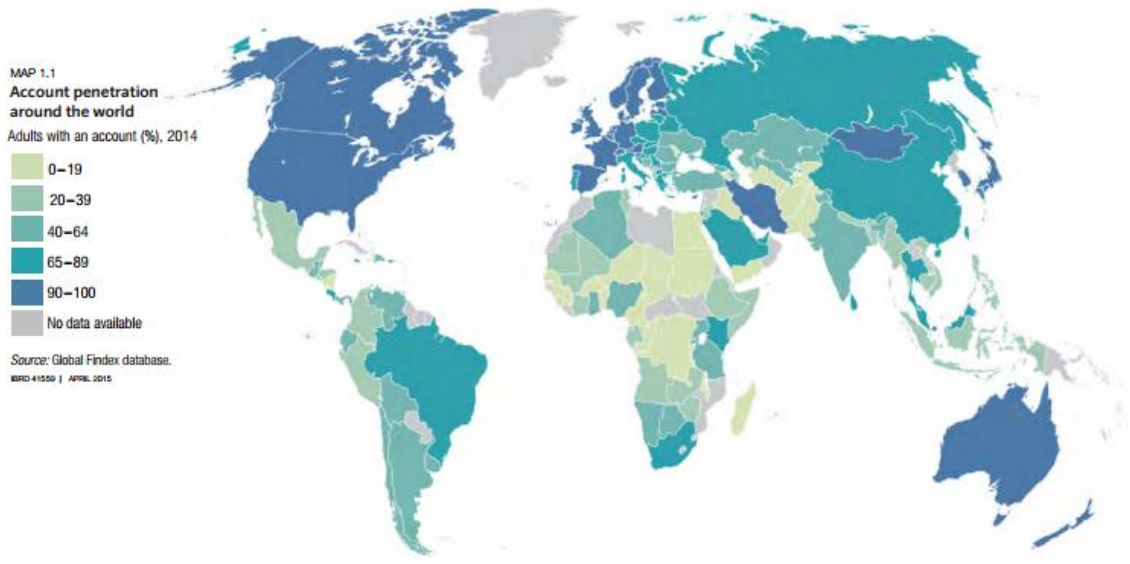


Figure 3.9: Bank account penetration around the world (Demirguc-Kunt et. al., 2014)

In Crossing The Chasm (2014), Geoffrey Moore suggests that there are gaps between the different user groups on the technology adoption life cycle, and he argues that one of these gaps is larger than the others. The technology adoption lifecycle resembles a continuous process, but in reality, there are disruptions in between the user groups. In order to acquire customers from the various user groups, a company must adapt their strategies accordingly. The largest gap, or the 'chasm' itself, according to Moore (2014), exists in the space between the Early Adopters and the Early Majority. This gap makes out the biggest challenge for product developers that seek to distribute their product to a broad public. The Early Majority represents a large, pragmatic group of consumers, and if companies are unable to capture their attention, the future of their new product is bleak (Moore, 2014).

According to Moore (2014), it is not uncommon to see high-tech enterprises focus on increased sales when attempting to gain access to the Early Majority. This is a defective strategy, Moore argues. Increased sales should the goal, but not the means (at that point in time). Instead of attempting to capture the attention of the user group as a whole, product

developers and companies should focus on niche markets within the Early Majority to cross the chasm effectively. In his book, Moore makes use of the D-day analogy to explain this generalised marketing strategy. The analogy consists of four steps that could be applied and adapted to most high tech disruptive innovations. The four steps are: Target your point of attack, assemble an invasion force, define the battle, and launch the invasion. This analogy is presented in more detail below.

Moore (2014) suggests that this strategy is applicable for most disruptive high-tech products/industries. As discussed in the section above, merchant mobile payment systems represent a disruptive, high-tech addition to the payment industry. Therefore, we argue that the core concepts from Moore's (2014) publication could and should be applied when developing marketing strategies with the intention of delivering merchant mobile payments to the masses.

In the first step in the D-day analogy, the company must choose their 'point of attack'. This implies choosing one or two target segments and deciding to focus all marketing efforts towards these. For a launch of mobile payment merchant solution, these segments could be small or medium sized retail stores, actors within the vending machine industry, ticketing/transportation, and so on. In this first stage, it is crucial to map the primary market identifiers, meaning the target segment itself, the value proposition of the product, the reason to buy the product and the competitors within the same market. How to distribute and position the product to the Early Majority, how to define the pricing model and gaining an oversight over the network connections in the target segment is also crucial in this first step. Any existing knowledge about the target segments should be used when determining point and method of 'attack' (Moore, 2014).

The second step of the analogy is to 'assemble an invasion force'. In this step, the most crucial consideration to be made is to gain a full understanding of the whole product, as well as defining the value propositions of your product in its entirety. What pains do the merchants in the target segment have, and how does the product address these pains? What gains can the merchants expect after adopting mobile payment solutions? Powerful allies and partners can be of use when attempting to solve the merchants' problems. This second step is where we believe that Mallat's framework will be of most use, as it defines drivers, barriers and prerequisites, elements that, to some extent, concerns themselves with pains and gains for merchants (Moore, 2014).

In the third step, the product developers must ‘define the battle and the battlegrounds’. This step represents a switch from a product-oriented view to a market-oriented one. The transition is illustrated in figure 3.10. Suppliers must develop their blueprint and decide how they want to advertise the strengths and weaknesses of their product. Here, it is essential to emphasise the solution’s points of difference compared to competing solutions, and how your solution responds to the merchants’ outspoken pains and gains. Therefore, the communication strategy should build on the findings from the second step in the D-day analogy. Use this to establish control in the selected target segment by arguing rationally and appealing emotionally (Moore, 2014).

The fourth and last step in the D-day analogy is to ‘launch the invasion’. Here, the company must use the earned knowledge from the previous steps to select fitting distribution channels to the target segments. In the setting of mobile payments, it would be sensible to establish contact with actors within the early majority who are somewhat familiar with the new product. From here on out, sales to the target segments are the most important instrument in order to gain market dominance. The MFS provider must be able to adapt to the target segment’s needs and wants to some degree. By focusing solely on one or two target segments, this should be a more manageable task compared to a situation where the entire group of Early Adopters are targeted (Moore, 2014).

An illustration of the diffusion of innovation-process is shown in figure 3.10. This figure was first suggested by Geoffrey Moore in Crossing The Chasm (2014) and depicts the steps before and after the transition from the early adopter-group to the Early Majority-group. The concepts from the D-day analogy are intended to be applied in step (2).

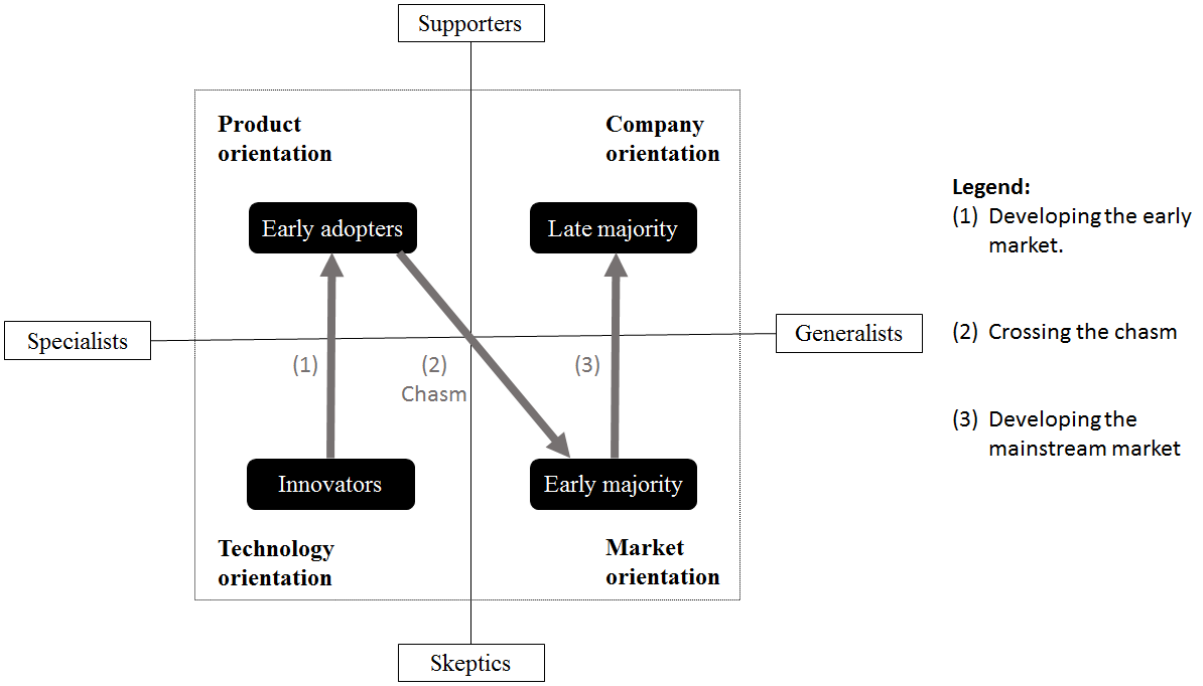


Figure 3.10: Competitive-Positioning Compass (Moore, 2014)

3.4 Placing the framework for merchant mobile payment adoption in a dynamic context

The original framework from (Mallat and Tuunainen, 2008) presents drivers, barriers and prerequisites for merchant adoption of mobile financial services in a theoretical setting. When applying this model to a real world setting in order to explain and develop adoption strategies, more considerations must be made. Aiming for the total market of merchants, and assessing all merchants by the same criteria is an ineffective approach for diffusion of merchant mobile payment solutions. The diffusion of innovation theory underlines that during the technology adoption lifecycle, the different user groups have different preferences. By combining diffusion of theory and the revised framework from (Mallat and Tuunainen, 2008), a dynamic framework for merchant adoption of mobile financial services can be developed.

In order to adapt the revised framework to the diffusion of innovation theory, we weigh the drivers and barriers according to the different user groups' preferences and requirements. By studying the characteristics of the different user groups, it is possible to identify the most decisive propositions for merchant adoption of mobile financial services. These are the propositions a provider of mobile financial services should target when marketing mobile payment solutions to the given category of merchants. As discussed in section 3.2.5, the

prerequisites are of paramount importance for diffusion of the technology, and therefore it weighing and prioritising them is trivial. The prerequisites must be satisfied regardless of the position on the technology adoption lifecycle.Cultural influences, established value networks, dominating payment technologies and merchant's way of business affect the dynamic framework. Therefore, for country-specific use cases, further alterations to the dynamic model must be made. In this section, however, we present the general dynamic framework for merchant adoption of mobile financial services.

3.4.1 First steps

The first step towards full market penetration includes convincing the Innovators to adopt the mobile payment solution. The Innovators are characterised as curious, venturesome, tech-savvy and risk-taking individuals. Furthermore, the Innovators are said to have access to financial resources and are willing to pay a high price in order to be the first to an underdeveloped market. They see themselves as technological pioneers and care about their public image. In a merchant setting, the Innovators introduce new technologies to their businesses in order to attract new customers who are similar minded.

In the context of Mallat and Tuunainen's (2008) framework, we suggest that providers of mobile payment solution prioritise drivers P9 and P10 due to their appeal to curious and exploring individuals. The Innovators will also perceive that mobile payment solutions will give way to increased impulse purchases, enhanced customer service, new services and increased product and service availability. However, according to (Rogers, 2003), their primary interests are to be ahead when it comes to business and technology. Because of their meagre concern over fees, costs and influence from established actors, drivers P4, P11 and P19 are put in the low influence-grade in the refined framework.

As for the barriers, issues related to lack of standard solutions, complexity, critical mass, and costs are given low priority. As Rogers (2003) stated, the Innovators are solution oriented, they have the ability to adapt to complex technological environments, they have access to financial resources, and care more about interacting with similarly minded individuals rather than gaining access to mainstream markets. Barriers of high importance are related to incompatibility and infrastructural instability. Weaknesses in the basic infrastructure and incompatible or irrelevant payment methods could discourage or prohibit the Innovators from adopting new technology.

	Initial market launch → Innovators		
Proposition weight	**Drivers**	**Barriers**	**Prerequisites (unweighed)**
High influence	P9: New customers P10: Enhanced image	P12: Incompatibility with existing business P20: Infrastructural instability	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge P18: Trust and security
Medium influence	P5: Increased impulse purchases P6: Enhanced customer service P7: Increased product and service availability P8: New services	P14: Lack of charging models	
Low influence	P4: Merchant's need for new payment systems P19: Influence from vertical partners incentivise uptake of mobile payment P11: Lower fees and costs	P13: Lack of standard solutions P15: Complexity P16: Lack of critical mass P17: High commissions and costs on implementation	

Figure 3.11: Factors affecting merchant adoption of mobile financial systems, initial market launch to Innovators

3.4.2 Convincing the Early Adopters

When the innovator-merchants are conquered, the next step is to focus marketing efforts on the Early Adopters user group. Gaining traction in this user group requires the provider of MFS to be more product-oriented, rather than technology oriented. The Early Adopters represent a larger group of the total market compared to the Innovators, and they are described as a fairly tech-savvy group of users and often hold the role as opinion leaders in local communities. The Early Adopters draw experiences from the Innovators, yet they are seen as more rational and prudent compared to their predecessors.

In order to persuade the merchants within the category of Early Adopters, providers of MFS should focus on drivers P5 to P10 and appeal to the Early Adopters rational nature by communicating a potentially increased customer base and enhanced customer services, as well as the possibility of acquiring new, curious customers.

Even though the Early Adopters represent a larger share of the total market, MFS providers should not be overly fixated at leveraging cost efficiency. Early Adopters are, like the Innovators, curious by default. The mainstream market is still well out of sight at this step. Relieving stress from barriers P12 and P20 should still be the primary focus at this step. At

this point, the provider should also ensure that issues related to complexity, lack of standardisation and lack of charging models are catered to.

	Innovators → Early Adopters		
Proposition weight	**Drivers**	**Barriers**	**Prerequisites (unweighed)**
High influence	P5: Increased impulse purchases **(+)** P6: Enhanced customer service **(+)** P7: Increased product and service availability **(+)** P8: New services **(+)** P9: New customers P10: Enhanced image	P12: Incompatibility with existing business P20: Infrastructural instability	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge P18: Trust and security
Medium influence	P11: Lower fees and costs **(+)** P19: Influence from vertical partners incentivise uptake of mobile payment **(+)**	P13: Lack of standard solutions **(+)** P14: Lack of charging models P15: Complexity **(+)** P16: Lack of critical mass **(+)**	
Low influence	P4: Merchant's need for new payment systems	P17: High commissions and costs on implementation	

Figure 3.12: Factors affecting merchant adoption of mobile financial systems, Innovators to Early Adopters

3.4.3 The Early Majority - crossing the chasm

When the Early Adopters have opened the door to the market for a mobile payment system, the mobile payment service provider face, according to Moore (2014), their biggest challenge in the diffusion process: Using traction from the Early Adopters and Innovators' decision to adopt the payment system to attract the Early Majority. Compared to the Early Adopters, the Early Majority are more concerned about issues related to cost-efficiency and have a longer decision-making process than the earlier adopters. To lessen their own risk, they usually want to await making their decision until proven results are shown in the performance of the earlier adopters. However, they are eager to adopt the mobile payment service once their concerns have been mitigated. The crossing from the Early Adopters to the Early Majority requires the MFS provider to be more market oriented than earlier. To attract the Early Majority, an MFS provider should design their "battle plan" in accordance with the D-Day analogy, as presented in (Moore, 2014), described in section 3.3.2.

How the “battle strategy” from the D-day analogy should be employed in practice will differ from market to market, and the MFS provider must adjust their target segments accordingly.

In order to accommodate the Early Majority’s preferences and requirements, MFS providers should direct their attention to propositions that comply with the user group’s interest for cost-efficiency, network connections and risk aversion. Propositions P11 and P19 stand out as the most influential drivers for Early Majority adoption of mobile payment. Catering to the trading partner network around the merchant, and having these partners adopt mobile payments, may prove a successful strategy to attract merchants to the mobile payment solution. Propositions P4-P9 are given medium priority, as the Early Majority are less driven by internal curiosity, and more by cost efficiency and the need to stay competitive. In contrast to earlier user groups, merchants who belong to the Early Majority are less concerned about the signal effect of offering new payment technology. Thus, the proposition P10 is given low priority.

Barriers P12, P13 and P17 are given high priority. Since the Early Majority merchants are risk averse, they will not be willing to adopt a mobile payment system unless they know for a fact that it is compatible with their existing business, and does not incur high costs for usage. In the same way, if a standard solution for mobile payment is not present, the Early Majority will not risk adopting one in fear of choosing a solution that later fails. At this point in the diffusion process, it is reasonable to believe that the drawbacks related to infrastructural instability have been improved. Therefore, P20 is given medium priority.

	Early Adopters → Early Majority		
Proposition weight	**Drivers**	**Barriers**	**Prerequisites (unweighed)**
High influence	P11: Lower fees and costs **(+)** P19: Influence from vertical partners incentivise uptake of mobile payment **(+)**	P12: Incompatibility with existing business P13: Lack of standard solutions **(+)** P17: High commissions and costs on implementation **(++)**	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge P18: Trust and security
Medium influence	P4: Merchant's need for new payment systems **(+)** P5: Increased impulse purchases **(-)** P6: Enhanced customer service **(-)** P7: Increased product and service availability **(-)** P8: New services **(-)** P9: New customers **(-)**	P14: Lack of charging models P15: Complexity P16: Lack of critical mass P20: Infrastructural instability **(-)**	
Low influence	P10: Enhanced image **(-)**		

Figure 3.13: Factors affecting merchant adoption of mobile financial systems, Early Adopters to Early Majority

3.4.4 Convincing the rest

The following user groups are Late Majority and the Laggards, making up 34 percent and 16 percent of the total market, respectively. The Late Majority are characterised sceptical towards innovations and lack curiosity towards newfound technological solutions. Their main drive is to find solutions that are economically beneficial for their business, and they make their decisions based on experiences from the earlier adopter groups. They care about their established network, they are risk-averse and often spend a lot of time contemplating on whether to adopt or not. Following the Late Majority, we find the Laggards. The Laggards show even more scepticism towards adopting new technologies. This last user group look to the past when adopting strategies, and they rely on tried and tested methods. They do not take risks and need to be fully ascertained that their businesses will not suffer economically after adopting a new practice. The merchants who belong to these two categories are well established and are resilient with regard to including new products in their portfolios.

The drivers that resonate the most with the characteristics of the Late Majority and Laggards are P6, P7, P11 and P19, as these consider improvement of existing business, influence from vertical partners and cost-efficiency. New customers and the development of new services or products are given medium priority, while enhancement of image is in the bottom tier.

Among the barriers, top priority is given to propositions P14, P15, P17 and P20 as these barriers problematize issues related to convenience, costs and infrastructural integrity. Medium priority is given to P12, P13 and P16. They contain concepts such as incompatibility, standard solutions and lack of critical mass. At this point in time, it is reasonable to believe that many of these issues will have been solved at an earlier stage. However, in a situation where merchants have embraced a mobile payment system more rapid than consumers, lack of critical mass might still be an issue for some merchants in these groups, especially among the Laggards who do not wish to take financial risks. The framework for laggard- and Late Majority adoption is shown in figure 3.14.

	Early Majority → Late majority and Laggards		
Proposition weight	**Drivers**	**Barriers**	**Prerequisites (unweighed)**
High influence	P11: Lower fees and costs P19: Influence from vertical partners incentivise uptake of mobile payment P6: Enhanced customer service **(+)** P7: Increased product and service availability **(+)**	P14: Lack of charging models **(+)** P15: Complexity **(+)** P17: High commissions and costs on implementation	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge P18: Trust and security
Medium influence	P4: Merchant's need for new payment systems P5: Increased impulse purchases P8: New services P9: New customers	P12: Incompatibility with existing business **(-)** P13: Lack of standard solutions **(-)** P16: Lack of critical mass P20: Infrastructural instability	
Low influence	P10: Enhanced image		

Figure 3.14: Factors affecting merchant adoption of mobile financial systems, Early Majority to Late Majority and Laggards

3.5 Summary of theoretical foundation

In this chapter, we have reviewed different models for technology acceptance and used them to validate the framework for merchant adoption of mobile payment solutions developed by Mallat and Tuunainen (2008). Concepts from the technology acceptance models correlate strongly with the propositions in the framework and are well founded in empirical studies. Over the course of evaluating the theory and through our interviews, we also discovered another factor influencing merchant adoption behaviour, namely external pressure from vertical partners. We believe this to be of such importance that it should be added to the framework.

We also discovered a drawback in the framework in that it does not take into consideration the heterogeneity of merchants, and has a static approach to adoption decisions. The diffusion of innovation theory explains that technology adopters can be divided into different groups with different characteristics, preferences and concerns when it comes to technology acceptance. With this in mind, we further extended the framework to allow for a more dynamic approach that will allow MFS providers to focus their marketing attention on the most prudent merchant segment at any given time in its diffusion. Our revised framework, or frameworks, could act as a guide for MFS providers in not only identifying the stage of diffusion for their technology but also to predict how to attain a larger market share in the future. Our revised framework will be used to evaluate the launch of a mobile payment service in Pakistan in chapter 4 and to propose possible launch strategies for a POS mobile payment system in Myanmar in chapter 5.

Chapter 4 - Mobile Money in Pakistan

With more than 202 million inhabitants, Pakistan is the seventh most populous country in the world (CIA, 2017a) and an emerging market for mobile services (GSMA, 2016a). Despite about 75 % of the country having 3G coverage, only 47 % of the population are registered as active mobile subscribers as of December 2016 (GSMA, 2016a). GSMA states in the same report that mobile uptake is slowly growing in the country and will reach about 50 % in 2020. However, Dr Farrah Arif pointed out that often men buy cell phones for their wives and family members and that the uptake may, therefore, be higher (Arif, interview) than GSMA's numbers indicate. This is supported by the total number of mobile subscriptions, which were 139.1 million in March 2017 (Pakistan Telecommunication Authority, 2017), meaning many subscribers own more than one SIM-card that they may or may not share with family members. The ratio of smartphones is about 26 % (Oddvar Risnes, interview 11.05.2017). The number of people with cell phones is higher in cities and urban areas than in rural parts of the country (Arif, interview). Another explanation for the low number of mobile users may be a mandatory registration act from 2015, which demanded all mobile subscriptions in the country to be connected to a biometric ID, following a terror attack in Peshawar in 2014, where the government suspected unregistered SIM-cards as one of the terrorists' means of communication. This registration process reduced the number of active pre-paid SIM cards in Pakistan from 215 to 115 million, connected to 45 million unique biometric IDs (Nesse and Hallingby, 2016).

The coverage of traditional financial services through banks is low, with only 13 % of adults having a bank account in 2014 (World Bank, 2017). In Pakistan, there is a low level of confidence in banks, a bad service level in banks and the country remains a cash-based society (Arif, interview). This might explain why so few Pakistani open bank accounts. Since the introduction of credit cards two decades ago, there are still very few ATMs available, especially in rural areas, and stores accepting credit card payments are the exception rather than the rule (ibid). Dr Arif also believes that it takes a lot of courage for a poor person to walk into a bank to open an account and perform financial services and that even for those better off they still have bad customer service experiences at the banks. As Dr Arif pointed out in our interview:

"A) Customers are not happy with going to the bank and talk to the bankers because the customer service is really really bad. B) There is also a perception from the customers that there will be a lot of hassles when opening up a bank account and making a transaction. Again, people sitting on the other side of the table are not really helpful. So it's more of the hassle, more of the cumbersome operations the banking sector has developed rather than insecurity and lack of trust."

- *Dr Farrah Arif (interview, 19.04.2017).*

Despite the obvious need for financial inclusion left by this low level of bank account usage, the uptake of mobile wallet accounts is still very low, with just under 20 million mobile accounts registered, corresponding to ~10 % of the population. Of those 20 million accounts, about half of them are classified as "active" accounts, meaning it has been opened or used to perform at least one transaction in the last 180 days (State Bank of Pakistan, 2017). In addition, 53 % of those who have a mobile account also have a conventional bank account (Nesse and Hallingby, 2016), meaning that mobile accounts do not fulfil their potential for offering financial inclusion in Pakistan. OTC solutions are still the dominant mean to perform mobile money transactions. 51 % of all transactions were carried out through an OTC solution in the 4th quarter of 2016, down from 69 % in the 3rd quarter of 2015 (State Bank of Pakistan, 2017). Based on this, we can assume that if the decline in OTC usage has continued, m-wallet transactions will have surpassed OTC transactions since the last report was published by the State Bank of Pakistan.

4.1 Social and regulatory factors affecting uptake of mobile accounts

4.1.1 Society overview

Pakistan is largely a cash-based society. Consumers prefer to use cash to make their payments, and merchants prefer to be paid in cash (Arif, interview). According to Dr Arif, the culture promotes cash as the best option for payment, and people do not feel comfortable using digital money like credit cards and mobile payment. When asked by Dr Arif on why he did not use mobile wallets for his transaction, a merchant said:

"I don't stop people from paying with mobile money, but I think it's also easier for me to have cash. The reason being that I too have to make payments [in cash]"

- *Cited by Dr Farrah Arif (interview, 19.04.2017).*

We will get back to the notion about merchants making their payments in cash later.

The main social structure in Pakistan is the extended family, with the males holding power positions. Families are headed by a male (husband/father) who is often the only source of income for the family (Kwint Essential, 2017). Despite having the first democratically elected female head of state in a Muslim country (History.com, 2009); (Benazir Bhutto, 11th Prime Minister of Pakistan 1993-1996) Pakistan remains a patriarchal society, ranking 147th out of 171 countries in the 2015 UN Gender Inequality Index (United Nations Development Programme, 2016). Women are expected to take care of the household while their husbands are at work and the women who work usually work as teachers or tutors. In urban areas, there is a shift in the gender inequality, with more women assuming professional roles to contribute to the family (Pal, 2000).

Migrant Pakistani workers contribute to their family by sending money home, with migrant workers in Saudi Arabia sending the highest amount of remittances. Those living away from their family, such as military personnel, also contribute to their household economy through remittances (Arif, interview; Alam, 2016). About 40 % of the population live in urban areas, and multiple languages are spoken in the country, with Urdu and English being the official languages (CIA, 2017a). The adult literacy rate is 57 % (GSMA, 2016a). This also leads to a gap in technological literacy, where solutions that offer simple communication is essential. Dr Arif provided us with an example on how technology could aid even those with a low level of literacy:

"The penetration of the smartphones that is happening in Pakistan right now, even my household staff, they have started sending me images of notes, because they can't read English. They just take pictures and send them on WhatsApp. And I can see that they are taking some pride into it. They cannot type on a cell phone, so they might scribble something on a paper, take a picture and then send it. This is a cool thing to do for them. So I think this is what we need to develop in a market."

- *Dr Farrah Arif (interview, 19.04.2017)*

4.1.2 Regulations on branchless banking in Pakistan

Branchless banking, which mobile money is a part of, is in Pakistan regulated by the Banking Policy and Regulations Department, a subdivision of the State Bank of Pakistan. The regulations aim to define branchless banking and the activities it constitutes, and to be a set of minimum standards of overall information security, customer protection and risk management to be followed by the banks that desire to offer mobile banking services (State Bank of Pakistan, 2016). Since branchless banking cannot be undertaken by a bank alone, the regulations also serve to aid mobile network operators, technology service providers and other involved parties to understand their roles and responsibilities. The regulations state that the only model allowed for mobile banking in Pakistan is bank-led (ibid). This means that a telecom operator wishing to include mobile banking in their service portfolio must enter into a joint venture or similar cooperation with a bank. This might also explain why the State Bank of Pakistan use the names of payment services and banks interchangeably in their Quarterly Branchless Banking Newsletter. The regulations allow banks to establish one-to-one, one-to-many or many-to-many relationships with telecom operators (ibid), meaning that a bank might be the financial backbone of one or multiple mobile payment services, or enter into a larger network of multiple banks and telecom operators. Alternatively, branchless banking may be done using other agents than telco, such as Pakistan Post, chain stores etc. (ibid).

The regulations permit the following activities to be offered by the branchless banking service: opening and maintaining a BB account, account-to-account fund transfer (between a customer's own accounts or other people's accounts), account-to-person fund transfer (persons not having an account), person-to-person fund transfer (OTC solutions for non-account holders), cash-in and cash-out (at bank-branch counters, ATMs or agents), bill payments (also for non-account holders at agent locations), merchant payments using a BB account, loan disbursement/repayment, and to send or receive remittances (State Bank of Pakistan, 2016). Should a bank wish to offer other services, they must comply with all rules and regulations for banking in Pakistan and notified of to the State Bank of Pakistan (ibid). The regulations define three levels of accounts, with increasing transaction limits and Know-Your-Customer requirements associated with the opening of the account. Level 0, or basic accounts, require the customers to provide his CNIC (national ID card), get their picture taken, accept account terms and conditions and have the information verified by NADRA (the National Database & Registration Authority) when opening the account. The account must

have transaction limits of Rs. 25 000/day (238 USD), Rs. 40 000/month, Rs. 200 000/year and Rs. 200 000 in maximum account balance. The basic accounts may only be opened by individuals (State Bank of Pakistan, 2016). Level 0 accounts might be opened remotely, in line with Pakistan's strategy for financial inclusion. For example, Telenor Pakistan customers only need to dial *345*3737# on their mobile phone to set up an Easypaisa account (Easypaisa, 2017d). The level 1, or biometric accounts, must be opened at a branchless banking agent location or at one of the banks regular branches. They require, in addition to the level 0 requirements, that the customer's cell phone number is confirmed and that an account opening form is filled out and signed. If the account is opened through a biometric verification system, only confirmation of the phone number and signed account opening form is required. The biometric accounts have transaction limits of Rs. 50 000/day, Rs. 80 000/month, Rs. 800 000/year and a maximum account balance of Rs. 400 000. Biometric accounts may only be opened by individuals (ibid).

The level 2 accounts, or top-level accounts, may be opened by individuals or as joint accounts and by firms, entities, trusts, non-profit organisations, legal persons, merchants, businesses, banking agents, technology service providers and corporations etc. (State Bank of Pakistan, 2016). These accounts are required to be opened in a bank branch, fulfil all KYC requirements the bank demands for regular accounts (including ID-requirements stated for level 0 and level 1 accounts) and the bank must perform a customer profiling and due diligence for identification and monitoring of associated risks. For level 2 accounts, it is up to the bank or financial institution itself to determine appropriate transaction limits (ibid). CNIC or biometric verification is also required for both senders and receivers of money through OTC solutions.

The regulations also require the financial institution to ensure that their systems are up-to-date and protected by multiple and layered security tools such as firewalls, intrusion detection, antivirus software, and anti-spam and anti-spyware programs. Transaction history must be logged and administered by a different unit than operations or IT. In the same way, the financial institutions must ensure that the customers' information is safe through both encryption and secure transfer of PIN-information when making transactions and that the customers are informed about the security measures (State Bank of Pakistan, 2016). Since many users of branchless banking will have a low financial literacy level from being previously unbanked, the banks must provide clear guidelines for the customers on how to use

the service. The information may be delivered through text, recorded audio or from bank representatives when the customer opens an account. Customers must also be informed on how to complain, should they suspect fraud when dealing with agents. Service charges must be published and made available for their agent locations and other information outlets each quarter, during which they cannot be changed (ibid).

4.2 Mobile Payment landscape in Pakistan

Mobile payment was first introduced in Pakistan in 2009 with the launch of Easypaisa, a collaboration between Telenor and Tameer Bank (Arif and Chattopadhyay, 2016). In its initial state, Easypaisa was originally a platform for P2P payments through OTC solutions, where users deposited their money at one agent location, who then, in turn, transferred the money to another agent at another location. As of December 2016, Easypaisa is the biggest provider of mobile payment services in Pakistan, with 46 % of the registered mobile accounts, 43 % of the performed transactions (4th quarter 2016), 50 % of transactions in terms of value and 30 % of the OTC agents in the country (State Bank of Pakistan, 2017). They offer a variety of mobile financial services, including bill payment, sending or receiving money, purchasing airtime, salary disbursements, giving donations, disbursing social cash transfers, insurance and savings. The services are managed through Easypaisa's agent network or the customers' personal mobile wallets (Easypaisa, 2017a).

4.2.1 Service providers and banks

Today, there are nine solutions for providing mobile money services in Pakistan (State Bank of Pakistan, 2017). Of these nine, three have a combined 98 % share of the mobile account market: Easypaisa, Jazzcash and UBL Omni. These three are also the major players in terms of total mobile transactions, including OTC, handling 43 %, 39 % and 12 % of all transactions respectively. Each solution is connected to one single bank, meaning that no banks in Pakistan have opted for the many-to-many model proposed by the branchless banking regulations. However, some mobile network operators cooperate with multiple banks for their mobile payment services. Some of the mobile banking solutions are app- and agent-based services provided by the bank, available for subscribers to all MNOs.

Table 4.1 show the different mobile payment services in Pakistan, their connected banks, mobile network operators and market share by volume of transactions (including OTC) and mobile accounts as of the fourth quarter of 2016.

Table 4.1: Mobile payment solutions in Pakistan (State Bank of Pakistan, 2017)[1]

Mobile payment service	**Bank**	**MNO**	**Market share of transactions, 4th quarter 2016**	**Market share of accounts, 4th quarter 2016**
Easypaisa	Telenor Microfinance Bank (Formerly Tameer)	Telenor Pakistan	43 %	46 %
Omni	UBL Omni	Any (Bank issued app)	12 %	12 %
Timepey	Askari Bank	Zong (China Mobile Pakistan)	< 1%	< 1 %
Jazzcash	Waseela (Mobilink)	Jazz	39 %	40 %
HBL Express	HBL	Warid	2 %	< 1 %
Upaisa	U Microfinance Bank	Ufone	1 %	1 %
Mobilepaisa	Bank Alfalah	Warid	3 %	< 1 %
Meezan Upaisa	Meezan	Ufone	< 1 %	< 1 %
MCB Mobile Banking	MCB	Any (Bank issued app)	< 1 %	1 %

The government of Pakistan aspire to increase the mobile uptake as a part of its Vision 2025 strategy, which aims to establish Pakistan as a knowledge economy, with a more advanced digital society (GMSA, 2016a). Mobile service providers play a key role in the envisioned success of this strategy, as they can help connect the people of Pakistan (especially in rural areas), provide the means for secure access to digital services and provide a platform to

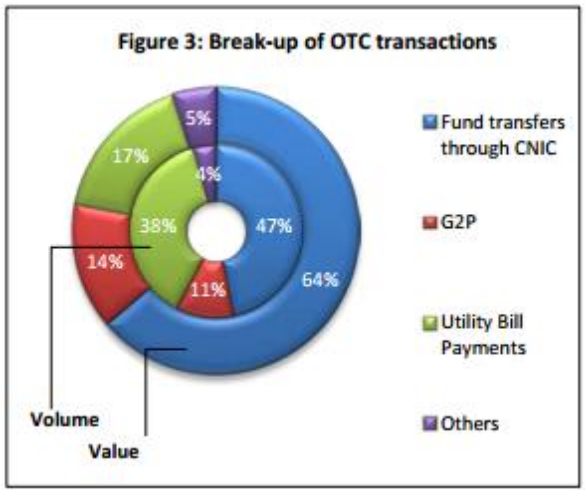
[1] Table note: The MNO Jazz is a result of a merger between Mobilink and Warid in 2015, with the launch of the Jazz brand in 2017. Warid still exist as a separate brand name until January 2018 (Chohan, 2017). All information on banks and service providers collected from the companies respective web sites and press releases. Information presented with reservation of possible changes since the information was published.

promote financial inclusion, meeting the government's goal of 50 % of the adult population having a transactional account by 2020 (GSMA, 2016a; State Bank of Pakistan, 2017). Because of the branched banking infrastructure in Pakistan, this goal is not achievable without the use of mobile accounts (State Bank of Pakistan, 2017).

4.2.2 Consumers and transactions

As discussed in the introduction to this chapter, despite the low level of bank coverage and the apparent advantages for financial inclusion that comes with having a mobile account, mobile payment is still a relative "unpopular" service among consumers in Pakistan. Pakistan ranks lower than their neighbours in enablers of mobile internet connectivity, such as infrastructure, affordability, consumer readiness and content (GSMA, 2016a). It is safe to assume, that a country with low technology awareness will struggle to engage people to use the technology for a service such as mobile banking.

However, branchless banking usage is slowly rising from 101.6 million transactions with a total value of Rs. 486 billion in the fourth quarter of 2015 to 133.7 million transactions with a total value of Rs. 596.9 billion in the fourth quarter of 2016 (State Bank of Pakistan, 2017). In the State Bank of Pakistan's first newsletter on branchless banking, covering the 3rd quarter of 2011, these numbers were 16 million transactions for a total value of Rs. 59 billion (State Bank of Pakistan, 2011). OTC transactions remain more popular than m-wallet transactions but the gap is closing, with m-wallet accounting for 49 % of transactions in December 2016, up from 31 % in September 2015 (State Bank of Pakistan, 2017). Figure 4.1 shows the distribution of transactions by transaction type. As we can see from the figure, government entities have started distributing payments such as income support and pension programmes through mobile payment solutions. Focusing on these kinds of payments through mobile banking solutions might be a good strategy from the government to incentivise consumer adoption of mobile payment solutions.



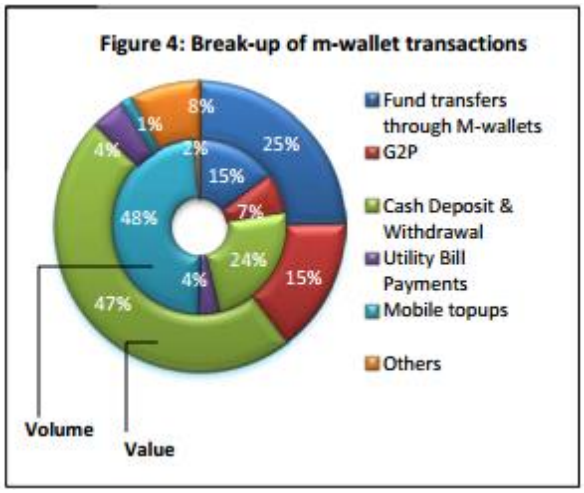


Figure 4.1: Break-up of mobile payment transactions in Pakistan, 4th quarter 2016 (State Bank of Pakistan, 2017)

In total, there are 20 million mobile account holders in Pakistan today. Since many of these adopters are among the 13 % of the adult population that hold a conventional bank account, the potential for gaining new customers as a mobile payment service provider is high, adding to the financial inclusion of the country. According to estimates by Easypaisa, their total addressable market for mobile financial services (the adult unbanked population less the voluntarily unbanked) is about 60 million people (Arif and Chattodaphyay, 2016). Nevertheless, cash remains the preferred mode of payment, both due to a higher sense of trust in this type of payment, and a lack of technology awareness of the benefits from using digital payment systems (Arif, interview; GSMA, 2016a).

4.2.3 Merchant usage of mobile payments

The vast majority of merchants engaged in mobile banking in Pakistan are agents for the various service providers, and few accept mobile payments for their products (Risnes, interview; Arif, interview). In total, there were 359 806 agents in Pakistan in December of 2016, 32,1 % of which have account opening capability, and it may be assumed that these agents possess much of the knowledge needed to accept mobile payments for purchases made in their stores. Nevertheless, as mentioned in section 4.1, merchants prefer cash payments and do not believe that their business would be improved by the use of mobile payments (Arif, interview). Suppliers and wholesalers also prefer to be paid in cash, meaning that merchants would be stuck without the ability to pay for their goods if their income from customers was paid digitally. Another problem is associated with mobile technologies. According to Oddvar

Risnes, the NFC payment technology available at some 35 000 locations has a lag in payment processing, meaning that merchants do not get paid immediately, as opposed to if they took the payment in cash. In addition, the technical infrastructure is unreliable. Dr Farrah Arif recounted a meeting with the CEO of Easypaisa, who told her that he had failed to perform a mobile transaction because it was too easy to make mistakes in the payment interface. If merchants should take the leap of faith, they still risk not being able to accept mobile payments because of faulty technology. Thus, even those who are familiar with mobile payment solutions may not choose to adopt it (Arif, interview). As long as the technology does not invite adoption, and the potential consumer base is low, merchants will not be willing to invest money and effort into the adoption of mobile payment technology.

Another issue is related to income generation. Today, a merchant can claim his commissions immediately in cash when helping customers perform OTC transactions. If more customers adopt mobile wallets, they can perform these transactions themselves, and the merchant will, in his perception, lose a source of income. The revenue gains from mobile payments are not as evident or direct, nor are they paid immediately. Therefore, the agents have few incentives to educate their customers to enable mobile accounts that they then later can use to perform POS purchases (Arif, interview). The mobile money service providers need to educate the merchants in how mobile money can generate revenue for them, and build intrinsic motivation to adopt mobile payments. As Dr Arif put it:

"Think about a merchant, he or she has a lifestyle, and mobile wallets should be an important part of that lifestyle".

- *Dr Farrah Arif (interview, 19.04.2017)*

Finally, merchants might be reluctant to adopt mobile payments, because digital payments are traceable, and if most of a merchant's revenue source is documented, it is easier to be taxed. In Pakistan, there is a lower threshold for income tax for small business owners, and if you are paid in cash, it is easier to ensure that your reported income is below this threshold (Risnes, interview).

4.3 Easypaisa - Launch and diffusion, benchmarking for success factors

According to our framework presented in chapter 3, the most influential criteria for merchant adoption of a mobile payment system will to a certain degree change when different user groups are adopting the payment system. Therefore, it is important to understand the history and market situation for a mobile payment solution to place it in the diffusion cycle. In this section, we will review the launch and diffusion of Easypaisa and compare it to the framework to find if the success factors with regard to merchant adoption match our framework. This assessment will be relevant to evaluate the market potential for merchant adoption of mobile payment in Myanmar in chapter 5, as Pakistan's socioeconomic factors related to payment is comparable to that of Myanmar.

4.3.1 History of Easypaisa

Telenor Pakistan, a wholly owned subsidiary of Telenor ASA, commenced operations in Pakistan in March 2005, as the fourth major mobile network operator in the country (Arif and Chattopadhyay, 2016). In August of the same year, Tameer Microfinance Bank Limited (now Telenor Microfinance Bank LTD.) was incorporated. During the next two years, Telenor Pakistan attained a 17% market share, making them the third largest mobile network operator. Simultaneously, Tameer struggled to achieve their goal of nationwide expansion with only 20 small-scale branches in 2007 (ibid). The management of Tameer considered technology to be the key to expansion and enhanced their market offering by setting up ATMs, POS systems for loan dispersal and repayments and a bank-on-wheels service across the country. They also took part in a pilot project for branchless banking initiated by a World Bank microfinance think-tank. Telenor Pakistan shared Tameer's thoughts on technology-driven expansion and vision for bringing financial services to the vast unbanked population of Pakistan, and this brought the two companies together in a joint business venture. In 2009, this resulted in the launch of the Easypaisa brand, a mobile banking service co-owned by the two companies operating under the branchless banking license issued to Tameer (ibid).

Easypaisa was the first mobile service for branchless banking launched in Pakistan and targeted the 71 % of the adult Pakistani population that were involuntarily unbanked as their potential users (Arif and Chattopadhyay, 2016).

Most Pakistanis did not use banks for money transfers, having a perception that using a bank was time-consuming and cumbersome. This was even the case for the banked segment, who preferred using informal channels to perform money transfers, such as sending the money with friends, relatives or truck drivers going to the recipients'' home towns. The problem with the general perception of banks is underscored by Easypaisa, stating that before they launched their service, customers "had to travel long distances, manage lots of paperwork, stand in long queues for hours, and were limited to specific working hours. Easypaisa revolutionised the industry by enabling the same transactions to be carried out at your local retailer instantly, in a safe, secure and convenient manner." (Easypaisa, 2017a).

At the time of initial launch, Easypaisa offered only OTC transactions, which lowered the perceived barriers to making financial transactions. Instead of adapting to the time-consuming process of transferring money at a bank, anyone could approach a local Easypaisa agent to make an OTC transaction (Arif and Chattopadhyay, 2016). Telenor Pakistan ensured a large potential user base by not requiring Easypaisa OTC customers to be Telenor Pakistan subscribers, as well as offering their entire existing network of retailers to become Easypaisa agents, of which an initial 2500 agreed (ibid). Not having restrictions on who could use the service, as well as undertaking a large marketing campaign and brand building process, made the Easypaisa service attractive for both customers and agents. Easypaisa's efforts were so successful that the brand name became synonymous with transferring money (Arif and Chattopadhyay, 2016).

In February of 2010, Telenor Pakistan launched their mobile accounts, available for all Telenor Pakistan customers (Attaa, 2010). At the time of launch, the service offered bill payments, domestic and international money transfers and savings in customers' mobile accounts. To register an account, customers needed to submit both their CNIC (Pakistan's national identity card) and add their thumbprint to the registration form, ensuring that accounts were personal and unique with one account per person (Attaa, 2010). At the time of launch, the accounts had transactional limits of Rs. 10 000 (95 USD) per day, Rs. 20 000 per month and Rs. 120 000 per year, with a maximum allowed balance of Rs. 60 000 to be held in an account (ibid). These limits could be increased if the customer also opened a Tameer Bank account. Cash could be deposited into the account or withdrawn from it at any Easypaisa agent location throughout Pakistan. In addition, if customers had a Tameer Bank account, they could transfer money between their bank and mobile account freely, not affecting the

transaction limits (Attaa, 2010). Transaction limits applied to both in- and outbound transactions, meaning that debiting Rs. 10 000 to your account prohibited you from making payments that same day. Easypaisa's revenues came from fees, ranging from Rs. 5 to 240 depending on the transaction type an amount (Attaa, 2010).

In March of 2011, the service was expanded with the introduction of different levels for accounts (Propakistani, 2011). The level 1 accounts were a continuation of the accounts introduced the year before, with the same transaction limits. The subsequent levels, named Level-2-(Basic), Level-2A, Level-2B and Level-2C offered higher transaction limits, shown in table 4.2 below.

Table 4.2: Transaction limits by account level, Easypaisa 2011 (Propakistani, 2011)

Level-2-(Basic)	Daily Limit: 50 000 Monthly Limit: 100 000 Yearly Limit: 600 000 Max Balance: 300 000
Level-2A	Daily Limit: 100 000 Monthly Limit: 200 000 Yearly Limit: 1 200 000 Max Balance: 600 000
Level-2B	Daily Limit: 250 000 Monthly Limit: 500 000 Yearly Limit: 3 000 000 Max Balance: 1 500 000
Level-2C	Daily Limit: 500 000 Monthly Limit: 1 000 000 Yearly Limit: 6 000 000 Max Balance: 3 000 000

The new accounts were available for all customers, but opening a higher-level account demanded more documentation, such salary slips or proof of business (Propakistani, 2011), as per the branchless banking regulations. With the launch of the different level accounts, Easypaisa also introduced more features for customers to enjoy, including mobile top ups and utility bill payments (ibid). The transaction fees from Easypaisa remained the same. As seen in figure 4.1, the availability to top up your phone credit is a very popular feature, and potentially a significant motivational factor for consumers to open an account.

Easypaisa's first brush with merchant payments came in May of 2015, with the launch of Easypay (Mobile Money Pakistan, 2015). The service was designed for online merchants offering their customers a new way to pay for merchandise, using their Easypaisa mobile accounts or VISA/MasterCard credit cards. The Easypay solution also allowed customers to pay for their online purchases at the 60 000 Easypaisa shop locations (agent locations) in Pakistan (Mobile Money Pakistan, 2015). According to Mobile Money Pakistan (2015) the service rapidly became popular among online merchants due to the real-time notifications the merchants received on payments through their Easypaisa mobile accounts, and due to the low service charges claimed by Easypay compared to other online payment solutions.

This merchant solution was further expanded in August of the same year when Easypaisa, in collaboration with KEENU, a merchant payments network in Pakistan, integrated NFC payment compatibility at KEENU's POS devices across the country (Telenor Pakistan, 2015). This launch meant that Easypaisa mobile account holders could use their accounts to make payments at POS locations that supported NFC payments. The customer attached an NFC tag to their phone, which interacted with the payment terminal, and the payment was secured by the customer's PIN number. Nadeem Hussain, CEO of Tameer Microfinance Bank claimed that NFC payments were a safer alternative to credit card payments, stating that:

"The most important step in this mobile payment transaction is the secure element which is tamper-proof and protected by a unique digital PIN. Even if you lose your NFC tag or mobile phone, your money is completely safe, unlike cards."

- *(Telenor Pakistan, 2015)*

There were large expectations associated with this launch, as Yahya Khan, Chief Financial Services Officer of Telenor Pakistan put it:

"With convenient, secure and instant payments in place, NFC in Pakistan is truly about to boom. It liberates the customer from the dependence on cash or cards and enables them to make payments through their mobile phones."

- *(Telenor Pakistan, 2015)*

It seems, however, that the Pakistani people do not see the same benefits with having a mobile account that Easypaisa express. As mentioned in the introduction to this chapter, there are only 20 million registered mobile accounts in Pakistan as of December 2016, covering less than 10 % of the population (State Bank of Pakistan, 2017). Of those, about 10 million are Easypaisa accounts (Risnes, interview), a slight increase from 9,2 million in December 2016 (State Bank of Pakistan, 2017). 2 million of the Easypaisa accounts are categorized as active, or used in the last 30 days, by Telenor (Risnes, interview). Merchant uptake is also low, with an estimate 35 000 POS terminals accepting NFC payments through Easypay or Jazzcash, who use the same technology delivered by KEENU (Risnes, interview). According to Oddvar Risnes, most of the active users of mobile accounts are migrants and military personnel who use their accounts to transfer money to their relatives at home.

Easypaisa has also experienced the impact of competitors entering the mobile payment market. In September of 2013, they had a 62 % market share of all mobile money transactions (Arif and Chattopadhyay, 2016), which has later declined to 43 % as of December 2016 (State Bank of Pakistan, 2017). Perhaps to counteract this loss of their market leader position, Easypaisa launched a referral campaign in April and May of 2017 to recruit more consumers to use mobile wallets. In this campaign, Easypaisa offered a referral reward to existing customers of Rs. 100 for each new account opened with at least one transaction done via SMS, and Rs. 150 for each new account opened with at least one transaction done via the Easypay app (Easypaisa, 2017b).

In March of 2017, Easypaisa and Telenor Pakistan parted ways. Easypaisa is now managed solely by Telenor Microfinance Bank, and its operations, PR and marketing is handled by the Telenor Group, the sole owner of Telenor Microfinance Bank (Attaa, 2017).

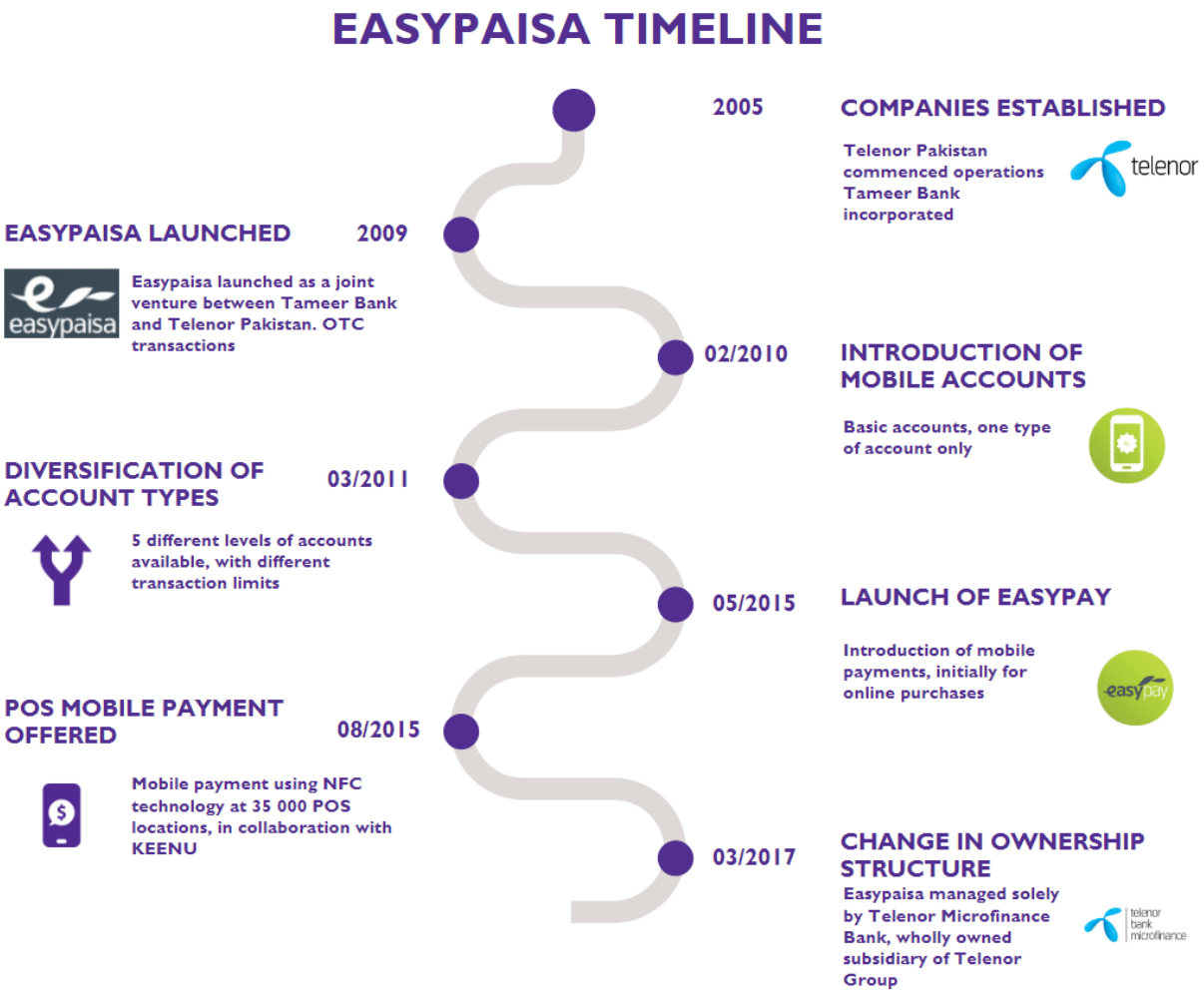


Figure 4.2: Easypaisa timeline

4.3.2 Evaluation of Easypaisa in light of our merchant adoption framework

Between the launch in 2009 and the launch of Easypay in 2015, Easypaisa was strictly a consumer-oriented payment service. The merchants involved in Easypaisa were agents for the service by facilitating OTC transfers. In March of 2015, two months before the launch of Easypay, Easypaisa had 66 836 agents in Pakistan (State Bank of Pakistan, 2015). Today this number has grown to about 108 000 (State Bank of Pakistan, 2017). Of these, 25 056 agents, or 23,2 % have the ability to open mobile wallet accounts on behalf of customers.

As for Pakistan as a whole, (Ahmed, 2016) estimates that there are approximately 2 million retail outlets in the country, of which 800 000 are outlets for fast-moving consumer goods (FMCG). Most of these FMCG retail locations are local corner shops, run by individuals in the neighbourhood (ibid). If we then take into consideration that only 35 000 POS locations in Pakistan have installed hardware to accommodate mobile payment, this means that 1,75 % of merchants in Pakistan have adopted mobile payment services. This is close to the ratio of adopters that make up the Innovator group in the Diffusion of Innovation theory discussed in chapter 3. The merchants who enable mobile payment acceptance technology are, for the most part, high-end merchants such as supermarkets, international brands, expensive restaurants and hotels that already accepted credit card payments before mobile payments were introduced (Risnes, interview). Since the merchants operate in the high-end segment, we can assume that they have a solid financial base and can afford possible losses from failed investments, as identified in (Rogers, 2003, p.239). As this group of merchants was the first to accept digital payments through credit cards and mobile payments, they display innovativeness. Therefore, we can draw the conclusion that proliferation of mobile payment technologies among the first of the five merchant user groups, the Innovators, has been achieved. After the transition from initial market launch to attracting the Innovators, the next step is to attract the Early Adopters (see figure 4.3).

In this section, we will evaluate to which extent the first phase in the diffusion cycle for Easypaisa merchant payment was carried out according to our framework, determine the diverging factors, and assess whether Easypaisa is ready to make the next push to attract the Early Adopters.

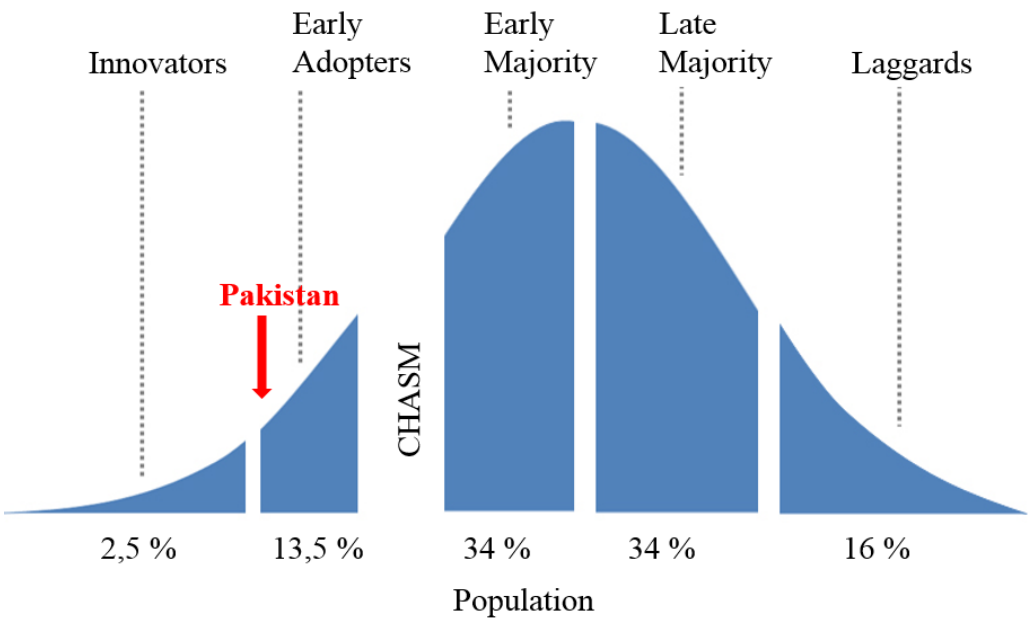


Figure 4.3: Pakistan in the technology adoption life cycle

Prerequisites in the Pakistani market

Since the prerequisites defined in figure 3.7 are equally weighed for all adopter group transitions, we will evaluate them by themselves before going into detail on the past and future diffusion of the Easypaisa mobile payment solution in Pakistan.

P1, proliferation of mobile technologies, must be said to be achieved to a large extent. With 139,1 million active mobile subscriptions, and at least 47 %, (possibly more) of the population being mobile subscribers, there is a significant amount of the population that are eligible to adopt mobile payment solutions should they choose to do so. However, Pakistan still has a long way to go before the entire population has access to mobile technologies, and this might be a part of the explanation as to why the diffusion of mobile payment has not been more rapid. Proposition P2, viable mobile payment infrastructure, is also satisfied to some extent. The cellular mobile teledensity in Pakistan is 70,8 % (Pakistan Telecommunication Authority, 2017), and the technology exists to perform mobile payments through the Easypay solution. However, there have been some problems with the technology (Arif, interview) that might act as a deterrent to merchant adoption of mobile payment. Once these problems are fully resolved, the likelihood of merchants adopting the technology is likely to rise. Proposition P3, merchant's knowledge of mobile payment solutions, is also somewhat satisfied.

Since the launch of Easypaisa in 2009, awareness of mobile financial services, in general, has progressed in the country as a whole, with more actors launching mobile financial services and each services attracting a growing consumer base (State Bank of Pakistan, 2017). Both the number of agents that enable OTC transactions and the number of merchants that allow mobile payments at POS has been on the rise. However, providers of mobile payment solutions still have a long way to go when spreading the word of mobile payment opportunities. Educating merchants in the possible benefits that mobile payment solutions can provide is of crucial importance for this specific prerequisite (Nautiyal and Pasti, 2016). We, therefore, argue that raising the general awareness of merchant mobile payment solutions in Pakistan will help facilitate merchant uptake of mobile payment solution.

The final prerequisite is P18, trust and security. As mentioned in the introductory part of this chapter, less privileged people in Pakistan have a strained relationship with banks and providers of financial services. Furthermore, even among the banked segment of the population, bank services are regarded as tedious and cumbersome processes. Some of the factors affecting trust in branchless banking in Pakistan are service quality, system quality, reputation and perceived credibility (Chaudhry, Parveiz and Javed, 2016). Dr Arif stated in our interview that a general perception in Pakistan is that when you go to the bank, the employees act as if though they are not there to help you out, and that the main issue for Pakistani banks is the customer interaction. Banks in Pakistan have a long way to go when it comes down to customer service, service quality and courtesy. As stated in section 4.1.2, all mobile financial solutions in Pakistan are bank led and affiliated with conventional banks. The general issues related to trust in Pakistani banks therefore implicitly affects proposition 18 in the framework for merchant adoption of mobile financial services.

In order to achieve wide proliferation of mobile payment technologies, providers of mobile financial services in Pakistan must cater to these four prerequisites listed in the revised framework to a greater extent than the present situation implies.

Evaluation of initial market launch to acquiring the Innovators

For the most part, Easypaisa has successfully addressed the most influential drivers for Innovators in a mobile payment merchant setting. When Easypay was launched, the brand name Easypaisa was analogous with the service of transacting money among the Pakistani population (Arif and Chattopadhyay, 2016). Adopting the Easypay solution would, therefore,

be communicatively equivalent to enabling the most innovative method of payments, generating synergies for both innovative merchants and Easypay itself. The innovative merchants gain recognition from their customers when they adopt new technologies, and Easypay/Easypaisa increase their merchant user base. Looking at the revised framework for merchant adoption in the initial market launch to Innovator stage presented in figure 3.11, it would be safe to assume that merchants consider it positive for their image to be associated with the brand, satisfying the driver of enhanced image, P10, in the framework. Along the same lines, we assume that this thinking also led the merchants to believe they would attract more customers from offering to accept mobile payment. With 10 million registered Easypaisa mobile accounts among consumers, the potential for increasing a merchant's customer base is present. Therefore, the driver of new customer potential, P9, is satisfied. Assessing whether Easypaisa facilitates for the drivers of medium influence, P5-P8, is challenging due to the extent of our available data. However, in a general sense, all enhancements to a business' service offering is a positive influence on customer perception of the business.

As the POS locations that accept mobile payment today do so because mobile payment functionality has been integrated into existing POS terminals from KEENU, barrier P12 is catered to. The technology was compatible with the existing business of the merchants. Adding to this, but without definitive facts, we can assume that a POS location that has a functioning payment terminal does not suffer extensively from problems with infrastructural instability. Thus the barrier of infrastructural instability, P20, is catered to. The issues related to charging models, proposition 14, have been accommodated by offering customers to deposit cash into their mobile accounts at any of the 108 000 Easypaisa agent locations across Pakistan. Ideally, the number of agent locations should be higher, but given that the number of agents is trifold that of merchants accepting mobile payment, it stands to reason that Easypaisa has accounted for this issue to some extent.

As stated in chapter 3, our dynamic framework might need some alterations depending on local market factors. If we look at the framework for the transition from market launch to Innovator adoption in figure 3.11, we have defined P19, influence from vertical partners, as a low influence driver for this merchant group. This was due to our emphasis on the general characteristics of Innovators: They are driven by intrinsic motivations, curiosity and possible business opportunities in new technology.

In the specific use case of the Easypay mobile payment launch, however, the influence from vertical partners seems to be an important driver at an early stage. KEENU is a vertical partner for the 35 000 high-end merchants that accept mobile NFC payment, as they are the merchants' provider of hardware and software to accept digital payments. The agreement to integrate NFC mobile payments at KEENU's POS terminals was between KEENU and Easypaisa, and not Easypaisa and the individual merchants. Therefore, we assume that the merchants could choose to either follow along and accept mobile payments, or find a new provider for payment technology. Switching providers would have meant to lose all intangible assets stemming from their (possibly) long-term business relationship with KEENU. In addition, it is safe to assume that since these high-end merchants are familiar with and use digital payment in general, their other suppliers are paid digitally and not in cash. There might have been influences from these suppliers on why mobile payment was a good idea, further strengthening the merchants' decision to adopt it. We believe that for Pakistan and comparable cash based economies where digital payments are largely reserved for high-end merchants, P19 should be considered a high influence driver in this, and the following user groups.

	Initial market launch → Innovators		
Proposition weight	**Drivers**	**Barriers**	**Prerequisites (unweighed)**
High influence	P9: New customers P10: Enhanced image P19: Influence from vertical partners incentivise uptake of mobile payment **(++)**	P12: Incompatibility with existing business P20: Infrastructural instability	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge P18: Trust and security
Medium influence	P5: Increased impulse purchases P6: Enhanced customer service P7: Increased product and service availability P8: New services	P14: Lack of charging models	
Low influence	P4: Merchant's need for new payment systems P11: Lower fees and costs	P13: Lack of standard solutions P15: Complexity P16: Lack of critical mass P17: High commissions and costs on implementation	

Figure 4.4: Revised framework from 3.11: Factors affecting merchant adoption of mobile financial systems, Market Launch to Innovators

Further diffusion of merchant mobile payment in Pakistan

As stated in the above paragraphs, Easypaisa currently entertains 108 000 OTC agents. We believe that the highest potential for adoption of Easypay for mobile merchant payment lies with these, as the Easypaisa agents already are relatively knowledgeable about the Easypaisa service offerings. To segment further, it could be assumed that the 25 056 agents of Easypaisa that can open mobile wallet accounts for customers (State Bank of Pakistan, 2017) are those who would most easily be swayed to accept mobile payment for their goods. Many of the agents who offer this service are also familiar with bill payments on behalf of their customers. We argue that, since these merchants are able to open accounts on behalf of customers, they are so familiar with the wallet mechanisms and functionality that they can see the possible benefits from a consumer point of view. According to Oddvar Risnes, the main reason behind agents' enabling OTC transactions is to increase their revenues by attracting new customers (Risnes, interview). Therefore, the next target segment for Easypaisa, in order to achieve merchant adoption of mobile payments, should be the already existing agents, with special attention to those that are experienced with m-wallets. All Easypaisa agents are familiar with either the process of opening of a mobile account, conducting OTC transactions, or both.

Figure 3.12, showing the merchant adoption framework for how to transition from Innovators to Early Adopters, can be of aid in how to convince these agents to adopt mobile payments. As with the previous stage, the prerequisites for adoption are already somewhat satisfied for this segment. To improve conditions for mobile payment adoption, Easypaisa needs to work together with Telenor Pakistan to improve the mobile infrastructure in the country. This will ensure stability, a more exhaustive geographical coverage and wider mobile proliferation. Furthermore, in order to become an Easypaisa agent, the merchant must undergo training under the direction of Telenor/Easypaisa. The communication channel between the merchant agents and Easypaisa can be exploited through elevation of the merchants' knowledge levels on mobile payments. As a result of an open and honest dialogue and information diffusion, established communication channels pose an opportunity to strengthen the trust between merchants and Easypaisa.

Transitioning from the Innovators to the Early Adopters implies that Easypaisa must switch from a technology-oriented view to product-oriented view, as explained by (Moore, 2014). We know for a fact that OTC agents increase their revenues by providing a new service to new customers. Therefore, Easypaisa must make evident to the current OTC agents what income, service and customer potential occur from adopting mobile payment solutions. This addresses propositions P7 and P8, which are of high influence for the Early Adopter category, as well as proposition P9. As more customers open mobile accounts, for example as a result of the ongoing referral campaign by Easypaisa, they will hopefully see the value in paying using their mobile accounts. When this happens, the merchants will strive to accommodate the demand for mobile payment to keep up their customer service, as stated by P6. This might ring especially true for the agents in rural areas who usually run corner shops. These merchants know and meet the same customers on a regular basis and want to keep it that way. Easypaisa should also emphasise the potential increase in impulse purchases for merchants, as customers will not be limited in their spending by the amount of cash they carry. This addresses driver P5. Merchants who already have accepted mobile payment may be a valuable marketing tool for Easypaisa. If they encourage their customers to adopt mobile payment this will increase the pressure on the merchants who have not adopted mobile payment to follow suit.

As previously concluded, the driver P19, influence from vertical partners, is of greater significance in a cash-based economy like Pakistan than we initially anticipated. Therefore, P19 is re-categorised as a high-influence proposition in figure 3.12 and the corresponding frameworks for the Early Majority, Late Majority and Laggards. As a result, Easypaisa can profit from intensifying marketing efforts towards distributors and wholesalers in the Pakistani market. Ideally, if merchants within the pre-existing agent network share one or more distributor or wholesaler, these are the targets Easypaisa should aim for.

	Innovators → Early Adopters		
Proposition weight	**Drivers**	**Barriers**	**Prerequisites (unweighed)**
High influence	P5: Increased impulse purchases **(+)** P6: Enhanced customer service **(+)** P7: Increased product and service availability **(+)** P8: New services **(+)** P9: New customers P10: Enhanced image P19: Influence from vertical partners incentivise uptake of mobile payment	P12: Incompatibility with existing business P20: Infrastructural instability	P1: Proliferation of mobile technologies P2: Viable mobile payment infrastructure P3: Merchant's knowledge P18: Trust and security
Medium influence	P11: Lower fees and costs **(+)**	P13: Lack of standard solutions **(+)** P14: Lack of charging models P15: Complexity **(+)** P16: Lack of critical mass **(+)**	
Low influence	P4: Merchant's need for new payment systems	P17: High commissions and costs on implementation	

Figure 4.5: Revised framework from 3.12: Factors affecting merchant adoption of mobile financial systems, Innovators to Early Adopters

As P19 is categorised as a high influence driver for the Early Adopters, only P11, lower fees and costs remain as a medium influence driver. For most merchants in Pakistan, this means that mobile payment transactions must cost them at max the same as using cash. According to Easypaisa, setting up Easypay retail payments are free of charge (Easypaisa, 2017e), but a very small transaction fee is charged for each payment received through Easypay. With the use of cash, there are no fees directly associated with each transaction, but this does not mean that cash is free. Since payments in cash demands exact change, merchants need a steady supply of small denomination rupees at hand. Usually, banks charge a fee for selling small change to merchants, and some merchants choose informal channels such as buying change from beggars, at a premium. Processing cash payments also incur intangible costs related to the time spent with cash handling, both at the POS and when taking cash to the bank to make deposits (EUC, 2015). If the total costs for cash handling are higher than the total costs for mobile money transactions, it is favourable for the merchant to adopt mobile payments. Easypaisa should take this into consideration when calculating their fee structure. As the merchant user base grows, it should be possible for Easypaisa to exploit economies of scale to reduce the individual fees, as their total income generation would still grow.

For the Early Adopters, the high influence barriers to mobile payment adoption are the same as for the Innovators. In order to accommodate for proposition 12, Easypaisa must align their payment solutions with the business models of a larger group of merchants. Furthermore, when approaching a larger market, the technical infrastructure may be subject to an increase in transaction volume, making it more vulnerable to infrastructural instabilities (proposition 20). Easypaisa could use the experience from the Innovator segment to continuously improve on technical instabilities and compatibility issues. These two barriers are of paramount importance to overcome in order to acquire and maintain a sustainable user base of merchants.

The barriers categorised with medium influence on adoption decision for the Early Majority are P13, lack of standard solutions, P14, lack of charging models, P15, complexity, and P16, lack of critical mass. Due to the high number of competing mobile financial services in Pakistan, achieving one standard solution may prove challenging. One way Easypaisa could accommodate for this barrier is to facilitate joint payment initiatives with one of its competitors. The existing POS terminals from KEENU accept NFC payments both through Easypay and Jazzcash. With this approach, the solution for mobile payments will be more standardised, and the lack of critical mass will be less evident, reducing the impact from P16 since both consumers using Jazzcash and Easypaisa can use their accounts at the merchant's POS. As long as the total market for mobile payment solution is growing, the direct competition for market shares between Jazzcash and Easypaisa is absent to some extent. Easypaisa and Jazzcash are market leaders in consumer mobile account penetration, and a joint offering by the two companies could be an efficient instrument in discouraging other competitors from trying to attract mobile account customers.

As Easypaisa moves their marketing efforts to new segments along the technology adoption lifecycle, the tech-savviness of potential adopters decline. Even though most OTC agents are familiar with some aspects of the payment solution, the agents in the Early Adopters segment will presumably be less adaptive to new technology compared to the Innovators. Easypaisa must accommodate for this by ensuring that the payment solutions are as intuitive to use as possible. The lack of charging models arises from a situation where consumers are unable to pay using their mobile accounts, normally caused by insufficient funds in mobile wallets. With an increasing amount of agents, consumers can access more locations where they can deposit cash into their accounts.

The efforts of signing new agents need to be continued by Easypaisa. An additional way that the lack of charging models can be addressed is to increase efforts to make consumer income generation digital. Today, Easypaisa offer a solution for salary dispersal by businesses to their employees (Easypaisa, 2017c). As more companies embrace this solution, more consumers will have liquid mobile accounts, increasing merchant incentive to accept mobile payments. The increasing usage of mobile G2P transactions will also add to the total mobile account liquidity and consumers' mobile account spending power.

4.4 How lessons from Pakistan could ease the process of mobile payment launch and merchant adoption in similar markets

In general, the success factors for merchant adoption of mobile payment in a cash-based market like Pakistan align with the propositions suggested in our revised framework. In the dynamic context of the technology adoption lifecycle, Easypaisa has taken necessary steps to facilitate merchant adoption in the Innovator segment. The established user base of consumers with Easypaisa mobile accounts and the standing of Easypaisa in the Pakistani branchless banking sector substantiates the most influential drivers for merchant adoption of mobile payment in the Innovator segment. The first adopters of mobile payment were merchants with existing acceptance of digital payment. By focusing on these merchants, the barriers of incompatibility with existing business and infrastructural instability were of minor importance as mobile payment acceptance became integrated into existing POS payment terminals. However, because mobile payment was introduced to these merchants through a collaboration between Easypaisa and the technology provider of the POS terminals, the influence from vertical partners proved to be a more important driver in the initial market launch than we anticipated. Therefore, this driver should be held in higher regard by a service provider that seeks to launch mobile payment solutions in a market comparable to Pakistan.

Going forward, Easypaisa or similar service providers in comparable markets should focus on building on the competencies and knowledge acquired from the Innovator segment. After securing initial merchant adoption of mobile payment within the high-end merchant market, Easypaisa should turn their attention to their existing agent network. The merchants that make up the agent network are accustomed to mobile payments, its functionalities and opportunities, and can educate potential consumers about the benefits of switching from cash

to mobile payments. Having an open information channel between the service provider and the merchants is essential in this process of transferring information and expand the user base on both the consumer and merchant side of transactions. Furthermore, providers of mobile payment solutions should sway other actors in the ecosystem, such as wholesalers and suppliers, to adopt mobile payment solutions. This can generate a two-sided pull effect, as the demand for digital payment from both the consumer- and the distributor-side of the merchant increases. This two-sided pull effect will create an extrinsic motivation for the merchants to adopt mobile payment. In a market where there are multiple actors offering mobile payments, it could prove beneficial for two of them to enter into a joint payment offering to minimise the lack of standardisation. Finally, the service provider should make efforts to profit from economies of scale as the user base grows, so that the use of mobile payment appear as a more attractive alternative to cash cost-wise.

Chapter 5 - Securing merchant adoption of mobile payment in Myanmar

Myanmar is a country in Southeast Asia with a population of 57 million (CIA, 2017b). After almost 50 years of military rule, with little diplomatic contact and trade with other countries, the new civilian government who came into power in 2011 has made efforts to open up the country to foreign investors (CIA, 2017b). These include re-writing the Foreign Investment Law, separate the Central Bank from governmental control, enact a new anti-corruption law and granting banking licenses to 13 foreign banks (ibid). These new policies have led to a rapid economic growth in the country, with Myanmar ranking 4th in the world in GDP growth in 2016 (ibid). However, even though the country's economy is growing, approximately 26 % of the population still live in poverty, and estimates suggest that 23 % of the adult population have access to a financial transaction account. Among the poorest 40 %, the corresponding number is only 16 % (Demirguc-Kunt et al., 2015). Other sources report the coverage of traditional bank accounts as low as 10 % (Turnell, 2016; Myint, 2016). When you factor in that Myanmar has one of the most rapid uptakes of mobile phones in the world, growing from less than 5% in 2012 to almost 80 % today (Cunningham, 2016), the Burmese market for mobile financial solutions offer opportunities to ensure financial inclusion. In this chapter, we present the social and regulatory factors that may affect mobile payment adoption in Myanmar in section 5.1, before presenting the mobile payment landscape in the country in section 5.2. In Section 5.3, we evaluate how a mobile payment service provider can ensure merchant adoption of a mobile payment system in Myanmar before we provide some thoughts on the future of mobile payments in the country in section 5.4.

5.1 Social and regulatory factors affecting uptake of mobile accounts

5.1.1 Society overview

According to (Giz, 2016), Myanmar is the most cash-based economy within the ASEAN, an organisation that facilitates international cooperation, advocates Pan-Asianism and promotes financial integration between ten countries located in Southeast Asia (ASEAN, 2017). Even though the ratio of banked individuals has been on the rise, cash is still king in Myanmar (Kyaw, 2016). In 2014, Myanmar had the highest proportion of money outside the financial sectors in the ASEAN region (GIZ, 2016). The cash proliferation imposes large costs on the broader economy of Myanmar. Compared to digital currency, cash transactions are time-consuming and expensive for the ecosystem. One representative from Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in Myanmar states that even the costs associated with printing new notes due to physical wear and tear is a significant burden for the economy as a whole. Cash makes it harder for governmental bodies to enforce reasonable economic policies, and cash facilitates black market transactions (Kyaw, 2016). In March of 2016, there were 1 700 ATMs nationwide, and only 3 500 POS terminals that accepted credit or debit cards. Despite Myanmar's extensive cash usage, utilising bank services has become more common over the years. In 2012, for each kyat in circulation outside banks, there were 1.2 kyats in a bank, a number which increased to 2.2 kyats in 2015 (Giz, 2016). Brad Jones from Wave Money expressed that the Burmese citizens' level of trust in banks is low. An incident in 2003 resulted in the loss of large customer deposits. This is still in the memory of many Burmese citizens. In terms of monetary value, the Burmese put the most trust in gold, thereafter U.S. dollars, and lastly the Myanmar Kyat (Brad Jones, interview 06.06.17).

Gender inequality is a large concern in Myanmar. 53 % of the female population identifies themselves as being on the outside of the labour market compared to 7 % of the males. Furthermore, there are significant wage gaps between the two genders. According to (Zainudeen and Galpaya, 2015), men earn as much as 77 % more than women in rural areas. The number for urban areas is still significant, yet somewhat lower at 46 %. The socio-economic divergence between rural and urban parts of Myanmar is evident. And for most women in rural areas, there are few jobs to be had (ibid). Access to banks is rare compared to the urban areas, obstructing proliferation of financial services for the broader public.

Technological illiteracy is also a concern in rural parts of the country. Only 15 % of the rural population are educated beyond primary school levels, in contrast to the urban areas where the corresponding number is 48 % (ibid). Technological illiteracy remains an issue in the country as a whole. Zaindudeen and Galpaya (2015) state that a multitude of people do not even understand the most basic concepts of the Internet, this rings even more true with the parts of the population that do not own a cell phone. Because of this, the same people are unable to understand the possible benefits that new technologies can provide. Among the smartphone adopters, many use their phones only for feature phone functionality like sending SMS and making calls, while those with a high level of digital literacy use their phone mainly for access to social media apps, reading news online and playing games (ibid). Language is also a contributing factor to the barrier of digital literacy, as the population that understands English experience no usage barriers at all (ibid). Access to utilities such as electricity is a rare commodity in rural Myanmar (37 % of households compared to 93 % in urban areas), and even when available, the associated costs are often too high for a family to sustain. However, this does not seem to hinder adoption of mobile phones in rural areas. The rural population bypass this barrier by charging their batteries at charging points or at friends' houses (ibid).

The core family holds a special position in Myanmar. To be with the family is widely regarded as the 'default mode' both in rural and urban areas of the country. Leaving home is uncommon unless there is a valid reason for doing so, like work, studies or social interactions with friends (mainly for men). The close knitted family relations remain an important part of the Burmese's lives even if they move away from home, and it is more common among these to have a mobile phone than among those who stay home. It is the norm that family members who have moved away from their hometown come home to visit at least four times a year in connection with various religious holidays, and having access to mobile phones makes planning these visits easier for the family.

The wife or mother in the household is viewed as the financial head of the family and in most families, and all income is handed over to her. She is the financial decision-maker of the household and spends the money on commodities such as food and saves up money for emergencies (Zaindudeen and Galpaya, 2015). However, men are regarded as the head of the family overall, and they make bigger decisions outside of the domestic sphere. In Myanmar, it is not uncommon to see man and wife acquire a mobile phone in consultation with each other. When choosing what kind of mobile phone to purchase, the female often set the criteria.

This is due to the perception that females are less technologically literate than men are and require a phone that she can utilise given her limited technological competence (ibid).

5.1.2 Regulations on branchless banking in Myanmar

Mobile Financial Services in Myanmar is regulated under the document 'Regulation on Mobile Financial Services' (Central Bank of Myanmar, 2016). The regulations cover the manner in which mobile financial services can be provided in Myanmar, including the responsibilities of the service providers and account restrictions. The regulations state that both bank-led and telco-led models are possible, but for the telco-led model, only companies set up for the sole purpose of providing mobile financial services may apply for a registration certificate for performing these services (Central Bank of Myanmar, 2016). This means that a mobile service provider cannot integrate MFS in their service portfolio, but need to set up a separate company before venturing into MFS. The company applying for a MFS registration certificate need to have a minimum capital of 3 billion Kyat (2,2 million USD) and disclose the details of their proposed MFS operations, service offering, proposed three-year business plan, their board of directors and senior management and a letter of no-objection for their regulating body (such as the Ministry of Communication and Information Technology for an MNO) (Central Bank of Myanmar, 2016). The mobile financial service provider must also take action as to implement a service that has interoperability options with MFS provided by other companies that is suitable to market demand at agent, customer or mobile platform level. Permitted services are account management, cash deposit, cash withdrawal, money transfers between mobile accounts, cash transfers between mobile accounts and conventional bank accounts, and domestic payments between individuals, government, and businesses.

The provider of the mobile financial service must keep the assets related to MFS operations separate from other assets, and ensure that their finances are subject to system and internal control that follows internal regulations and local anti-corruption and counterterrorism laws. Customers' rights are protected by mandatory contract signing requirements that shall provide a clear guidance on the customer's rights, account features and information on how to contact the service provider for information and complaints.

The regulation allows for three different types of mobile accounts to be offered by the service provider, with associated transaction limits and KYC-requirements. Level 1 accounts are available for individuals only and demand the customer to present a national ID card, drivers

license or passport when opening the account. Level 1 accounts have transactional limits of MMK 50 000 (36 USD) per day, 1 million per month and a maximum allowed account balance of MMK 200 000 (Central Bank of Myanmar, 2016). Level 2 accounts are available for individuals only and demand the customer to present an identification document, as with level 1 accounts, as well as a registration of the customer's SIM card, which must be verified against the MNO's SIM registration database within 48 hours of opening the account. Level 2 accounts have transactional limits of MMK 200 000 per day, 5 million per month and a maximum allowed account balance of 1 million (ibid). Level 3 accounts are available for registered businesses only and demand the account opener to present the businesses' registration certificate and to meet the identification requirements that apply to opening of a conventional bank account. The level 3 accounts have transactional limits of MMK 1 million per day, 50 million per month and a maximum allowed account balance of 10 million (ibid). The transaction limits apply to each individual account holder, meaning that the total amount of transactions may not exceed the limits imposed by the individual accounts (it is unclear what limits apply if an account holder has both a level 1 and a level 2 account, but it might be assumed that the level 2 limits apply). However, transactions that involve payments to merchants, financial institutions, governmental fees and taxes does not count toward the transactional limit (ibid).

Finally, the regulations stipulate that the MFS provider that wish to use an agent network must, before launch, provide the Central Bank of Myanmar with a 3-year plan for the geographical coverage of agents, their agent policies, and the services that the agents will be allowed to offer. After establishment, the MFS provider must inform the Central Bank about the factual details of their agent network, submitting the name of the agent, the GPS coordinates of the agent location, the contact details of the agent and the details in the agent agreement. The MFS provider may use the agents the only contact point with their mobile banking customers or as a supplement to their branched bank locations, and they may not practice agent exclusivity. The MFS provider is legally responsible for the MFS-related activities of the agents, and need to submit a report of their internal audit after 6 months of operations to the Central Bank of Myanmar. The MFS provider must also publish their list of agents, the activities performed by the agents and the fees they charge. The Central Bank has the right to dictate fees for mobile financial services if they fear that the market might be monopolised.

5.2 Mobile Payment landscape in Myanmar

5.2.1 Mobile Network Operators and Mobile Payment Availability

Today, there are three mobile network operators in Myanmar: Government owned MPT, Telenor Myanmar and the Qatar-based Ooredoo. MPT is the market leader in terms of subscriptions, with 23 million (MPT, 2017), closely followed by Telenor Myanmar with 19 million (Telenor Myanmar, 2017) and Ooredoo making up the rear with 9 million subscriptions (TeleGeography, 2017). According to (Zainudeen and Galpaya, 2015), Telenor is perceived to have the best rates, both with regards to calling and mobile data, but their internet connection is unstable in some areas. Ooredoo is perceived to charge more for their services than the other two, but they compensate for this by offering the best network quality. MPT is mostly used for incoming calls since many users have had this SIM the longest and their contacts are familiar with their phone number. Apart from this benefit, MPT is seen as inferior to Telenor and Ooredoo in both network stability and data speed, especially in rural areas. It seems that if Telenor can mitigate their network instabilities, they are set to become market leaders in Myanmar.

Due to the high percentage of mobile subscribers in the country, combined with the large unbanked population, Telenor Myanmar saw a market potential for offering mobile financial services in Myanmar, and in a joint venture with First Myanmar Investment and Yoma Bank, the mobile financial service company Digital Money Myanmar was established. In August of 2016, the company received a license to carry out mobile financial services in Myanmar (Jones, interview). This license was the first granted for a telco-led model in the country, and the mobile financial service Wave Money was launched in October of 2016 (Wave Money, 2016). The goal for Wave Money is to provide accessible, safe and convenient mobile financial services to the people of Myanmar (Wave Money, 2017). As was the case in Pakistan with Easypaisa, Wave Money was first launched as a P2P money transfer service, but unlike Easypaisa, that initially only offered OTC transactions, Wave Money offered the option both to transfer money through an OTC solution and via direct customer transactions using the customers' own Wave Account from launch (ibid). Since launch, Wave Money has steadily grown in both users and agent locations. Today, Wave Money's product offering include OTC money transfers, P2P money transfers using mobile accounts, mobile airtime top

up using mobile accounts, customer bill payments to electricity and landline companies as well as limited trials with online and physical merchant payments (Jones, interview).

Wave Money states that there are 12 competitors in the field, of which five competitors are categorised as having strong presence, three are expected to be of strong presence in the future and four have a diminishing presence in the competitive landscape (Haley, 2017). Among the three with expected strong presence, possible telco-led mobile financial services from both MPT and Ooredoo are the most crucial competitors as they will be able to launch quickly on a large scale due to their existing infrastructure of sales locations. The competitors' product offering and their associated categorisation is shown in figure 5.1.

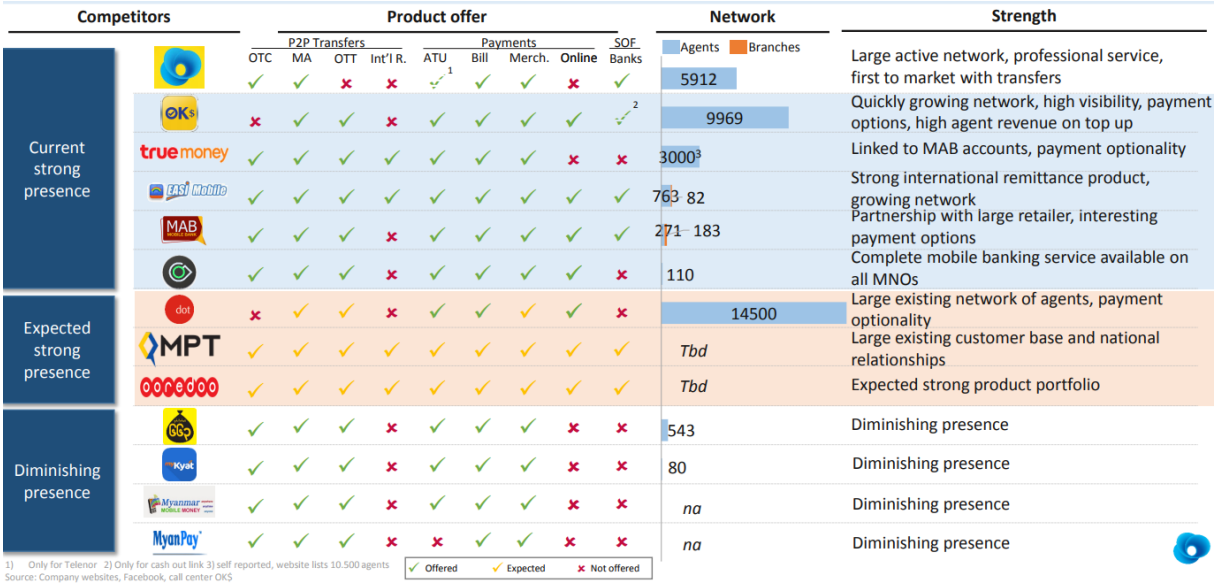


Figure 5.1: Competitors of Wave Money in Myanmar (Haley, 2017)

(Haley, 2017) states that one of Wave Money's biggest points of difference in comparison to their competitors is their large and active and network of competent agents. Brad Jones of Wave Money stated that the company is approaching 8 000 agents who are capable of facilitating P2P transfers and bill payments in ⅔ of Myanmar's townships[2] (Jones, interview). Among the companies who are considered having strong presence, only OK $ employs a higher number of agents than Wave Money. However, the OK $ agents are limited in their knowledge about the functionalities of the payment service.

[2] A township is an administrative unit in Myanmar, covering a set geographical area. The townships are comparable to a municipality in Norway, and vary in size from relatively small in the Yangon area to relatively large in more rural parts of the country (Jones, interview)

Approximately 8 % of OK $ agents facilitate bill payments, and only 11 % of their agents are able to perform OTC transactions. In contrast, the corresponding number for Wave Money is higher than 80 %. Furthermore, OK $'s notoriety is affected by the perception of an uneducated and non-responsive customer service. Limited liquidity and agents hesitating to conduct transactions are also factors that affect the service's perceived trustworthiness. In early April of 2017, the number of monthly transactions at agent locations for OK $ was estimated to be at around 20 000, whereas the similar number for Wave Money was 72 000 (Haley, 2017). For Wave Money, this number is quickly rising (Jones, interview). The other competitors struggle less with uneducated agents, but they are considered of less significance due to the low number of agents and transactions (Haley, 2017).

Wave Money's pricing models for monetary transactions are competitive with both other MFS providers and conventional banks. Compared to OK $, Wave Money charges substantially lower fees for transactions of 30 kyats and upwards. Compared to normal bank transaction rates, Wave Money's fees are slightly higher, but the convenience of the transactions mitigate this gap in fees (Jones, interview).

(Haley, 2017) also evaluates the competitive situation through a SWOT analysis (Weihrich, 1982). The main findings from the analysis indicate that Wave Money is currently the largest actor in mobile money transactions in Myanmar. This presents them with the opportunity of leveraging this position to win the money transfer market in the long term as well. However, Wave Money have been slow to introduce new functionalities and products to the market, and the organisation itself shows symptoms of high organisational inertia. The introduction of bill payment functionality was too tedious, the service still lacks widespread applications, and the absence of merchant payment functionality makes the threat of new entrants high. New entrants rarely suffer from the same problems of organisational inertia, and can thus capture critical market shares in the business of merchant payment before Wave Money are able to react. Furthermore, due to the fact that Wave Money's services are available to Telenor-customers only, the total addressable market for Wave Money is somewhat limited compared to their competitors'. This is especially a concern regarding the future mobile financial services from MPT and Ooredoo, should they choose to offer them to all Burmese mobile phone subscribers, regardless of MNO affiliation. Wave Money's competent leadership team is another great strength. As a result of being owned by Telenor, a company with international experience, the Wave Money decision makers has access to insights from other international

markets. A key to capitalise on this intangible asset is to make the tacit knowledge about mobile financial services explicit and communicated throughout the Telenor Group (Nonaka, 1994).

Wave Money has succeeded in establishing lucrative partnerships with companies and NGOs. At the moment, the service offers salary disbursements to 20 different clients in the Burmese market. Brad Jones estimates that Wave Money conduct 3-4 000 salary transactions each month. The most notable salary disbursement business partners are Kentucky Fried Chicken (300 employees) and Yoma Bank (300 employees). Among the partnering NGOs, we find the World Food Programme, Save the Children and International Red Cross. Wave Money helps these organisations with distributing financial support for the poor. This is beneficial for all parties involved in several ways. Firstly, the financially less fortunate become included in the Wave Money ecosystem, ensuring at least some degree of financial inclusion for these subjects, as well as expanding Wave Money's user base. Secondly, Wave Money is able to charge a transaction fee on top of every transaction. Prior to using Wave Money, the costs for an NGO associated with distributing cash was estimated to be around 50 % of the monetary value of the transaction itself. With Wave Money, the NGOs only need to pay Wave Money a fraction of this sum for facilitating the distribution. This makes it a win-win scenario for all. Lastly, recipients of financial support no longer need to visit bank branches or seek out NGO premises to cash out their money. With Wave Money, the money is deposited straight to the recipients Wave account, and he or she is able to visit any agent at any time if they want to cash out (Jones, interview).

5.2.2 Mobile payment users

Until 2014, mobile phones was a good available only to a small elite of the Burmese population, due to the extreme price point of a SIM card with MPT. During the military regime, SIM cards cost between 300 and 1500 USD (Cunningham, 2016), an unobtainable sum for a regular worker in a country with a minimum wage of MMK 3500 (2,5 USD) per day and where day labourers often earn much less (Zainudeen and Galpaya, 2015). This changed when new regulations came in place, issuing licences for mobile network operators to establish mobile connections in the country. This lead to a surge in mobile phone uptake in Myanmar from 2014, when Ooredoo launched their SIM cards (ibid). Ooredoo sold SIM-cards at for only MMK 1500 (1,1 USD), pushing the price point for MPT SIM cards in the

process (Cunningham, 2016). Ooredoo was soon followed by the Norwegian Telecom company Telenor. The 51 million active mobile subscriptions across the MNOs today correspond with at least 45 million unique mobile users in Myanmar, accounting for almost 80 % of the population (Cunningham, 2016). Due to the late liberalisation of the mobile market, Myanmar has to a large extent skipped over the feature phone stage of mobile adoption, and between 70 and 80 % of the mobile phones in the country are smartphones (Iji, 2016; Vota, 2015; Risnes, interview). This puts Myanmar far ahead of most other countries in smartphone penetration, and on par with advanced technological economies like Singapore and South Korea (Vota, 2015). A reason for the high percentage of smartphones among cell phones in Myanmar could be that there is a "social pressure" to own a smartphone and not a feature phone. There is a perception among the Burmese that it can be seen as socially inferior and an embarrassment to have a feature phone, and as a result, many Burmese await buying a phone until they can afford a smartphone. For the same reason, people usually do not buy second-hand phones, as they will be seen as inferior for not being able to afford a new phone (Zainudeen and Galpaya, 2015). Gaining the ability to conduct voice calls is the most common adoption motive for mobile users in Myanmar. Voice calls are necessary in order to communicate with business clients, to stay in touch with friends or family or to call family members in case of emergencies. Other motivating factors are related to practicalities such as having access to mobile entertainment (games) and social media or avoiding asking others to borrow their phones when in need (Zainudeen and Galpaya, 2015).

Even though SIM cards have become much more affordable, there are still high costs associated with having a phone since the lowest denomination for an airtime top up is, as of July 2015, MMK 500. Because of this, a mobile phone is initially seen as a common property within a household, shared among the family members until they can acquire enough phones for each family member (ibid). This might be problematic for the proliferation of mobile accounts, as they usually are uniquely connected to one mobile phone number.

Today, Wave Money have about 370 000 users of their services, including OTC (Jones, interview). 320 000 users have registered Wave Money Accounts, while between 50 000 and 60 000 unique users have used performed an OTC transaction within the last 90 days, which is the period of time Wave Money use to benchmark usage statistics (ibid). In terms of transactions, the most popular service is mobile airtime top up from Wave Money accounts with around half a million transactions each month. Coming second and third in usage

frequency is P2P money transfers using Wave accounts and through OTC with about 60 000 transactions each month, but these numbers are growing at a rate of 35 % each month. When you add cash-in and cash-out transactions, Wave Money is closing in on 1 million total transactions each month, of which 75 % are made through the Wave Money app. (Jones, interview). We do not have access to accurate user statistics for the five competitors with the strongest presence, but they are significantly lower than for Wave Money, and their total number of monthly OTC transactions at agent locations are less than 30 000 across the five actors combined (Haley, 2017).

5.2.3 Merchant adoption of mobile payment solutions

At the time of launch, Wave Money offered Wave Shop Transfer transactions (OTC) at 4000 agent locations across Myanmar (Wave Money, 2016). Today, the number of agents is 8000, spread all across the country (Jones, interview). Telenor has 100 000 points of presence across Myanmar. At these locations, customers can purchase Telenor SIM-cards and top up their airtime. Wave Money aims to convert 30 000 to 40 000 of these to Wave Money agent locations capable of conducting OTC transactions. The total amount of retail locations in the country is between 150 000 and 200 000, but since most of these are corner shops without official trading registrations, the number is difficult to verify (Jones, interview).

Wave Money has defined their business journey and growth opportunities in 3 steps, starting with a product offering of basic MFS products to consumers for convenience, then expanding into digital payments to increase customer base and mobile payment uptake before offering more complex balance sheet products like lending and insurance when the customer base is significant (Digital Money Myanmar Limited, 2017). They are currently taking measures to conquer the second step of this business journey. In an ongoing experiment, Wave Money employs 400 merchants who are able to carry out POS payments (Jones, interview). These 400 merchants are part of a 3-month series of experiments, from which Wave Money will gather data and evaluate whether merchant payment functionality is a lucrative business opportunity and test the readiness of merchants to accept mobile payments. At the present time, the functionality of the merchant payment system is limited. Transactions between consumer and merchants are settled through the existing P2P-structure in the Wave Money app, eliminating the need of QR-codes or payment terminals, implicitly reducing the costs associated with investments in infrastructure to a minimum. However, the transaction

settlement time is slow, and Wave Money is currently investigating whether QR codes could help mitigate this issue. In the future, Wave Money will implement bar code or QR functionality in the mobile app.

The merchants who use the merchant payment functionality are not charged any extra costs. The reason for this is, according to Brad Jones, that it is difficult to justify the associated costs for the earliest of adopters. The participants of the merchant payment experiment series are chosen on the following two criteria: the merchant should have a high volume of transactions and they should be located in areas where they are likely to have a high number of customers. Among the participating merchants, we find teashops, local restaurants and corner shops in relative closeness places of interest, such as universities. Many of the 400 merchants are also Wave Money agents (Jones, interview). Out of the total number of transactions conducted at these merchants, only 10 to 15 percent are reported to have been conducted through the merchant mobile payment service. The merchants are said to show curiosity towards new technology, their technological literacy is sufficient enough to utilise the mobile payment system, and they are intrinsically motivated to test out new business opportunities stemming from adoption of new technology (ibid).

Furthermore, the experiment shows that merchants are able to utilise mobile payments to support and enhance their existing business models. One example provided by Brad Jones was that of a merchant situated on the ground floor of the Telenor HQ in Yangon. The merchant in question keeps records of what customers buys in her shop over a one-month period, and postpones the settlement until the end of that month. Prior to enabling the mobile payment solution, she was forced to pay a visit to every customer in her records and collect their payments in cash. This practice is time-consuming, and it would often take her a day's work to complete all the transactions. When she enabled mobile payment solutions, she was able to settle nearly all payments remotely without having to relocate, making her able to conduct business in the meantime.

In addition to the 400 physical merchants, Wave Money have reached out to online merchants in order for them to accept mobile payments through the Wave Money app. Online platforms are better fitted to facilitate mobile payments than physical locations, according to Brad Jones. In order to facilitate online mobile payments, Wave Money has entered a partnership with Paysbuy, a Telenor-owned payment gateway company. Transactions are conducted through the Wave Money app after choosing the products on either company owned websites or other

online marketplaces, such as Facebook, and paid using the customers' Wave accounts. Currently, Wave Money employs three online merchants, one operates in the food delivery business, one in cinema ticketing and one is a distributor of digital content (Jones, interview). In the future, Wave Money aims at a total market of between 100 and 1 000 online merchants who are able to integrate the payment solution on their websites and upwards of 200 000 merchants on platforms such as Facebook (Digital Money Myanmar Limited, 2017).

5.3 Analysis of the state of Wave Money merchant adoption of mobile payments

With a low level of both consumer and merchant adoption of mobile financial services in Myanmar, the country is very much in the infancy of mobile payment usage and need to move from the initial market launch to conquering the Innovators and then the Early Adopters. By implementing merchant payments on a large scale, Wave Money can increase their total product offering, thus making their service more universal. Merchant payments complement the existing mobile payment solution by generating new use cases for both consumers and merchants. The perceived usefulness of the mobile wallet is anticipated to increase after introducing merchant payment functionality, possibly contributing to financial inclusion by providing increased access to the digital financial system.

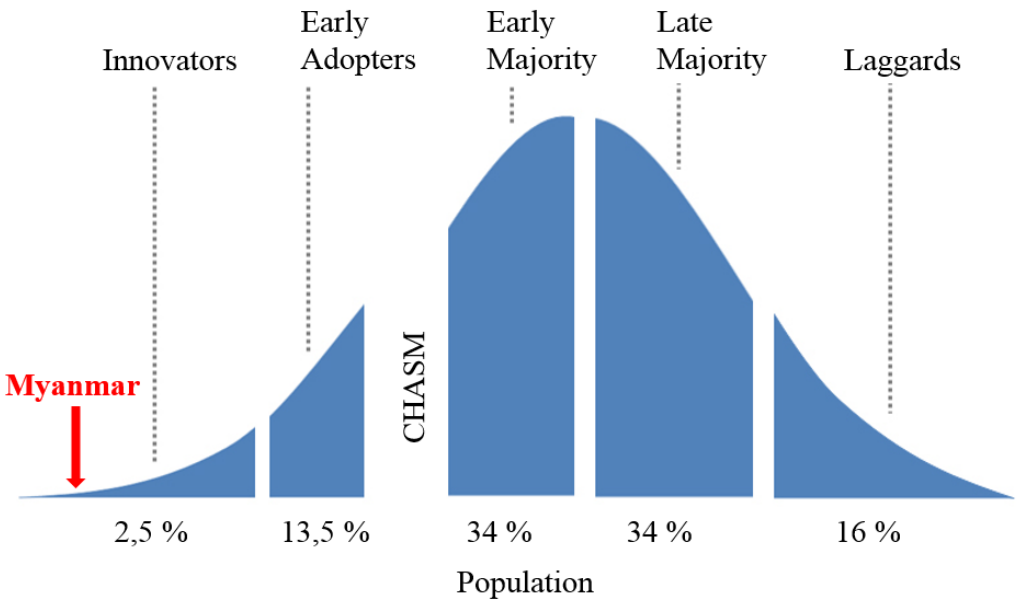


Figure 5.2: Myanmar in the technology adoption life cycle

In Pakistan, 5 % of the population has a mobile account with Easypaisa, whereas the corresponding number for Myanmar and Wave Money is 0,5 %. In some cases, Pakistan may be a valuable benchmark for merchant mobile payment adoption success in this early phase. In this section, we will evaluate the prerequisites, drivers and barriers for merchant adoption of mobile payment in a Burmese setting for the two first phases of the technology adoption life cycle. In section 5.4, we will briefly make a more long-term assessment of how Wave Money may continue to grow their merchant payment adoption and conquer the majority of merchants in the country.

5.3.1 Segmenting the market for merchant payments

Retailers in Myanmar that sell fast-moving consumer goods (FMCG) represent a large merchant payment market opportunity for Wave Money. Wave Money identifies the target adopters for merchant payments as independent stores, modern trade and transportation, with a target market in the tens of thousands (Digital Money Myanmar Limited, 2017). The total amount of retailers in the FMCG in Myanmar is estimated to be as high as 200 000. We argue that the total addressable market for retail merchant payments is limited only by the total amount of retailers. Therefore, we suggest that Wave Money should make an effort to conquer every retailer available. Currently, Wave Money employs 8 000 OTC agents who operate in said retail business. In the future, Wave Money has the aim of growing its OTC agent network upwards of 30 000 (Jones, interview), through adding at least 1000 agents every month.

"We will continue to grow our agent network, and we want to be the biggest in the country. We are currently rolling out around 1000 to 1500 each month"

- *Brad Jones, (interview, 06.06.2017)*

In the following sections, we present measures that pave the way to the ultimate goal of capturing the total addressable market. Following the logic of the diffusion of innovation theory, the adoption process should follow iterative steps with a gradually growing market acquisition. For Wave Money, we suggest an incremental growth in merchant adoption of mobile payment services that starts with the 400 merchants who are currently involved in retail payments experiments. The characteristics of these merchants correspond to the Innovator segment in the technology adoption life cycle. The participating merchants will take

part in the initial development of the payment service. When the technical solutions for retail payments are hammered out, the next logical group of adopters comprise the existing agents as they are well acquainted with Wave Money. Therefore, they are preconditioned to see the benefits of accepting mobile payments. We identify the existing 8000 agents as Innovators because of their quick acceptance of Wave Money services. The future agents are placed in the Early Adopter segment. As the agent networks grows, new OTC agents should adopt mobile payment solutions rapidly. The two service offerings, OTC and payment services, should be contemporaneous. When Wave Money has acquired significant market shares among the Innovator and Early Adopters groups, retailers in the Early and Late Majority should be approached.

5.3.2 Prerequisites for merchant mobile payment adoption in Myanmar

Since the prerequisites defined in figure 3.7 are equally weighed for all adopter group transitions, we will evaluate them by themselves before going into detail on the past and future diffusion of Wave Money mobile payment solutions in Myanmar.

Myanmar is in a very favourable position with the vast proliferation of mobile technologies in the country, satisfying P1 in our framework. Myanmar has a high rate of mobile phone adoption, and a proliferation of smartphones on par with the most technology advanced countries in the world. As this prerequisite is in place, stimulating mobile phone consumer adoption should not be a primary concern for Wave Money when attempting to penetrate the merchant payment market. However, as technological changes can happen rapidly, it would be wise to monitor the mobile phone market in Myanmar.

The second proposition in the framework covers viable mobile payment infrastructure. The mobile payment infrastructure in Myanmar should be considered viable, albeit very simplistic and therefore susceptible to degradation in the foreseeable future. The current solution employs P2P transactions as the mechanism for POS merchant payment, and the main concerns are network or app downtime and lack of electricity. As seen in section 5.1.1, those without electricity charge their phones with friends or neighbours, and as far as we know, unscheduled downtime has not been an issue for Wave Money so far. If Wave Money chooses to employ QR codes as their main enabler for merchant payment using mobile money, the situation will remain more or less the same. However, should they choose to introduce NFC

payments, Wave Money should learn from the technical difficulties experienced in Pakistan, and hold off launch until they can guarantee a stable system.

The third prerequisite is P3, merchant's knowledge about mobile payment systems. The awareness of mobile money is relatively high in Myanmar, at between 65 and 90 % (Brad Jones, interview*). However, the level of usage does not reflect these numbers. The general usage and adoption for mobile payment solutions remain low for the population in general and for merchants in particular. It is imperative for Wave Money to capitalise on the brand awareness to incite perceived usefulness. Merchants need to see how and why adoption of mobile payments is a rational choice for their existing businesses. Furthermore, merchants must be educated on the new business opportunities that mobile money can facilitate.

Lastly, trust and security is a big issue for financial services in Myanmar. Multiple bank runs and loss of citizens' deposits have led people to shun banks to a large degree. However, trust is on the rise, and the proportion of Myanmar's finances in banks is rising. Wave Money is best in class regarding ethical practices, and this is something they need to make evident. As they are a part of the international Telenor Group, Wave Money must be proactive against unprofessional actors in mobile money that do not follow regulations to the same extent as they do. Such actors undermine the general trust in mobile payment, a trust which Wave Money strives to strengthen (Jones, interview). The higher the general trust in Wave Money among the Burmese public, the more merchants will be inclined to adopt mobile payment.

5.3.3 Early stage Drivers for merchant mobile payment adoption in Myanmar

In this section, we evaluate the propositions for drivers from the transitions between market launch to Innovators, and Innovators to Early Adopters. The weighing of these propositions are originally shown in figure 3.11 and 3.12. Further alterations have been made in order to better fit the benchmarking case of the Pakistani market. The adjusted frameworks are shown in figure 4.4 and 4.5. We assume these propositions fit the factual circumstances in cash based economies such as Pakistan and Myanmar. By making use of these frameworks, we propose measures that can be taken in order to ensure further proliferation of merchant payments using the Wave Money platform for mobile payments at merchant locations.

To stimulate the extrinsic motivational factor of attracting new customers by offering mobile payment acceptance, P9, Wave Money should continue their efforts to attract consumers to adopt mobile wallets. 9 month after launch, Wave Money already has 320 000 mobile wallet users, and as far as we understand, the rate of uptake does not seem to be diminishing. In theory, the total addressable market among consumers encompass all mobile subscribers in the country. The served addressable market currently consists of the 19 million Telenor subscribers, as Wave Money is only available to Telenor subscribers at the present. Some incentives to attract Wave Money consumers are already in place, but they need to be expanded. We believe the biggest potential lies with salary disbursement and NGO cooperation. Through these initiatives, many consumers open Wave accounts that are liquid on a regular basis, and if merchant payment is available at their local retail locations, they are more poised to become customers there. This driver for merchant adoption is of high influence for both the Innovator and Early Adopter segments, and incentivising consumers to adopt mobile wallets should therefore be a priority for Wave Money.

According to Brad Jones, Wave Money is the most recognisable brand within the field of mobile money in Myanmar. Based on this, we assume that association with Wave Money has a positive impact on a merchant's image, supporting P10. If we look to Pakistan, Easypaisa became recognisable to the extent that the brand name was synonymous with the act of transferring money among consumers. Wave Money should strive to achieve the same market position through continued efforts to enhance their brand reputation. This could include cooperation with NGOs to improve CSR as well as communicating Wave Money's high ethical standards through marketing channels. The possibility of an enhanced image is a high influence driver to adoption for both Innovators and Early Adopters.

"In the country now, we are the number one brand for mobile money. We are attracting early adopters. (...) So far, the agents want to be a part of something that is helping the country"

- *Brad Jones (interview, 06.06.2017)*

The last driver of high influence for both Innovators and Early Adopters in our framework is P19, influence from vertical partners. Examples from Pakistan and statements from several of our interviewees indicate that suppliers or wholesalers have a large impact on a merchant's decision on whether or not to adopt a mobile payment system. Wave Money can take advantage of this driver by entering into business agreements with suppliers and wholesalers

to use mobile money. When companies higher up in the value chain appreciate and demand payments in digital currency, a pull factor on the merchants to comply is generated. Furthermore, if consumers are adopting mobile payments at the same time, this will effectively digitise the value chain stretching from the wholesaler to consumer. A possible point of attack towards a supplier push for mobile money could be the 160-170 distributors Wave Money currently employ today (Jones, interview). Of these, 75% are also Telenor distributors, providing an even bigger potential market potential should the distributors convince Telenor retail locations to adopt mobile payment as well.

The next four drivers, P5, P6, P7 and P8, are of medium influence for Innovators and high influence for Early Adopters. They encompass the possibility to offer enhanced customer service and a more attractive business offering through mobile payment acceptance. Assessing whether or not merchants believe adopting mobile payment would lead to increased impulse purchases, P5, is difficult without knowing the merchants in detail. However, we know from an empirical example that some merchants operate on a business model based on credit (Jones, interview). As Wave Money grows and offer more services, they could include microcredit to consumers' accounts. This way, consumers would be able to buy goods at retail locations even when short on funds. Even without the microcredit measure, a wider proliferation of liquid mobile accounts would increase impulse purchases and product availability as consumers no longer need to carry cash with them at all times. Mobile payments also allow merchants to include new services and enhance their customer service, effectively enhancing the merchant's product offering. This is demonstrated by the example described in section 5.2.3. Other ways to stimulate the abovementioned drivers for the Early Adopter segments is by co-offering OTC agent transactions and mobile payment acceptance to consumers.

As of now, Wave Money does not charge transaction fees for the merchants enabling mobile B2C payments. This is in line with driver P11. Mobile payments need to be cheaper or at least priced equally to use of cash in order for merchants to adopt them. Even though this driver is of low or medium influence for the Innovators and Early Adopters, its importance increases for later adopter groups. In our interview, Brad Jones stated that in today's paradigm, it is hard to justify to merchants and consumers why they should have to pay to make a payment. This is especially true for situations where the convenience do not outweigh the costs. Until Wave Money can justify the implicit costs associated with mobile B2C payments, they need

to uphold the 0-level cost scheme. As merchants get more acquainted with the system and its benefits, and a larger proportion of consumers take advantage of mobile payment opportunities, the market will perceive the costs associated with cash handling as diminishing. This is likely to happen when the adoption rate has surpassed the Early Adopters. Then, and only then, should Wave Money start applying reasonable transaction fees.

The last driver, P4, a merchant's need for new payment systems, is of little importance to the early adopter groups. According to Brad Jones, the merchants who are involved in the experimental pilot project are intrinsically motivated to participate. He states that:

> *"There is a bit of buzz around the mobile payment in the country right now"*
>
> - *Brad Jones (interview, 06.06.2017)*

The merchants are curious to see how the new technology will affect their business. Given this proposition's suggested weight within the Innovator and Early Majority's merchant groups, we do not recommend any immediate measures that need to be taken in order to accommodate for this driver. However, as the market share of Wave Money for merchant payment grows, Wave Money need to create a perceived need for mobile payment among the more sceptic adopter groups. This can be done through the efforts we have mentioned earlier like engaging suppliers to demand mobile payments for their goods and through an increase in consumers wishing to pay by mobile accounts. This will create a two-sided pull effect that, according to two of our interviewees and supported by literature, will be effective in inciting merchant adoption of mobile payment.

5.3.4 Early stage Barriers for merchant mobile payment adoption in Myanmar

In addition to drivers, the refined framework from figure 4.4 and 4.5 portrays barriers to merchant adoption of mobile payment services in the Innovator and Early Adopter segments. The most influential barriers for the Innovator and Early Adopter segments are P12, incompatibility with existing business, and P20, infrastructural instability. As discussed in section 5.3.2, the simplicity in the current experimentations today with merchant payments mitigates the issue of incapability to some extent. In the future, Wave Money plans to enable QR code functionality in the customer app. This approach is different from Pakistan, as Easypay has targeted NFC technology as their go-to technical solution for the initial merchant

payment offerings. Using QR codes instead of NFC tags at payment terminals reduces complexity associated with implementation for the merchants. At the most, if the functionality is implemented in the Wave Money app, the merchant is only required to produce a QR code that states the merchant's identity. No new hardware or software need to be installed, and the impact from infrastructural instability is minimal as it builds on existing mobile infrastructure. This seems appropriate for Wave Money, especially when considering the low levels of digital payment compatible hardware present in Myanmar. Only 3 500 POS card terminals are operative in the entire country. We recommend that Wave Money continue with their plan to launch merchant payment by enabling in-app QR functionality, and await NFC payments until a time where the Burmese market, both merchants and consumers, as a whole is more ready for more advanced digital payments. With these measures, we consider barriers P12 and P20 to be well mitigated. Still, caution is advised if Wave Money should opt to employ more technically advanced solutions.

P14, lack of charging models, is classified as a barrier of medium influence for both Innovators and Early Adopters. Prior to scaling Wave Money's merchant payment solution to match their desired agent network size, many merchants may be hesitant to adopt mobile payments if they anticipate a low level of customers with funds in their accounts. In Pakistan, Easypaisa has successfully mitigated this barrier by virtue of their vast agent network. Wave Money need to do the same. In addition, cooperative efforts with NGOs and large corporations for aid and salary disbursements is key to ensure a large group of potential mobile payment-using consumers. Wave Money should nurse their relationship with the existing partners for salary disbursements, learn from existing practices, and use these partners as references when approaching possible new partners. A best-case scenario would involve a large scale G2P-usage of mobile payments, as we have seen at an increasing rate in Pakistan. However, there are several issues related to this: Wave Money is not necessarily available to all Burmese citizens, and their competitor MPT, who will launch mobile payment soon, is government owned. Therefore, MPT is more likely to secure a governmental bulk disbursement contract.

"Getting cash into the system is a challenge. We have to find enough ways allowing people to pull money from bank accounts if they are banked, and allowing people to get paid salaries so that they have money in their account."

- Brad Jones (interview, 06.06.2017)

Proposition 13, lack of standard solutions, is regarded as an adoption barrier with low influence for the Innovators and medium influence for Early Adopters. Its importance increases as the adoption process moves along the life cycle. In the last stages of the adoption process, the transition between the Early Majority to the Late Majority and Laggards, we argue that the proposition is placed among those of the highest importance. In order to prepare for this development, Wave Money should investigate its options for enabling cross-MNO services. As Wave Money only caters to subscribers of Telenor, achieving a status as a 'standard solution' could be more challenging than for competitors who offer multi-service acceptance. At the present situation, merchants who wishes to enable mobile payments to a broad public may have to establish several other partnerships with providers of payment services in addition to their partnership with Wave Money. In Pakistan, at POS locations where Easypay is accepted as a payment method, Jazzcash is also accepted. This is due to the fact that Easypay makes use of a third party to facilitate the NFC transactions. A similar business model for Wave Money should be investigated. For a QR-code based system, a simple solution would be to create QR codes that are recognized by the payment apps of all mobile payment providers, with the merchant's account accepting transfers from all the service providers' accounts.

The Wave Money merchant payment scheme as it exists today is not a very technically complex process, which means the impact of proposition 15 is low. However, for the most technologically illiterate, even the tasks that are perceived as relatively simple by the majority can prove to be an unsurmountable challenge. In our interview, Dr Farrah Arif presented us with an example of how technologically illiterate people struggle to write text on their handsets, a mundane task for most adopters. As the Innovators and Early adopters are characterised as relatively tech savvy, the concern for complexity should not be of major importance for Wave Money in the immediate future. However, when transitioning to the Late Majority, and especially the Laggards, complexity is a very influential factor for adoption. Making use of QR codes would mitigate the complexity of the Wave Money payment scheme as it exists today, and we recommend no further measures.

Similar to P13 and P15, P16, lack of critical mass among consumers is a factor that increases in importance as we move along the technology adoption life cycle. As stated in section 5.2.2, the number of unique mobile accounts in Myanmar is 320 000 which accounts for less than

0,5 % of the population. To ensure a higher uptake of both consumer and merchant adopters, investments into incentives need to be made, as Brad Jones put it:

"Our strong belief is that in the early days, to stimulate this ecosystem, heavy investment in incentives and marketing is required on both sides of the transactions."

- *Brad Jones (interview, 06.06.2017)*

Examples could be for merchants to offer discounts to consumers paying using mobile payment, with Wave Money covering the difference. However, Wave Money did not want to make such an investment at this time, so other approaches need to be considered. A possible marketing target could be Burmese women, as they are the financial decision makers of a household in Myanmar. Wave Money also present mobile money success stories on their website, although not on the front page. Moving these displayed quotes from satisfied customers to the front page, so they become the first thing people see when they visit the website, could be a smart move to incite curiosity about Wave account usage. Wave Money should capitalise on the high brand awareness to get more adopters.

Finally, P17, high commissions and costs on implementations, is categorised as a low barrier to adoption for the Innovators and Early Adopters. As of now, mobile payment acceptance incurs no costs for a merchant, as they are using the P2P solution in the experimental phase. A QR solution should also be close to free to implement, as it requires no hardware. In an establishment phase, Wave Money should charge neither merchants nor consumers for payment transactions, as was the case for Easypaisa. When people get used to using the service, some small transactional fees could be implemented, but not before accounting for critical mass.

5.3.5 Summary of short-term considerations to ensure merchant adoption of mobile payment in Myanmar

In this section, based on the assessments made in 5.3, we summarise the most important actions that Wave Money should take in the short term in order to ensure adoption of B2C mobile payments among the Innovator and Early Adopter groups.

In order to acquire market shares and grow the total market within the field of merchant payments, Wave Money should seize the chance while there are still few competitors in the

market. The current competitive landscape indicates that there is a vacuum, but competing solutions are anticipated to enter the market with strong presence in the near future. Some of the new competitors can compete with Wave Money in terms of both agent network prevalence and product offering.

In the early stages of getting merchants to adopt mobile payment, Wave Money's main focus should be to deploy merchant payment solutions within their existing agent network. Furthermore, as the number of agents grows, the newcomers should be targeted as the continuous main segment for adoption. Wave Money should capitalise upon the high brand awareness they enjoy in the Burmese public. The Burmese should know not only that Wave Money exists, but also what services would be available to them and the conveniences they entail. This would also lead the merchants to associate Wave Money adoption with a better image for themselves. The brand awareness campaign should also focus on the high ethical standards Wave Money follow as a Telenor company, and ensure their customers, both consumers and merchants, that their money is safe when entrusted to Wave Money. These measures will also hopefully lead to a larger user base among consumers, which will incentivise merchants to adopt B2C mobile payments as more and more of their customers demand it. In the Pakistani case study, the pull effect from vertical partners seemed to play an important role for B2C mobile payment adoption. Wave Money should investigate the opportunities associated with potential partnerships among the 160-170 distributors of which they already are acquainted. Wave Money should escalate their collaboration with NGOs and companies that are prone to deploy mobile money salary disbursements. This will tend to the issues related to lack of liquidity in consumers' wallets as well as the lack of charging models within the Innovator and Early Majority user groups. QR functionality is preferred in favour of NFC technology, as the merchants' investments in infrastructure will be lower. Furthermore, no transaction fees should be imposed on the merchants in the first two adopter groups. Lastly, we advise Wave Money to explore the opportunities within cross-MNO payment schemes.

5.4 Future of mobile payment in Myanmar

As the financial scene and mobile payment landscape in Myanmar is in constant and rapid development, envisioning the adoption behaviour beyond the Innovator and Early Adopters groups is a challenging task. However, it is possible to predict some general market mechanisms. As pointed out in section 3.3.2, B2C mobile merchant payment solutions can arguably represent a disruptive innovation in markets where cash and/or cards are the prevalent payment method. This argument forms the foundation of our analyses in sections 4.3 and 5.3. As the general adoption process moves past the Early Adopters, the stage is set for conquering the Early Majority. The transition between the Early Adopters and the Early Majority is what Geoffrey Moore (2014) identifies as the chasm. In this section, we will describe how elements from 'Crossing the Chasm' can be utilised to better understand and predict the future diffusion process for B2C mobile merchant payments in Myanmar. Furthermore, we will extract the findings from section 3.4.3 and relate the associated framework from this section to the case of Myanmar and Wave Money. As the transition from the Early Adopters to the Early Majority is something that will not occur in the near future in Myanmar, our empirical foundation is somewhat shaky. Therefore, the discussion and findings presented in this section should be regarded as possible approaches rather than clear-cut solutions to the challenges that lie ahead of Wave Money's mobile payment program.

In contrast to the earlier adoption groups, the Early Majority is less concerned about how the general public perceives their innovativeness and more concerned about cost-efficiency and value chain integration. Our analysis in section 3.4.3 indicates that the most influential drivers for Early Majority-adoption of B2C mobile payments are P11 and P19. These are followed by P4-P9 at a medium level of influence (see figure 3.13). Regarding the barriers, P12, P13, and P17 stand out as the most influential ones. These barriers cover either the cost or the compatibility aspect of adoption. The merchants in the Early Majority are driven by rationality rather than curiosity, and if mobile payment adoption is incompatible with their existing business model or if it implies greater costs, they will presumably shun the new system. The remaining barriers, P14, P15, P16 and P20 are given medium influence on the adoption process. Actions that could be taken by Wave Money to mitigate these barriers are outlined in section 5.3.4. The rationale behind P20, infrastructural instability, being given a less important influence for the Early Majority, is that the trials, errors and experiences Wave Money have with the early diffusion process should give them enough insights in how to

mitigate for this barrier as the user base grows. Also, since we have recommended QR functionality as the most desirable approach to B2C mobile payment in Myanmar, this barrier should not be as pertinent as in a market where NFC is the preferred mobile payment technology.

The D-day analogy, presented in section 3.3.2 consists of four steps. When following these steps, the drivers and barriers from the paragraph above are imperative to keep in mind. As the Early Majority represents a significantly larger group of merchants than the Innovators and Early Adopters combined, focusing all marketing efforts towards the user group as a whole will be fruitless according to Moore (2014). A segmentation-oriented perspective is at the core of the first step in the D-day analogy. In this step, Wave Money should 'target the point of attack'. This means that they should select one or two merchant sub-segments from the Early Majority group. After gaining genuine traction in these sub-segment(s), numerous studies show that the remaining merchants in the Early Majority are inclined to follow. As business model compatibility, commission fees and costs on implementation are important factors for the rational merchants of the Early Majority, Wave Money should create a price model that suits the potential adopters' business model as well as their revenue streams. A possible sub-segment of the Early Majority group could be the existing Telenor agents that are not Wave Money agents, as Wave Money most likely will not be entirely foreign to them.

In the second step, companies introducing a disruptive innovation to a sub-segment of the Early Majority are encouraged by Moore (2014) to 'assemble an invasion force'. Here, the perspective should change from segment to solution orientation. If we treat the Telenor agents from the paragraph above as an example case for Wave Money, it would be reasonable to investigate what factors affect their day-to-day business. Such factors could be the effect vertical partners have on their business or how cash handling impose concealed costs. These factors are represented as drivers P11 and P19 in figure 3.13. Experiences from earlier adopter groups will be of crucial importance when mapping the pains and gains of the sub-segment adopters. Positive results from these earlier adopter groups are imperative for members of the Early Majority to adopt the new payment system. Furthermore, by combining OTC capabilities with B2C mobile payment solutions, two solutions that are closely interleaved, the customers of the merchant will have more reasons to seek out the merchant. The payment solution should be easy to use, and a focus on user-centric app development is important to ensure that technological literacy is not a hindrance factor to merchant adoption. We know

from our interview with Brad Jones that app development is an important focus area for Wave Money, as 75% of all transactions are made through the app. This work needs to be continued to support this solution-oriented view.

The third step dictates another shift in perspective. Here, Wave Money should transition into a market-oriented perspective. This is accomplished by combining the perspectives and synthesising the findings from the two previous steps of the analogy. In the third step, Wave Money should 'define the battle and the battlegrounds', meaning that they should choose the appropriate channels of distribution and come up with a communication strategy. Wave Money should emphasise the B2C mobile payment solution's points of difference compared to the established competitors, how the solution functions as a painkiller to the merchant's pains and how the solution boosts the merchant's existing business by focusing on the potential gains. We speculate that at this point in the future, the main points of difference for Wave Money would be the (hopefully) impeccable reputation and trustworthiness of the financial service, the widespread adoption among consumers, and the ability to incorporate mobile payments in the value chain. The reduced pains from cash handling such as the lingering risk of robbery and employee embezzlement should be emphasised. Possible gains for the merchant are the ability to introduce new services and enhance the customer support, effectively retaining existing customers as well as acquiring new ones. Choosing the appropriate channels for communication is also key in the third step. As a part of the Telenor Group, Wave Money should consider leveraging their influence on merchants from this affiliation. The existing communication channels between the Telenor agents and Telenor could be useful mediums.

As we reach the fourth step, Wave Money should be ready to 'launch the invasion' towards the target sub-segment of merchants, in this case, the agents of Telenor located all around Myanmar. By paying special attention to the previous three steps, the marketing and sales thrust towards this sub-segment will have a better chance at succeeding. According to Moore (2014), the continued efforts into this user group will have less friction. When merchants the merchants in the sub-segment have embraced the B2C payment solution, a beachhead into the Early Majority has been established and other merchants will see the possible benefits of the solution with greater ease.

Chapter 6 - Conclusions

In this thesis, we have evaluated which factors influence merchants on their decision to adopt mobile payment solutions or not, and how the importance of the factors change depending on the innovativeness of the merchant. We have then validated the findings by analysing the state of mobile payment in Pakistan and used these combined findings to deliver recommendations on how B2C mobile payment can gain traction in Myanmar. In this concluding chapter, we revisit our research questions and answer them.

RQ1

What factors affect merchant adoption of mobile financial services?

Merchants are an integral part of the mobile payment ecosystem, but in their role in it has been significantly understudied in the past. One of the most significant additions to this field of research is the framework for factors affecting merchant adoption of mobile payment systems by Mallat and Tuunainen (2008). In general, the propositions from this framework are mostly relevant today but based on our findings in chapters 3, 4 and 5, we argue that some alterations are necessary. Our findings indicate that a merchant will refrain from adopting a mobile payment system unless there is a proliferation of mobile technology in the market. Furthermore, merchants must perceive the mobile payment infrastructure as viable and they must possess the necessary knowledge about mobile payment solutions in order to make the adoption decision. Favourable conditions related to customer interactions, new business offerings and reduced costs are notable drivers for merchant adoption of mobile payment. Barriers to adoption include issues to lack of standard solutions, incompatibility with existing business, high costs on implementation and lack of a critical mass of consumers.

Through reviewing existing theory and from conversations with our interviewees, we found it pertinent to add some influencing factors to the framework. The most impactful addition is the influence from vertical partners. A merchant's trade partner is in a position to influence the merchant's business model. Convincing wholesalers and suppliers to adopt mobile payment expands the mobile payment ecosystem and makes the merchant's transition to mobile payments easier. The original framework underscores the importance of a viable basic mobile payment infrastructure. But while the basic infrastructure could be present, the reliability and stability could also be compromised. This could potentially act as a deterrent for merchants in

the adoption process. Therefore, we have added the concept of infrastructural instability as a barrier to adoption. Lastly, the original framework categorises low trust and security in a payment system as a barrier to adoption. Our findings indicate that trust and security is not only a barrier but also a fundamental prerequisite to adoption of any financial service. If a merchant does not trust the actor that manages their funds, it is very unlikely that they will utilise the said financial service.

Another important consideration is how to counteract the framework's static approach to mobile payment adoption. Disruptive innovations, such as mobile payment solutions, usually follow the innovation adoption life cycle. In this process, a set of curious, innovative adopters are the first to adopt the innovation. The Innovators are followed by other user groups with different characteristics and preferences. These groups will only adopt the innovation if it proves its usefulness and is applicable to their specific needs. By combining the prerequisites, drivers and barriers from the framework for merchant adoption of mobile payment systems with the adoption life cycle from the diffusion of innovation theory, we can get a clearer understanding of which propositions are the most important to cater to at different stages of the mobile payment adoption life cycle.

RQ2

How can lessons from Pakistan help facilitate the launch of a mobile B2C payment solution in Myanmar?

Pakistan is, like Myanmar, an emerging market for mobile financial services. When we look at the overall diffusion of mobile payment usage, and where merchant payment has gotten in the Technology Adoption Life Cycle Model, Pakistan is far ahead of Myanmar. Therefore, we argue that Wave Money can learn from the mobile payment diffusion process in Pakistan. By evaluating the launch and diffusion of Easypaisa, we saw that the dynamically contextualised framework from our theoretical desktop study is able to explain the mobile payment diffusion process in a cash based society. Launching mobile payment as a P2P money transaction service first, and adding the service offering of mobile payments at POS locations afterwards, is a proven approach for attaining a viable mass of potential customers that are ready for, and familiar with mobile payments. This is beneficial when the merchants join the ecosystem. The case of Pakistan also underscores the influence a vertical partner can have on the merchant's adoption decision. When suppliers and wholesalers embrace mobile payment, the merchants

experience a two-sided pull effect from both suppliers and consumers, making them more inclined to adopt mobile payment solutions. Based on findings from the case study of Pakistan, we re-categorised the proposition concerning vertical partners as a high-influence adoption factor for both the Innovator and the Early Adopter groups.

However, despite the evident similarities between the two countries and the richer experience in mobile payment in Pakistan as opposed to Myanmar, there is one area where Myanmar has come far longer than Pakistan: Due to the high percentage of smartphone penetration in Myanmar, the Burmese mobile payment ecosystem is more centred around mobile wallets than OTC transactions. In Myanmar, 75 % of all mobile payment transactions are made through the Wave Money app, whereas the corresponding number for Pakistan is 49 %. In summary, Wave Money can take lessons from Easypaisa on merchant adoption of mobile payment solutions, and in return, Wave Money can offer insights on how to successfully transition users from OTC solutions to mobile wallets.

RQ3

What strategies could Telenor/Wave Money implement in order to achieve B2C payments and merchant adoption?

As the Burmese market for B2C mobile payments is in its infancy, utilising the technology adoption life cycle will aid the diffusion process. The first target segment should be the existing Wave Money OTC agents, followed by the subsequent new agents Wave Money adds when the OTC network is brought to scale. When the growth in OTC agents has come to a halt, Wave Money could target the Telenor agents in Myanmar. As the communication channel between Telenor and their agents is already established, and as the agents are somewhat acquainted with the service offerings of Telenor, this group of merchants will presumably be more susceptible to Wave Money's new service offering.

In terms of possible actions to be taken, Wave Money should cater to the prerequisites, drivers and barriers to merchant adoption of mobile payment defined in our framework in chapter 3, and refined in chapter 4. Since Wave Money is at the very beginning of the technology adoption life cycle, the focus should be on measures that will aid in attracting Innovators and Early Adopters. The mobile proliferation in Myanmar, combined with the relative simplicity of the proposed mobile payment solution for B2C payments, is in line with what is needed in

terms of accessibility and infrastructure. Wave Money enjoys a high level of brand awareness, and this awareness needs to be capitalised on to achieve actual service adoption. Association with Wave Money should be perceived as positive for the merchant's image. Lastly, Myanmar suffers from a low level of trust in financial institutions among the public. Emphasising the high ethical standards expected from a Telenor company will be of utter importance for Wave Money in order to make merchants entrust the company with their money.

In order to increase the potential of customer acquisition for merchants, Wave Money should strive to increase the number of Wave accounts among consumers. Among other measures, collaborative efforts with NGOs for financial aid programs and large corporations for salary disbursements are efficient instruments to help ensure consumer adoption. In the same way, increasing wholesaler and distributor adoption of digital payments will act as a motivational factor for merchants and contribute to growing the mobile payment ecosystem in Myanmar as a whole. The current situation dictates that Wave Money should not impose any transaction fees on the merchants that enable mobile payments. In a cash-based society, it is difficult to defend why a merchant should have to pay for mobile payment acceptance until they are used to the solution and can see the added benefits for their business.

Wave Money the Telenor Group should stick to their plan of deploying QR code functionality as the technical solution to offer B2C mobile payment. This will lower the barriers related to complexity and incompatibility with existing business, as well as minimise the risk of infrastructural instability. A simplistic and functional design of the Wave Money app will be important, as the degree of technological literacy is heterogeneous among the population. Every merchant and every consumer, no matter how technologically well versed they are, should be able to utilise the app to conduct transactions. The biggest risk for Wave Money lies in the possible threat of new entrants among the competing telco-led and bank-led mobile financial services in Myanmar. Since Wave Money is offered only to Telenor subscribers, the customer potential is limited. Should the new entrants deploy a cross-MNO platform, they will gain an advantage with a more standardised solution and a larger potential customer base. Wave Money and Telenor Group should investigate the opportunities that multi-operator functionalities can provide.

Chapter 7 - Limitations and implications for further research

We believe that the methodological approach of combining the two models for technology adoption has significant scientific value. Our research adds to the research stream that originated in (Mallat and Tuunainen, 2008). However, the findings might have some limitations. Methodological limitations are discussed in detail in section 2.3.

7.1 Empirical data collection weaknesses

Our assessments of the merchants' behaviour and characteristics in Pakistan and Myanmar are based on second-hand evaluations. Unfortunately, we were unable to perform direct observations of and conduct interviews with merchants in the respective countries. The lack of first-hand knowledge of Pakistani and Burmese merchants' characteristics and perceptions of mobile payment technology may be reflected in our results. Due to the low number of interviewees, we have been forced to make some assumptions in order to provide a foundation for our discussion. Furthermore, the information we have obtained could be subject to bias based on the interviewees' personal beliefs and observations. In addition, the usage of semi-structured interviews as the method of data collection might have led to instances of confirmation bias from us when we asked follow-up questions that were not prepared in advance. Individuals are always inclined to confirm their own hypotheses, and will never be the best judges of their own objectivity.

7.2 Future employment of research principles

To increase the understanding of the underlying mechanisms for merchant adoption of B2C mobile payment solutions, we suggest that further studies on the subject have a broad and quantitative approach. Structured interviews, as well as surveys of merchants, consumers and stakeholders in the mobile industry, will provide a robust basis for a quantitative analysis. A quantitative approach would make it possible to run correlation tests between the different propositions in the framework to provide more pertinent diffusion strategies. Structured and coded variables would also make it possible to compare two countries on an objective basis. We believe our theoretical approach to be applicable to a variety of comparable markets but

recommend a more thorough empirical validation process. A rigid, quantitative and coherent assessment of adoption factors would be of great aid for an MNO that wants to introduce B2C mobile payment in new markets.

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Appendix

A.1 Full transcript of interviews

Date: 19.04.2017

Interviewers: Mikkel Lindheim and Oleiv Grimsrud **(MO)**

Interviewee: Dr Farrah Arif, Researcher at the University of Lahore, Pakistan **(FA)**

Form of interview: Semi structured interview over video chat using Skype

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MO: First of all, thank you very much for talking with us. And Per Jonny says hi, we told him that we were going to interview you today. He said that you have a lot of insight to provide us. Firstly, how much time do you have now?

FA: We can spend one hour, would that be OK?

MO: One hour is good.

MO: So, a quick introduction from us. As we told you in our email, we are studying merchant adoption of mobile payment systems, and a part of our research is to study mobile payments in Pakistan, especially the Easypaisa solution and how that has evolved from its primary introduction until today. Our main goal is to hear from you and what you know about mobile payment in Pakistan, and then we have some specific questions. Firstly, could you just introduce yourself and your research?

FA: As you have seen from my emails, I'm Dr Farrah Arif, I'm a professor here in one of the local universities here in Pakistan. I'm teaching in the business school. I did my PhD from the University of Cambridge in 2012, and since 2012 I've been in Pakistan working at this university. With regard to mobile financial services, I've been associated with this sector since 2013. I've seen Easypaisa from the initial two-three years struggle. They launched in 2009, and then in 2010 they pushed the product into the market, but they couldn't develop the market. So when I started working with them in 2013, even after 4 to 5 years they were struggling. And it's interesting that mobile financial services are still struggling. They couldn't develop the true market for mobile financial services, and I'm sure you are aware of the fact that there are two types of products which Easypaisa is associated to. One is called Over-the-counter, and that is successful, no doubt about it, but that is not for the kind of e-commerce and not for the merchants as such, this is just to transfer money from one place to another. Now when it comes to mobile accounts, the penetration is low with regard to consumers. And the force of merchants are not using it themselves because the consumers are not using it. So as we understand in

diffusion of innovation, again, it is a chicken-and-egg-problem. Should I bring in merchants first? Or should I bring consumers on board first? How can I bring both parties simultaneously on board. It is a big problem. Easypaisa had this first mover advantage, but now they are struggling even more because of competitors. Mobilink is one of the Telco's competitors in Pakistan, and UBL is one of the most progressive banks in Pakistan, and their products have also become quite successful right now in Pakistan. When I started working with Easypaisa, initially I was a trainer who worked with the team of Easypaisa at different levels, but then I started writing studies on Easypaisa. And along with that, because of my own interest, I also conducted some research. Qualitative as well as quantitative. However, my focus was not on the merchant side, but towards the consumer side. Because I'm a professor in marketing and my focus is on consumer behaviour. So when you read my research, there is more information with regard to consumer and not with regard to merchant. And I understand that your focus is on merchants, right?

MO: Yes.

FA: So this is my background. One of my case studies is published in Insead, and I think your professor has acquired this study.

MO: Yes, he sent it to us this morning, so we've read a small part of it already.

FA: Yes, it's a quite heavy case study with a lot of exhibitions. Easypaisa has tried many pilots for penetrating into the market, but they couldn't make it. That case study talks about that. There is another case study that is not yet published. How many case studies has your supervisor shared with you

MO: He has shared one with us, the one from Insead.

FA: There is another case study. I'm not sure if I can share it with my students or not, but let me find it out. It is not yet published, it is in its draft form. I will find this out and then send it to you. My research is not yet published, so I can not share this with you, but we can talk about it. It is more rigid with regard to consumer perspective than the merchant perspective. I was working with Easypaisa, so I have some information that you might find useful. So this is my background with regard to mobile financial services.

MO: Thank you. That was a lot of insightful information. First, we have a few basic questions about the mobile landscape in Pakistan. Do you know how many of the adult population owns a cell phone in Pakistan?

FA: One thing that I will ask you to do, and you can Google it: There is a state bank, a website of the state bank of Pakistan, and they issue a mobile financial services newsletter on a quarterly basis, so I would strongly suggest that you google it, and I'm sure you will find out. The latest newsletter can give you many statistics that you perhaps would be interested in using in your report. That would be the latest published account of MFS in Pakistan. Going back to your question, the cell phone telephone

penetration, I'm not sure about it right now, but it is definitely around 60 percent or so. It is less than the other economies, but shows that there is an upside as well. There is another problem with the data because many people have several sim cards on their names, plus usually the women do not buy the cell phone. Men buy the cell phone or the sim cards, so perhaps the density might be higher, but we don't have the actual figure. But if you talk about the [Unclear]. In the urban areas, I don't find any individual without a cell phone. When you go out and you talk to people, everybody has a cell phone, so perhaps in the urban population, the density has definitely touched around 90 percent plus. No doubt about it. We don't have the figures, but that doesn't mean that we can't see the density. Of course, that does not account for the rural parts of the population. There the numbers would be lower. Maybe around 60 or 70 percent.

MO: My next question is how many own smartphones, but I guess that is in the same set of statistics.

FA: The statistics that I'm sharing with you, these are in regard to cell phones and not smartphones. When you talk about the smartphone, of course the penetration is lower. However, in the last two to three years, the 3g and 4g development in Pakistan has really boosted smartphone penetration. I was talking to somebody from a telco the other day. The growth is in double digits, which means that perhaps within a couple of more years, we will have a very good smartphone penetration in Pakistan.

MO: For the other side of mobile banking, do you know how many of the adult population are customers of a conventional bank? And also: What is the geographical distribution, where are the branches, and are people in urban areas banked to a greater extent?

FA: Well, I don't have the exact figures, but the case study, the [Unclear], the information is a bit dated. It is from 2014/2015 but it does talk about how the total population is divided in terms of banked/unbanked, and then there is also research that talks about how much of the bank segment is actually interested in MFS. The case study might give you some figures that you can quote into your project. The same case study talks about the bank penetration in Pakistan. It will also talk about ATM machine penetration in Pakistan. You can get actual figures from this study. [inaudible, 5 sec]. If you ask for my opinion, the extent is not that great. If you go out in urban areas, it is not the case that you will find an ATM within one minute after walking out the door. It is also not the case that merchants will have a machine for credit card/atm card. It's not the case. I have figures for this credit card penetration. Now, credit card was introduced way back in Pakistan, like two decades ago, but the penetration is still in single digits. Plastic money failed to penetrate the Pakistani market. People are still using hard cash for their transactions. And interestingly, people sitting at the other side, which is the population of your interests, the merchants, they are also interested in the hard cash. There is a culture which promotes the hard cash rather than plastic money or the virtual money. MFS is virtual money. [inaudible, 5s]. People are not very comfortable with plastic or virtual money. When I was doing my research, I did ask one of my respondents, a merchant "Why don't you use your mobile

wallet for your transactions?" He said that "I don't stop people from paying with mobile money, but I think it's also easier for me to have cash. The reason being that I have to make payments." The ecosystem is not yet developed. Two problems: A) If he asks for mobile transactions, most of his customers will be irritated because they don't have mobile accounts. B) When he has to do the payments, the person that he needs to make the payment to, that individual might not have a mobile account either. So what's the use of mobile payments? If somebody would like to use a mobile account, the merchant would not stop them, but the merchant won't force people to use their mobile accounts.

MO: That answers a lot of our upcoming questions about cash proliferancy. Why do you think that the merchants are more interested in cash than virtual credit? Is there a problem with trust in banks or banking system, or is it something else?

FA: I don't think this is an issue of trust. It's an issue of hassle. This is my perception, but in most of the cases it is correct. A poor person needs a lot of courage for walking into a bank branch because they are not entertained. They are poor people and they don't have lots of money. In addition to that, I have my personal experiences, which are not very great, with the bankers. You go there to talk to them, and it seems that they are not there to help you out. The answer to the question: it's not about insecurity as it is about the attitude of the people who are interacting with the customers. A) Customers are not happy with going to the bank and talk to the bankers because the customer service is really really bad. B) There is also a perception from the customers that there will be a lot of hassles when opening up a bank account and making a transaction. Again, people sitting on the other side of the table are not really helpful. So it's more of the hassle, more of the cumbersome operations the banking sector has developed rather than insecurity and lack of trust.

MO: That is interesting, because in our perception, it would be more safe to have your money in a digital or virtual currency. Because if you carry cash with you, you can be robbed, or lose it. But when it's digital, then nobody can steal it from you. But it's interesting that the bankers are people who do not want your best interesting.

FA: One thing is the banking sector. Then you come to the MFS sector. It should be developed in such a way that a typical user can be facilitated with the use. The services are not very well developed for common people. I think it was in 2013, when I went to the head office of Telenor and I was on the floor of Easypaisa, and the CEO of Easypaisa said that at one point in time, he tried to do a transaction on mobile wallet. He couldn't do it, because he made like four mistakes on the interface/panel. The technology that was introduced was a lousy technology. If an educated person is struggling with the technology, just imagine an uneducated person using it. Furthermore, they say that if people will have smartphones, then things would get better. I have my doubts about that, unfortunately. It would take some time. Again, my reason is that it is not just the application, it is also about the extent that

customer services are there to help. I can give you a couple of examples, because I was reading the article you sent me [Mallat & Tuunainen]. The article brought up the technology of NFC. NFC sounds like an exiting thing. For the uneducated, it is easy to put a tag on the back of your mobile and then some machine at the merchant reads it, and the customer only needs to take the mobile close to that machine, and then the payment will be settled. And at the screen of the mobile phone, you will just need to click "check" or any other button after looking at whatever transaction that was made, but the problem with the NFC technology is that somehow, the way it is introduced in Pakistan it is not working. There are multiple problems. It is not just that the merchants are not ready. Even if merchants take the leap of faith, the technology still fails. The same goes for the customers. If they take this leap of faith and are innovative customers, the technology fails. It's about the technology, implementation of technology, development of the ecosystem, and unless we can connect all of these dots, MFS has no future.

MO: It's a big chicken-and-egg-problem, and also we need better technology. We have a more specific question. As you've said, OTC solutions are the most prominent MFS solution in Pakistan today. Do you think that the process of introducing mobile payment, first as OTC solutions and then a transition to mobile wallets, do you think that is the best way to go about it?

FA: Interestingly enough, when I was teaching one of my case studies, I put this question as my class discussion question. I think that it is touched upon in the study that is in draft form. The study is talking about the case of mPesa in Kenya. I don't have the actual figures right now with me, but as you are doing the research, and if you have the actual figures, please inform me about it. What is the penetration of mobile wallet in the mPesa-system in Kenya? Any idea?

MO: I do not have the numbers in front of me, but we have read about mPesa. It's quite high, because the mPesa solution works very differently. You fill up your phone with airtime, and then you can transfer your money, the same money that you would be able to talk with. It's a totally different solution.

FA: But the logic is the same, right?

MO: Yes.

FA: The issue is that even when they force people to go with the mobile wallet and not OTC, but the objective is not yet achieved. What would be the objective of a telco or a bank by giving this service? The objective is the e-float, right? So if the money would be kept in the mobile wallet, the telco and the bank would make money on top of it. So that's the business model. Plus, they are interested in that you buy their other services. The success of the mobile wallet products in Kenya are not a great success, as far as I remember. People are using mPesa mobile wallet just like OTC. They have some money on their mobile wallet and the moment they have money, within a few hours, they transfer that money to another end. They do not use OTC per definition, but in practice they are using it as an OTC

service. Going back to Pakistan, people are not technology savvy. [25:20, inaudible] I do agree that the market is not yet developed. I personally think that it was a good strategy that they introduced OTC in Pakistan first. [26:00, inaudible]. People from OTC will eventually come to mobile account, but first they have to undergo the natural cycle, the cycle of diffusion of innovation. Because these are not very educated people, they are not innovation-driven people, not tech-savvy people, so you can't expect that they will shift to mobile wallets. However, there is some applied models with regard to [26:50, inaudible]. There are stages. The first stage is to use technology for transactions. The second stage is that when you are comfortable with the notion of transactions, then you can jump to the use of mobile wallet. If you get comfortable with the use of mobile wallets, then you can go to the financial services of MFS. There is a natural cycle, and unfortunately, nobody can skip this natural cycle. We have to wait a little bit of time when people will get comfortable with these things. Having said all that, what could be the intervention so that we can shorten up the cycle, so that when we can start by migrating people from OTC to mobile wallet, or perhaps we can entice people to jump on to this mobile account system. In my opinion, introducing OTC first was definitely a right decision.

[28:20, issues with transmission technology. Small pause and call-back]

MO: We wonder about the agents in the OTC scenario. What kind of business do they typically run? Are they Telenor outlets, food markets, local shops, electronic suppliers?

FA: Easypaisa works in such a way that they have their franchisees. They opened up their own shops, but I don't think they became very popular, so most of the model is through franchisees. They have franchisee shops and each franchisee focus on developing their region network. So for example a convenience shop, mobile phone shop, basically these are the two major inputs of the Telenor network. One other thing that easypaisa has done is that when Telenor came to Pakistan, of course they developed their GSM network, and they developed this network with the help of merchants. These were the convenience shops. And they also introduced scratch cards which they sold through the merchants and introduced Easyload, a digital top-up for more airtime, and they used these merchants for this purpose. As I said, most of these merchants were corner shops and convenience shops. And then they introduced the OTC solution. They used the GSM network for OTC. The combination of retailers/agents today is the same today. The case that your professor has forwarded to you has explanations of this. I think it was mentioned that there was 80 000 merchants on board, now we have 100 000 merchants across Pakistan.

MO: At the same agent stores, is it possible if you have a mobile wallet, to pay for merchandise?

FA: First you have to understand that I cannot open my mobile wallet by going through all the merchants. There are some selected merchants. This is one of the biggest problems in regard to penetrating the MFS market. This is something they are not looking forward to, they are not motivated. On top of that, we don't have the network which can help them in opening a mobile wallet.

This means that the merchants are not very exited with this mobile wallet. If they would be exited they would be opening up for the possibility of using mobile wallets in their shops. Why don't they use mobile wallets? Well, they don't have the need of using mobile wallet. What is the need of using mobile wallets? If they don't want to keep money in their mobile wallet, then they don't want to use mobile wallets. For example these small time merchants, what would be their earnings on the daily basis? The earnings are not unlocked. They have to pay to other people at the end of the day. For this they need hard cash, and if they need hard cash, why should they go through the hassle of using mobile wallets. This is a huge problem. Just think like a merchant. You are running your small shop and you ask your client to pay you through mobile wallet. You will lose customers if you act like this. They would never do it.

MO: Yes. You need both a lot of customers to use mobile money and merchants to accept them. What we need is a more encompassing system. Workers paid through mobile accounts.

FA: I agree with you. We have a concept called pull and push in marketing. Traditionally what they have been doing, the MFS people, they were using the push strategy. They didn't create the pull. Just imagine if customers would start going to these merchants and start asking to create mobile accounts. Fewer customers would come to the merchants that do not offer this. But there is another problem. The technology is not yet excellent. While using the technology you might waste time. These are small merchants and at a time, there is just one person sitting in the shop. The same person would be giving the stuff to you and taking the cash from you. Taking the cash and putting it in a box is not that time-consuming, but using a mobile for this transaction is definitely time-consuming. We also need to understand in what kind of shops it might help. For example where there is self check-out systems. If you have this system then MFS makes sense, but if everybody will use the digital transaction to one single person, it will take time.

MO: This seems like a large problem, and one of the biggest technical difficulties for the developer.

FA: If the merchant sees the value of MFS, they will definitely use it. Let me give you a couple of examples. For the last three years, whenever there is black Friday, Easypaisa has started giving good deals to the online merchants. There is a very famous online by the name of daraz.pk. For each black Friday, they have a deal with daraz.pk that they will not entertain other types of transactions, for example OTC. You will only entertain mobile wallets. That has created customer interest. But again the point is, yes, they have forced people to use mobile wallets, but how many of them have remained active mobile account users.

MO: We see that there are 14 % active mWallet accounts on Easypaisa. I guess we both agree that you need incentives for both merchants and customers, let them see what they can gain in more value adding services, customer service etc.

FA: Are you aware of the current packages? When you go through the case study from INSEAD, you will see that Easypaisa has seen this strategy of selling mobile accounts in 2015. That has really helped them to a great extent. Their research found, and the case study that I'm working on also talks about it. We have found out that the mobile wallet is not for everybody. People who are interested in converting themselves to mobile accounts, their psychographics and demographics are different from the other group. Again, this is a new technology, people are not very happy with it, so you have to think like introducing a new product into the market. Whenever you introduce a new product into the market, there are some innovators who use it instantly, so lets find out who these innovators are. One of the things we have found out is that people are very much influenced by their peers and families. If people within a family start using mobile wallets, then there is also a high probability that other family members will use mobile wallets. We need to find out who the innovators are, the people on the stage before the early adopters. Then we can try to penetrate this market. Now, who are these people who are interested in using this technology? My case study talks about this. The people who were using social media, which means they were using data, these people are relatively young, and they were not very educated as well, but they were not completely illiterate. This is a very interesting profile. These were the people who were interested in using this technology. Easypaisa started bundling their products. They said that if you opened up a mobile account, they would give you data, airtime, etc. for free. And if you keep on using the mobile wallet, then each month you will get this bundle for free. Then they introduced different products, such as insurance. If you put 2000 rupees into this account, then you will have this insurance, in addition to free SMS, data, airtime. When they introduced this, there was a spike in acquiring Easypaisa mobile wallet users. And their active mobile account users also increased. But the bottom line is, that this worked for a while. When you bring people into this cycle of usage, then you should come up with other deals and motivating factors so that you keep them in that loop. If they were to disengage from the loop, it would be very difficult to bring them back.

MO: So if you keep the users engaged, that would be a good approach?

FA: Definitely.

MO: We have also found other studies that you should start with the consumers first, then move onto the merchants. Do you agree to this notion?

FA: No, I would suggest to develop digital platforms. You have to work on both sides simultaneously. If you only work on one side, it won't help you. This is the chicken-and-egg-problem. You have to develop both the sides simultaneously so that they can have this reinforcement mechanism. This is the only way that you will keep on increasing the use of mobile accounts.

MO: My most close comparison is the mobile payment solution here in Norway developed by one of the major banks (Vipps). Initially it was launched as a p2p-solution, and then they introduced bill payments and there are talks of introducing retail payments on the same platforms. And since they

already have two million active users on a month to month basis, then I would guess that this is a good approach to get the merchants on board. But maybe that's not the same case in Pakistan?

FA: I think that one of the biggest problems is the merchants. It would be very difficult for telcos to keep these users on board. Why are they using mobile wallets? Only for transactions? This is not very appealing, you can use OTC for that. I can give you an interesting example: I was talking to one mobile account user, and I asked him: You are using your mobile account for one type of activity, but you are not using it for grocery purchases. I asked him: Why don't you buy groceries by mobile account. He replied that he didn't need it. If we have to bring this culture, and we will say alright, when you go to these retailers, and we will encourage these retailers as well, if you start encouraging your clients to use mWallet, there will be mutual benefits. Where are these benefits? People who are using mobile accounts go to merchants to get their hard cash. One way of getting the cash back is merchants or cash machines. Most of the merchants will say that they don't have the cash. The merchant is not feeling like entertaining the mobile account user. How would you attract this merchant? I like this idea that you should have the critical mass of consumers first, and then the merchants will be attracted, but what should you do when the merchant says no because there is no mutual benefits. You have to develop the whole network, and not only the consumers. You will be able to attract the merchants by suggesting that you have the consumers, then just by telling this they might not get attracted. We need to understand what would attract the merchant.

MO: What do you think would attract a merchant?

FA: Interesting. Who are these merchants. Merchants are also the consumers. Aren't they? Most of the transactions that they are doing would classify as B2B-transactions. Just imagine that the merchant would have a lot of value into this if the companies with which he is interacting would start using mobile wallet. If the merchant would like to buy groceries for 10 000, and the wholesaler say that they prefer mobile account because they don't need to send a person to collect hard cash from you. The people who are collecting cash from merchants are different from the people distributing the goods. The companies might save a lot of costs here. That is one of the biggest ecosystems that can attract the merchants. It is also a lucrative solution for these companies. Having said this, I'm sure Easypaisa has been working with this but has failed to understand why it hasn't become a success. Because it's not something that they haven't noticed. I'm not aware of why they haven't applied it. They do talk about that they have developed packages for small and medium enterprises, and try to make them pay the workers' salaries through mobile wallets, but the companies don't find it valuable for them, because they don't know what their employees would do with these mobile wallet. However, if somehow you can engage the companies who are selling products to the merchants, then the merchants would get attracted. Once a merchant has started using a mobile wallet, then the critical mass that you are developing by one way or the other of the consumers, then now the chicken-and-egg-problem is solved to some extent.

MO: We have a couple of more questions. Do you think that the Easypaisa franchisees would…..

FA: Exactly! These wholesalers and the distributors, if we can bring them on mobile wallet, then the agents will be easier to bring on mobile wallets. You have to keep on targeting consumers, but you have to target the distributors and wholesalers as well. You have to move one step forward. Who are the distributors and wholesalers buying from? They are also buying from somewhere. From the big companies, from the big manufacturers. Can we bring mobile wallet to that level? The answer is yes. This is the way, in my opinion we can develop a very effective ecosystem for the real need of mobile wallets for merchants. Your merchants can be brought in to the ecosystem through this channel. And remember, they are also consumers. So if they start using their mobile wallets, they will also have these bundle packages, such as free airtime, free data, etc.

MO: As of now, merchants (or agents) are making money off commissions in OTC transactions. One of Mallat's barriers for merchant adoption of MFS was that MFS sometimes would be incompatible with existing business. Do you think that the agents do not want P2P-payments to proliferate because this would cannibalize the income from the OTC transactions?

FA: Here in Pakistan we call it a price war. A lot of competition is there, and all the companies are pushing the agent network by giving better commissions. The other companies are focusing towards OTC only. Then they are able to give better commissions than Easypaisa because Easypaisa also focused on mobile wallets. It has become a big problem for Easypaisa to convince retailers to use the mobile wallet as well, because the OTC has become very lucrative for them. Now it has become a bit different because other companies are also pushing mobile wallets. It's about perception. You have to inform the merchant that it is not about making money. What the merchant has to realise is that mobile wallet customers will keep coming to you, and the telco is increasing your customer base. The telcos and the MFS market is not doing a very good job in educating the merchants. I have worked in the sales team in Easypaisa. There are some other problems, for example, the money they are making through OTC and mobile wallet transactions. They don't get the money on a daily basis. They don't see the money instantly. This is one of the problems that retailers face, and then retailers don't remain interested in these transactions. If you will start using the technology, and if you get a hang of it, and start liking it, then you can sacrifice a little bit on commission. As we say in marketing: If it becomes the fashion of the day, they might do the switch. You have to make MFS or the mobile wallet as a part of their life narrative. Unless this is not happening, mobile wallet penetration will be very difficult. Think about a merchant. He or she has a lifestyle, and mobile wallets should be an important part of his or hers lifestyle. He or she is getting a kick out of it, he is the fashionable dude around, he is technology driven and not handling cash. This message clicks very well, but the companies are not focusing on this. The case study that I will send you talks about extrinsic and intrinsic motivation. The companies only focus on extrinsic motivation. You cant differentiate OTC from mobile wallet when it comes to extrinsic wallet. But when it comes to intrinsic motivation, it's a different ballgame. The case

study will be talking about, from the consumers perspective, how you can motivate the consumers through intrinsic motivation. My two cents would be that you can also bring merchants on board with you if you will start using intrinsic motivation. The soft side of using this technology. The sense of empowerment, the sense of accomplishment, the sense of the tech savviness. People like this. Just to wrap up our discussion, the penetration of the smartphones that is happening in Pakistan right now, even my household staff, they have started sending me images of notes, because they cant read English. They just take pictures and send them on WhatsApp. And I can see that they are taking some pride into it. They cannot type on a cell phone, so they might scribble something on a paper, take a picture and then send it. This is a cool thing to do for them. So I think this is what we need to develop in a market. These are my two cents.

MO: Thank you so much for your time!

[Interview ended]

Date: 27.04.2017

Interviewers: Mikkel Lindheim and Oleiv Grimsrud **(MO)**

Interviewee: Niina Mallat, researcher at the Aalto University in Finland **(NM)**

Form of interview: Semi structured interview over video chat using Skype

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MO: We are working on our master thesis in Trondheim, Norway, and we are writing about merchant adoption of mobile payments, and how to ensure merchant uptake of these kinds of services. At the heart of our theoretical basis, we have your framework from 2008, the one that proposes 18 drivers, barriers and prerequisites for merchant adoption. Based on this, we would like to discuss merchant adoption with you. Also: How the recent technological advances might have affected the original framework as well. If that sounds OK with you, we can just fire away.

NM: That sounds OK. I just came back to academia in the beginning of February after a 10 year break working in the industry. My new research is concerned about automated vehicles, smart services, IOT, but I will do my best to answer your questions, but I think my answers about mobile payments are based on what I did during my thesis work, and also about general understanding of where the field is headed, but not necessarily the latest academic developments. So that's something you will have to dive into yourselves.

MO: We would value your views anyway, and we understand that it's been a while since you published your paper on merchant adoption, but nevertheless: How do you perceive the changes in the mobile payment ecosystem from the time that you published in 2008 until today.

NM: I think the biggest changes has been in the technology. As I mentioned in my email, at the time I did my thesis and research, and specifically at the time I collected the data, the smartphones had not really been invented yet. There were proprietary mobile phones which had very specific functions and they were different compared to for example laptops or computers. And there were no iPhones, smartphones, iPads, no apps. And therefore the landscape of mobile devices were very different from other computational devices. They were kind of specific. But the adoption of those types of mobile phones was already quite wide in Finland where we did this study. At the moment when we look at the technology and how it has developed, obviously the smartphones and iPads and tablets in general, they are much closer to each other. The apps are running on top of these devices, and you could do much of the same in your laptop, iPad, tablet or smartphone. It's not necessarily when we use an app or internet browser on mobile phone, the mobile technology is in the platform level, or in the infrastructural level, and the use of the services is similar in different devices. My challenge to you would be to look at the definition of mobile payment and rethink this in the new environment. If the user uses his or hers browser on a mobile phone or in a tablet, is there actually a difference anymore, or is some of the features in this mobile interface just a kind of infrastructure? And when you think about payment

services that are done on an internet browser, is there a difference between using a mobile phone or a tablet? That has definitely changed, the technology. Now it enables much more than it did at the time. The big screen, the apps, it enables much more sophisticated and potentially easier to use mobile payment services. At the time I did my study on merchant adoption, there were many complaints about the small screen, the sending of text messages and so on. It would be more easy when you have a bigger screen. Now the technology has caught up on that, so mobile payments have become easier, at least when it comes to what technology enables it to do. The development of mobile payment services has not really taken many steps forward. There are still quite a few mobile payment services, or even the commerce of payment services hasn't developed in a mobile app that supports .. or allows them to store receipts or anything like that. It's no standard feature. I think the technology now is there to enable much more, but the services are not yet present, and the service offering is lacking in terms of what is possible and what is useful for customers. And therefore merchants as well.

MO: Could you tell us a bit about the mobile payment situation right now, related to merchant payments?

NM: I haven't reviewed the situation today overall, but what I see now compared to the uses previously, the time my paper was done, is that companies are starting to use apps. Nowadays its possible to pay for a ticket on your mobile phone because of the screen, and not just an sms you get on your mobile phone. You get a proper ticket which can be scanned and validated when you go into a movie theatre or public transportation, for instance. Again, the technology has taken steps and this has been used in ticketing. The services have improved there. In grocery stores or in small payments, there are some trials conducted by Danske Bank, but I wouldn't say that it is widely used. An anecdote: There was a person visiting us last week from Hong Kong, he was a professor. He said that in Hong Kong and China in general, mobile phones and mobile payments are much more widely spread than in Europe or anywhere he has travelled, and he travels quite widely. In many restaurants they don't have menus, instead you use smart techs, your phone, select a meal online, place the order through your phone, make the payment through the phone. China is ahead of most countries when it comes to mobile payments. Especially in point of sales.

MO: A common strategy to introduce mobile payment solutions to cash-based societies is by implementing OTC mobile solutions before embracing the personal wallet. Are you familiar with the term OTC?

NM: I have discussed the term, but I wouldn't know what that means in terms of mobile payment, so if you can elaborate that a bit, that would be nice.

MO: Of course. In order to conduct transactions from peer to peer, OTC solutions use agents located across the country. Individuals approach these agents and tell them to whom they should transfer the money. These agents in turn conduct the transaction through a mobile network and sends a mobile

notification to the receiving individual. It seems like several companies seek to introduce OTC solutions before transitioning to mobile wallets. Do you have any views on this entry strategy for telco operators?

NM: I think that works in developing countries, but I'm not fully familiar in these kinds of environments. I think it's quite similar to western union money transfers in more developed countries. I guess it depends on how much demand there is for that kind of service, and it could help as a gate or bridge to enable mobile payment technologies, to make merchants and consumers familiar with the technology.

MO: What do you believe is the most fundamental barrier today when it comes to merchants adopting or not adopting mobile payment solutions?

NM: I'm looking at the barriers listed in my framework listed in my framework at the time. Most of them are relevant still today, and altogether the constructs are all still valid, but the content may change. How you interpret the barriers/drivers/prerequisites may change over time. For example, incompatibility with existing business. More business are compatible using mobile payments today then back then because of the development of the technology, the apps, the wide screen, the ease to present a product on the screen and then also the option with the payment methods. The biggest issue today is still the lack of standard solutions. The merchants are not inventing these, but they take on something that is already there, and currently there are quite many options for mobile payment that work quite well. Still, there is not too much innovations within mobile payment solutions and offerings. To be honest, I would be quite surprised to hear that they are still based on these separate mobile wallets, because that was one of the most difficult ways of organising mobile payment schemes from my experience researching consumer adoption of mobile payment solutions during my PhD thesis. Also merchants reacted strongly against having separate wallets and having to log into them, transfer money back and forth, and have one wallet that would be used for one thing and another used for something different. It should be quite easy to integrate the services and to the bank account. People using bank cards do not have to upload money to their bank accounts, they have to do this using some forms of mobile wallets. Mobile solutions should be seamless with the other ways you use money, and not have multiple separate or just one separate wallet for different situations. I would say that the lack of standard solutions and the lack of solutions that are compatible with merchants are the biggest barriers.

MO: In your view, concerning the barriers, drivers and prerequisites, other than the definition of mobile payments and other than technology, what do you are the factors that have changed the most since 2008?

NM: I think that the prerequisites are still there. They lay the ground for wide mobile payment penetrations. The question is how do merchants perceive these barriers today? I don't know the answer

actually, but I think it is worthwhile to test these. So for example if they try to use a mobile payment solution that requires a smartphone, then a wide penetration of smartphones is required. How do merchants perceive that? Do they have a customer base that do not use smartphones, but use more simple devices? The penetration of mobile phone technology is still important, but the usage of these devices is also important. Viable technical infrastructure as well is really important. In northern countries I would expect that this is in place, but it's still worth testing. Knowledge of mobile payments is still important, because even though smartphones are general, the merchants may not have great knowledge about how the mobile payment solutions work. That is also worth testing. Then again, I wouldn't know the result. I could only speculate. The merchants may not know how to use the systems or how to integrate them into the new business. The need for a new payment system is also an important prerequisite. It seems like the industry at the moment is quite satisfied with today's payment solutions and are not necessarily innovatively looking for new methods of payments. This could explain why there aren't so many innovative mobile payment services being developed and offered in the market. Then again, I think overall when I was speaking with the merchants, they were always looking for options for increased impulse purchases. If customers like this kind of payments, that would be a driving factor for adoption. Introduction of new content and new customers are concepts that are still valid. The drive for an strengthened brand/image is interesting. It would be interesting to test whether merchants believe or perceive the usage of mobile payment solutions enhance their brand/image. I do not know if that could be used as a competitive advantage, but it would be interesting to test this. Businesses are always looking for ways to make their proceeds and margins higher, so if mobile payments can help merchants save costs it would be very relevant. The potential application areas are interesting. It would be interesting to see how this works, my hypothesis would be that it has widened because of the technology development, and that merchants would see more areas compatible with mobile phones than before. I think that regarding barriers, lack of charging models is still relevant. If mobile payment systems were linked to your bank account, that would be ideal. This is seamless. The following barriers are also relevant. I would keep all the factors.

MO: There is definitely room for innovation, but why do you think that the extent of innovativeness is as low as it is?

NM: The value added to banks might not have been big enough. There hasn't been enough competition in the market that would have enabled alternatives that would disrupt the existing status quo. The traditional players do not have enough incentives to develop new things and there is a disruption to new entrants to force the traditional players to innovate. Consumers and merchants are relatively happy with what they have today, and there exists no push or pull from any direction that is big enough to change things as they are at the moment.

[Interview ended]

Date: 11.05.2017

Interviewers: Mikkel Lindheim and Oleiv Grimsrud **(MO)**

Interviewee: Oddvar Risnes, Telenor, working with mobile payment in Pakistan **(OR)**

Form of interview: Semi structured interview over telephone

[The interview is translated from its original Norwegian]

MO: Is it okay if we record this conversation?

OR: That's okay.

MO: This thesis is closed from publication, and we write for Per Jonny, Telenor and NTNU.

OR: It's okay.

MO: We write a master thesis on merchant adoption of mobile payment solutions in Southeast Asia. In this regard, we also look at Easypaisa in Pakistan as a case because it is a place where Telenor has come a little further on the merchant front than in Myanmar. As a benchmarking case, experiences from Pakistan may be of benefit for future strategies in Myanmar. As far as we know, you are working with Pakistan as a case.

OR: Yes, we have been in Pakistan. My colleagues are there now on a second round and we have had talks with Easypaisa. Easypaisa may be the starting point when it comes to merchant payment in particular. Easypaisa has focused on and had success with money transfer. That's what they started with. Sending money to parents living in the countryside and, the way you do it is by bringing cash to an agent, then the agent transfers this to another agent electronically, so the parents can retrieve the cash from the latter agent. The money is sent to a social security number (CNIC). That's where it started, but then it has increased because they have added features for bill payments and that they can pay different bills. It's almost like an online bank where you have registered companies that accept payment. You can choose such companies from a menu to make electronic payments. But the most widely used feature is to put money on their mobile account, and then top up their mobile subscriptions. If you look at usage, and on those who are active users, then this function is most commonly used. Most people buy prepaid subscriptions, and to pay this, it's common to withdraw money directly from their mobile wallet. What is the main status of unbanked markets and digital payment services it is person to person, peer to peer. It's the same as when you are "Vippsing" money from one account to another. If A and B does not have an account, it may be that you go through an agent asking for a transfer of cash, and that way you can pick up cash at the other end. If you look at the number of active users, i.e. those who actively use their account over a thirty-day period,

Easypaisa has 2 million active users. But they have about 10 million who have registered account. The biggest competitor, who has had a good increase in recent years, is Jazzcash. They also claim that they are up to 2 million active users. Easypaisa has not come so far and what struck me when I was down there and saw the feedback we received, it was very much characterized by the fact that most transactions happen through cash. More or less all merchants operate with cash. it is uncommon to accept credit cards, and those who accept credit cards are usually high-end merchants, i.e. the big chains and hotel chains. Looking at medium and small merchants everything is handled with cash.

MO: We have spoken with Farrah Arif. She told us that OTC solutions are used the most, but that more and more use mobile wallets. Can you tell us a bit about the proliferation of mobile wallets as opposed to those who use cash?

OR: The impression I have gotten is that those who are actively using their mobile accounts, are a group that consists of migrants. They are Pakistani who work in another country and transfer money home. Those employed in the army also often send money home. There is a large group that use their mobile account in that way, but most Pakistani are not that active in using their mobile accounts at merchant locations. In that field, Easypaisa has set up pilots. They have made an app for smartphones, but not that many have downloaded it thus far. It is very new. They have conducted trials with NFC for a year now. With this, you get an NFC-tag that you attach to your phone. This tag is connected to your mobile account, and that is how you are identified. Then you can pay at a retail locations where they have rolled out POS-terminals that are activated with NFC. For this, you use the tag to recognise your identity with the terminal. There is a third party that has delivered this solution to Easypaisa. The other major actor [Jazzcash, int. note] has told that they use the same third party actor.

MO: And the app is Easypay?

OR: Yes, it is Easypay. We visited a place where they used the new way to conduct payments. The one we call "till payment", where you can pay to a code. There is a code at the merchant. We visited a restaurant, and we had the possibility of transferring money from our wallet and to the merchant. This way, it is a user-activated payment. You navigate through a menu and find "till payment" and pay the amount that is listed on your check. Then the restaurant has to wait for an SMS confirming that the money has been received into their account, and this is the settlement of the check. The guy we talked to thought it was more attractive than the NFC solution, because the NFC solution meant that you got your settlement within two to three days. That was to long to wait to receive the payment, especially when the revenue was high over the course of a weekend. In the weekend they did not accept payments through NFC, that was the impression we got.

MO: So it took longer with NFC than if you used a code, was that because of the third party?

OR: It was the third party that had delivered the POS terminals. You can say that what is common with POS terminals is that the payment information goes from the terminal to a back-end system. The

only thing you then need is a confirmation of the user's identity. Those who have delivered this solution, I do not remember their name, have entered a collaboration with Easypay to make this happen, and they have also made a similar solution for Jazzcash. They way I understood it, the user experience is fairly similar between Easypay and Jazzcash, but there are fairly few who uses it. I think the number of POS terminals is fairly low, I have heard a number of 35 000.

MO: Why do you believe this number is so low

OR: It is because it costs money to use it, you usually pay a monthly fee. This does not interest the merchants, as most of them like to deal with cash. To them, cash has no costs associated with it. Even though it has a cost for society as a whole, it has no cost for merchants. It was revealed through interviews that they fear being taxed. If you start leaving electronic traces, the merchants believe that these traces will be picked up on and therefore they will start to get taxed by the government. If you had a yearly revenue under a certain level, you do not pay taxes. They are very afraid to move above this threshold. Sadly then it works in the way that many prefer to stay in the cash-based world. It is a colossal challenge to make this tip the other way. I think it is fairly similar in both Bangladesh and Myanmar, this particular thing. It is thoroughly a cash based economy. The same with India. It might not be as bad there, but I have heard numbers of around 90 % cash payments. In the other countries I mentioned, the ratio of cash payments is at 95 % of all transactions.

MO: Does this code-method have a name, a descriptive title?

OR: I am sure it does, but I do not remember what it was. They have copied it from Safaricom [Kenya, int. note]. It is essentially the same as a QR code. There is also an identification of the merchant, but for this there is a number code that you enter. You then have a digit code that works as sort of a card code to identify a merchant. But this is only in a pilot phase (in Pakistan). It is not commercially rolled out yet, and there are not many points of sale where you can use it.

MO: Farrah talked to us about how the technical aspects often fail for the merchants, and that they fail to accept payments through the mobile network, that it might be bad service coverage, and that the apps are complex. Does this reflect your experiences?

OR: Yes, we got to experience that ourselves. At a restaurant on a mountain they had told us in advance that you could pay by credit card. When we came there they told us that the system did not work. I was then guided by the restaurant owner and the guard we had with us to the square behind the restaurant, because there it luckily was an ATM. Then we could withdraw cash. But this had to be agreed upon in advance, before we ordered. That was the way we resolved it. There might be problems associated with electricity, especially in rural areas, where it is quite unreliable. There are some findings in the Dalberg report, you have read that?

MO: Yes, 2015 and 2008.

OR: Yes...No, not that one. There is a Dalberg Consulting

MO: Oh yes, yes. We used that one in literature review in the pre-master thesis.

OR: They made a report that came out in November of last year. Merchant Payment, Big Opportunity or something like that. It says there, and they have focused on why one can't make merchant payments really start up. And it is difficult to be successful with that, I'll tell you as much. When the population are used to use cash, and they are complacent with using cash, then it is hard. What we have seen then [couple of seconds interference] And what we have discovered is that this is a real pain point for merchants that they have a wish to expand their business. Either by expanding their inventory, make purchases in a more reasonable manner by buying in bulk and get discounts, or by expanding their shop's size. And the answer is that when they are unbanked, they are not in a position to be granted loans, so the end result is that there is no change in their situation. What they borrow money for is when they are in dire need of cash, and then they borrow from family and friends. That was the common response we got. It was family and friends, because then you are granted a loan, the loan period was a couple of days and then you paid back the entire sum you had loaned, without interests. And then the procedure is that you discover that you have too little money, for example to pay the delivery you will receive the next day or you will be going the market the next day and have no money. Then they go first and talk to their father, that's the example, and if he does not have money, they ask a friend. And that is so terrible for them and it is repeated many times. That is the reality for them when they can borrow money from neighbours [some seconds interference]. So it's on family and friends. They then get small loans so you can make the purchase so you can keep the business going, but you will never get out of the position you are in. So that's a colossal challenge. So we've made some assumptions about it that if you could have given them loans, given them the loans digitally, maybe it might be the starting point to make them banked. And get them away from being unbanked to be banked by granting formal loans, making them expand their business and gradually becoming part of a digital economy. There is no such quick solution, but what is interesting is that we actually interviewed one who is an expert on merchant payment in GSMA. I talked to him 14 days ago. He told me that Safaricom, that they had managed to get some momentum on merchant payment. As he says, they are dominant in the market and have 90-95% of all transactions. He mentioned that they had, that the players were so dominant, and the learning was that if a merchant does not offer the opportunity to make mobile payment, then the customer will go to another merchant where he will use his mobile app. So that they have such dominant role that merchants do not dare not to be included.

MO: Yes

OR: So that, because, you know that there are so many users of Safaricom's app that if they do not accept payments using that mean of payment they will lose customers.

MO: Yes

OR: Then you have managed to raise the awareness with merchants that it is important to offer this, so that if they do not offer it will make a difference. You actually lose business. But then, in a country where you have not managed to cross that threshold and gained a market leading position you will struggle with the accomplishment power to make this happen. So that… and his point was that you do not succeed with merchant payment in a market if you are not a dominant actor and can drive the process by yourself. Then you are obliged to cooperate with others and provide the same user experience, and try to build up a common network that solve this task of digital payments. What else was his comments...I have a presentation, if I have not shared it with you before, I can share it with you.

MO: That would be nice.

OR: Yes, and there were some interesting comments he had around that subject...But I view it as a pretty large challenge to get the understanding, the consciousness and the eagerness with a merchant to accept mobile payments. The knowledge we also discovered through interviews that...We also had a Pakistani with us from Pakistan, that performed interviews.

MO: Yes

OR: We did not have a chance to do it. So there, the knowledge about mobile payments, it is low. We have a job to do.

MO: I see

OR: With raising awareness around it

MO: I have to ask, and please say no if it is not possible, but would it be possible for us to take a look at those interviews, and the transcriptions if you have that. Or, in a way, it is your work.

OR: No I would have to check that out, I have to be a bit reserved concerning that.

MO: Yes, I thought as much. Absolutely

OR: But some classical signs around cash are evident, like that they lack spare change, And when there is a lack of spare change they either have to go to the next door store and hear if they can have some or they try to sell some additional goods, so that you do not need to provide change. A piece of candy or something. It if was a corner shop. And they also have, another thing they mentioned was fake notes. That it apparently was a problem they experienced.

MO: Okay

OR: That they receive fake notes. If there is a fake note in the pile, that is lost income for them, because they cannot use the note when they are buying their supplies.

MO: Yes exactly

OR: So that was what they was a bit afraid of, and then of course they are afraid of theft, but not so much that they don't keep their cash either at their shops or take them with them home, and spend them the next day when they are going to the market to buy goods or pay their supplier that arrives with goods. So they stockpile cash you might say, because they are also going to pay with cash.

MO: Yes okay, to wholesaler?

OR: Yes, to the distributor that comes with the goods.

MO: Yes, let's go back to...

OR: And also, it is, to be granted loans I mentioned that, it is family and friends they use.

MO: Yes, let's get back to [short interruption] These OTC-agents, can you say something about

OR: Yes

MO: What kinds of places they are today. What types of stores and kiosks are we talking about here?

OR: Yes that I am not so sure of, but they are.. They are agents for Easypaisa. And that is kind of a side business they have, or that they operate solely as an agent. It is they who accept cash, and if you want to transfer money from one place to another and do not have your own mobile money account.

MO: Yes right. Are they like grocery stores? Kiosks or?

OR: I have the impression that it can be anything really. And then there might be some that operate a bit under the radar to be one. Like that they do not have an official role for it. For example they do bill payment. The customer comes to them with cash, and then the merchant takes care of the bill payment using his account and then he receives the cash from the end user. Then, it happens under the radar. And this apparently happens a lot in Bangladesh I have come to understand. And there the government tries to end the practice, so that only official agents are allowed to operate with that kind of bill payment. And in Bangladesh, you have had a phenomenon where the government has restricted how much you can transfer transaction-wise on one subscription. And that has led to [laughter] a large increase in the sale of SIM cards, so that those who operate under the radar are sitting there with multiple subscriptions, and in that way they gain a larger sum of money that they can do transaction management with. So the creativity is immense [laughter]

MO: Yes [hehe], so these agents then, are they subject to the same regime with restrictions on how much money they can transfer?

OR: I do not know that, what I do know, what I read about, and this is for Bangladesh, and I do not think they are subject to the same regime in Pakistan. But there...There is probably some bill payment that take place at for example a hair dresser without him being registered as an agent. That can happen. Since I have mentioned it. But in the Easypaisa-gang I'm sure they do know what is happening.

MO: Yes I know that at Grønland in Oslo, there are a few who operate, among hair dressers, that take payment through Vipps and who are not at all registered as merchants, but they accept payments through Vipps as an individual, and in a way use merchant payment in a kind of shady way, and try to avoid the system there, in some way or another. I am not sure why they choose to not register as agents, but I am sure it has its reasons.

OR: [Laughter] It is funny, [9 seconds of interference] In South Africa there are people who have specialised in making models for [..] granting loans, and we interviewed those on the phone and what we did not understand, because we made a point out of finding out who the merchants are, and after a while we understood why it is so important. The scenario you describe, that they use their wallet and carry out services on behalf of their customers. And by performing a data analysis then you could see that here there are customers with a mobile account, and it is being used in a particular way. And you could see from the usage pattern that, and conclude that that individual had to be a merchant. Based on the way he is using it. So that is a bit curious. [Laughter] The world wants to be deceived.

MO: Yes, we have a bit, we want to look closer at the wholesaler side in Myanmar, and see what you can do there. On that side of the merchant to in a way create a pull factor to make use of mobile payment solutions. Because what Farrah told us, was that in Pakistan, and you have to tell us if this is in line with your understanding, but there was one person who came to the stores and delivered goods, and then at the end of the day, there might be a totally different person who would come to collect money for the same goods. And they demand payment in cash. And what it looks like now is that consumers want to pay in cash, and wholesalers and suppliers want to be paid in cash. And then the merchant is sitting in quite a tricky situation, when it comes to adopting mobile payment solutions. Is this, does this concur with your impression as well?

OR: Yes I think it does, but my, the way I have been told, it is the driver that accepts the money when he delivers the goods, and then he will have a big problem, because he will have a lot of cash in his car. So it seems that if he has too much cash then he will stop more than once over the course of the day to get it deposited into a bank, right. So as to not [interference] too much cash. Nevertheless, there it is, again, the confirmation that it is a very cash based economy.

MO: Mm

OR: And a part of the reason is that the merchant often would like to operate under the radar, right, so he won't be taxed.

MO: Yes exactly

OR: By the government

MO: That is a big challenge that right there

OR: Yes it is

MO: To create a trust in the tax authorities, and contribute to society. But you were talking a bit about...

OR: Yes, so what it is that, I almost, I almost have to put aside the Western mind set. Because here, the transition to not using cash has happened many years ago. Here the battle is more defined by how to change the way we pay digitally to day by virtue of credit card, to get people to pay digitally using their mobile phones. That is the battle that is being fought here in the West, to take the last joint in the user experience, and make it better than by using cards. On the other side, down there [in Pakistan] people do not have an account in a bank, and they do not have cards. They have cash. So you need to take them out of the cash world and over in a mobile world. And to solve that pickle, that is not easy.

MO: Mm, so basically skipping the credit card stage entirely

OR: Yes, in essence you would do that. You also skip the check book, that is not that much used either. The check books was the first invention. I do remember, I am old enough to remember that I was paying with check.

MO: Yes

OR: And then we got bank cards, and that was a great relief, and the attitude was that you should only pay with card for large amounts, it was kind of like, implied that paying for goods below 200 kroner, that was kind of bad to use your card for. But the attitude today is, I don't know, even if something costs only 20-25 kroner you use your card.

MO: It is because the transaction costs are so low, right, that it is that way?

OR: Yes, in Norway at least. You are so used to pay by card that you think it to be convenient. And to get people to switch from using their card to using mobile payments, that is a bit hard. And then it is here, this friend service, when you sit in a restaurant and are going to split the bill, that is a really good use case. To do, because the foundation for Vipps, and what resonates with the younger parts of the population who often have [problems]. And then you found an app that granted the entrance ticket, and people started using it. [In Pakistan] What you in practice is doing is taking them from using cash to using Mobile Pay or Vipps directly. To find the trigger point for that, that is much harder.

MO: Yes, among consumers and merchants then, in Pakistan, are people in general technology adapted enough to use a smartphone then?

OR: Yes well, as of now the penetration of smartphones, it is on the rise, but it is about 26% I think, in Pakistan. And so I think, the number I was looking at, GSMA, I was looking at their database, and it should rise to about 50% in 2020, who have smartphones. It is growing, but it isn't growing...it will take some time.

MO: 26% of…

OR: And when you look at Myanmar, over 70% have a smartphone.

MO: Yes, there are some big differences there. That corroborates the numbers we have for Myanmar. But in Pakistan, and I am sure we can find this in the GSMA report, but it is 26%, is it the percentage of the population or the percentage of mobile users?

OR: Yes it is the share of mobile users, where it is 26 % who have a smartphone. And about half of the population have a mobile phone.

MO: Yes right. I do not have any more immediate questions, maybe Mikkel have some.

OR: As I have come to understand, you are maybe developing another evaluation methodology to then evaluate a merchant to. Is it so to understand?

MO: Our main goal is really to take an existing standardised framework that was made quite a long time ago when smartphones were more or less non-existing, by a Finnish researcher called Mallat, and her partner who is named Tuunainen. And they have a framework for merchant adoption of mobile payments. They were the first to, and one of the only scientific articles published about these things. Where they list 18 propositions, Barriers, drivers and prerequisites for a merchant to even consider being willing to adopt it.

OR: Right

MO: So what we want then, is to modernise this framework, and see if we can take any lessons from the modern mobile landscape, and then fine-tune it to Myanmar, and possibly using it there. See if it might be of help in the process of implementing mobile payment solutions, in Myanmar. So it is a bit like, we continue the work from her further research suggestions, that by testing out this framework and try to adapt it to different markets. And then we will see if we can test it out and if it might be of help for Telenor too. When you, when you choose to possibly push a bit harder for merchant payment using mobile phones in Myanmar. They have barely started with it there now.

OR: Yes they are doing some experiments under the radar, I know as much.

MO: Yes so we are going to talk with Brad Jones in Wave Money, also

OR: Yes!

MO: And hear with him a bit about how the situation is there

OR: Cool! Good!

MO: And then maybe we will figure out something new. We want to, we especially want to look at this wholesaler, or supplier, side. It is very interesting what you say it might look like, regardless of who is collecting the money, that in cash based economies someone is driving on long rides to collect money, and then they are exposed to robberies. Might be in risk of robbery, and risk a lot there. And maybe they are forced to replan their routes, and maybe get extra costs to deposit cash. So if you can

manage to create a bigger trust in mobile payment solutions, and relieve the pain by having a lot of cash, cash in hand, that might be interesting. To incentivise the distributors.

OR: Yes exactly, that is the conclusion we have as well.

MO: And then we want to look a bit more at these OTC agents then, because OTC is also fairly diffused in Myanmar, and see to which degree we can use them as an entry, to possibly take payments for retail, Point of Sale. To know a bit more, we have to speak with people who have local knowledge about Myanmar.

OR: Yes

MO: But...

OR: I would not be able to help you with that

MO: No, but, this is super what we have discussed. Really good. A couple of more questions.

OR: That colleague of yours, did he have any questions?

MO: Yes or, yes he has commented a bit here now, throughout. But we are wondering if you know someone that WE should get in contact with respect to mobile payments and merchant adoption in Pakistan and Myanmar, are there anyone we could talk to get some, to get some more sources, basically?

OR: Yes, let me check that out. See if she who is running that pilot is interested in talking to you. Let me go that way, I can check it out.

MO: That would be really nice

OR: Apart from that, it is that guy Omar Malik, who Per Jonny also knows, he is the most knowledgeable about Easypay and Easypaisa, because it is he who has worked with it for all these years. I do not know if Per Jonny has spoken to Omar if it is okay for you to contact him. He is maybe the most important point of contact, if you are permitted to open that channel.

MO: Is he in Telenor?

OR: In...yes, in what is now called Telenor Bank Microfinance.

MO: Formerly Tameer Bank?

OR: Yes correct. I will see if I find that thing I got from GSMA then, if I haven't sent it to you before. Then, what I am talking about, it is a presentation that focuses on merchant payment.

MO: Yes that sounds terrific! If we should think if something else, is it then okay for us to send you questions via email or something like that?

OR: Yes, feel free.

MO: That’s good

OR: And good luck to you!

MO: Thank you for taking the time to talk with us!

[Pleasantries]

[Interview ended]

Date: 06.06.2017

Interviewers: Mikkel Lindheim and Oleiv Grimsrud **(MO)**

Interviewee: Brad Jones, CEO of Wave Money **(BJ)**

Form of interview: Semi structured interview over video chat using Appear.in

(*): Additional data gathered from another interview conducted by co-students Alexander Fosseidbråten and Silje Arnøy, 08.06.2017

[Introduction]

MO: As you may know, we are writing our masters thesis on merchant adoption of mobile financial services in general, and we're looking at both Pakistan and Myanmar as case studies. We heard that you were talking to two of our co-students yesterday.

BJ: We had some connection problems, so I think that we have rescheduled for tomorrow.

MO: The main difference between our thesis and theirs is that we are focusing solely on the merchant adoption segment of MFS

BJ: And when you say merchants, do you mean agents, or do you mean sort of payments?

MO: We mean merchant payment, yes. But the agents are also relevant in this setting. We're focusing on point of sale and merchant payment yeah. And just before we get started, is it okay with you that we do a recording of this interview?

BJ: Yeah sure

MO: The thesis will be locked down for a couple of years because of confidentiality

BJ: How long is it locked down for?

MO: It think it is 5 years, because we are working for Telenor as well as the university

BJ: Cool

MO: Do you think you could give us a brief introduction to Wave Money, your role and the responsibilities you have in the company?

BJ: So, Wave Money is a joint venture between Telenor Group, First Myanmar Investment and Yoma Bank, the last two being Burmese companies. We are 51% owned by Telenor Group, so we are a consolidated Telenor entity. We've been in the market now with a license since August last year (2016) but we were ready some time before that waiting for that license and regulatory process to be completed. We are offering a very simple sort of transactions at the moment. Essentially it is Over the

Counter money transfers, money transfer through customer app or USSD, customer app on top-up, customer bill payment with electricity and landline payments being the primary use case, and we're starting to trial some online and digital merchant payments. So we're still not anywhere near scale on those, but on the core business, in terms of agents we are now close to 8000 agents, in ⅔ of the townships in Myanmar. So that is giving us quite a good representation. We still have a lot of room to grow though, as Telenor has 100 000 points of presence. We do not need 100 000 locations, but we are looking at 30 to 40 000 locations when we make it to scale. So that's sort of a brief overview. My role is as a CEO, so I report to the board of Digital Money Myanmar, which is the legal entity, with the brand name being Wave Money. The board has three directors from the Burmese side, and three directors from the Telenor side.

MO: You were saying that you have 8000 agents in ⅔ of the townships in Myanmar. What does that imply, the township term?

BJ: Township is a legal sort of concept here, a bit like what we would call a suburb in Australia or something similar. So in a sense...where I am here now in Yangon is Sanchaung township. There are 30 townships in Yangon. And then every part of the country is divided into a township. So a better example in Australia is not so much a suburb but a council. So each council will have responsibilities for a particular part of the country, and every part of the country is basically covered by a council. It is the same thing here. So some townships are going to be big geographically, as they cover a lot of distance, and some townships are going to be very small, when you are in Yangon for example.

MO: The 8000 agents, what kind of merchants are they, what kind of characteristics do they have. Do they have anything in common?

BJ: They tend to be a mixture of mom-and-pop grocery shops, which tend to be the better ones, through to mobile phone shops, pharmacies, rice millers. So it is a bit of a mix. The predominant types would probably be the mom-and-pop shops, where they sell a little bit of everything. And the mobile phone shops.

MO: So they are like local corner shops, or are they often international brands, high-end retailers, any such characteristics?

BJ: No, there is not really the concept of a chain store in Myanmar. You have probably 150 000 to 200 000 businesses operating in the country, retail outlets operating in the country. Out of that, chain stores would be less than 1000. There are a few brands that are emerging, to compete against a type of 7-11 business. 7-11 is not in the market yet, but there are a number of copycats, that are miniscule. So in essence, retail here is basically family based, informal, so they will not have official licenses, and be heavily disorganised from a supply chain perspective.

MO: Do you think you can say anything about the supply chain anyways? Are there any common distributors, or wholesaler who distribute to these merchants?

BJ: We operate through a network of 160 - 170 distributors that service our 8000 agents. 75% of those distributors are already Telenor distributors, so they are distributing airtime and SIM cards. What they are distributing for us is e-money, both physical cash and e-money. So often these are not big businesses, they are sort of small and medium businesses in the Myanmar context. Often they are doing other doing other commodities, so they might be doing Unilever, Proctor & Gamble, they might be rice buyers, legumes, distributing through the country. So they all have a variety of different commodities they are actually selling or distributing.

MO: We heard in a news clip from the 8th mobile banking seminar in February that you were saying there were 250 000 mobile money users in Myanmar. Does this imply Wave Money Account users or both OTC and account users combined?

BJ: So we have about 320 000 Wave Account users now, and about 50 to 60 000 OTC users. So we have about 370 000 customers now.

MO: So the OTC users, are they unique users?

BJ: Unique users yeah. But that's on a 90-day active basis, so there have probably been more, but we are only tracking the active users on a 90-day basis.

MO: And that's the most recent figure?

BJ: Yes.

MO: Do you think you could describe the pilot of POS merchant payment solutions that you are currently experimenting with today?

BJ: There are a couple of objectives that we want to do. We originally built a business case to build a merchant proposition where we would invest heavily in incentives and marketing and roll it out as a separate service. I decided late last year to pull that business case, and in line with Telenor's move to, I'm not sure of the term "red wire-working", but more of a innovation experimentation way of working. We decided to then run a 3-month series of experiments, where we would actually create minimum viable products, and then test them in the markets to see how they would perform. So we do not have QR functionality for example, or a merchant payment transaction as such, but we are able to use a P2P transaction and some basing marketing at merchants to test the readiness of merchants to accept payments, and also the customers' desires to use digital payments. So we ran that experiment, as well as another experiment where we used a Telenor company called Paysbuy which is a payment gateway. We connected to Paysbuy to create online capabilities. Online merchants, such as food delivery, digital content are connected through Paysbuy and using the digital wallet as a source of funds. So we now stood that up with three merchants, and we are looking to scale that with as many online merchants as we can, and then use the experimentation to create a much stronger presence on the online side. On the offline side, it is a little bit harder. We are not at anywhere near scale. We have

around 400 merchant with which we are testing this out. The transactions are too slow, as we are using P2P transfers, and we need to be able to move to a QR-code with very quick transactions. So we are building the bar code functionality now that we are building into the app. With this, we can at least have the capabilities done. I do not think we will get the investment to really ramp it up at this stage, and I think that where the board is wanting us to move is to continue to build up [our base (?)], because that is where the revenue is coming from at the moment. What I want to be able to do is at least have the product capabilities ready and continue to roll out merchants in an incremental way, and be ready to scale if we need to competitively. So that is our position on merchants at the moment. Online however, it is a lot easier for us to sign up online merchants. We are moving a lot faster in the online, because we think that with the smartphone penetration in Myanmar there is a lot of online opportunity, and there are opportunities for us to take the number 1 position for in-app online payments. The capabilities we have are actually in-app payments, where you generate a PIN code challenge inside the merchant's app, and then that deducts from your Wave account when you have entered your PIN correctly.

MO: So you were saying that there were 400 offline merchants that are using your merchant solution. Can you elaborate on how they were selected, what criteria did they meet?

BJ: So how they were chosen basically? In general, we chose merchants who were high volume of transactions, like tea shops, local restaurant, that sort of stuff. Close to universities and other places we were likely to have a lot of customers. However, we have seen a fairly low activity rate , at 10 to 15% across the merchants.

MO: Are there any costs today associated with enabling this merchant payment, costs on the merchant side?

BJ: No, we do not charge the merchants to accept the payment. [I will send you the evaluation of the experiment.] So we do not charge merchants to take the payment, but we do charge for online merchants to take the payment. And the reason for that is that it is very difficult to justify to merchants early on in an ecosystem like this why they should pay to accept a payment, and once again it is hard to justify to a customer why they should pay to make payment. So what we decided on now on the offline side is to make it a free transaction, and collect as much data as possible on that as we scale it, on both customers and merchants. On the online side, it is very difficult for online businesses to accept payment, we think we can charge, and we are looking at charging up to 2 - 2,5 % of the transaction for that. Even more for some digital goods, given that the [?] are generally charging a carrier billing, sometimes up to 20 or 30 % for digital content.

MO: Again, for the offline merchants, does it require any physical infrastructure to enable mobile payments?

BJ: No, they are just using their phones, so we do not have a business model where we push any infrastructure yet. It is up to the merchant [...]

MO: What do you believe has been the main motivation for these 400 merchants, that have enabled mobile payment solutions?

BJ: I think they do it for experimentation. There is a bit of buzz around mobile payment in the country right now. So if I tell you a story about one merchant we have at the bottom of our building down here. She often operates on credit with a lot of her customers, as a lot of them do, like the restaurants and tea shop businesses. So what she does is that she physically keeps a logbook of what everyone in this building, usually the local staff, is owing her and she collects at the end of the month. So she was very interesting in mobile payment because for her to go and collect she will often spend half a day walking up and down the stairs of the building collecting payment for things. Like tea and lunches over the course of the month, once people are paid once a month. So we are finding some interesting use cases where being able to receive the payment digitally is attractive and you do not have to physically go and collect it. So these are opportunities that are able to exploit, to see if this is a broader phenomenon, which we think it probably is.

MO: That's very interesting. Do you have any thoughts on what would be the most important motivations if you were to scale the mobile payment solution? What would be the most important motivations or maybe incentives for merchants to adopt this kind of payment?

BJ: We need incentives on both sides of the transactions. A big part about that business case, and this is why we are probably not going to scale merchant payment at this early stage, was actually paying for incentives for both customers and merchants. For example paying for a discount on the merchant price, and compensating the merchant for that, or providing an incentive for the merchant to actually collect digitally. Our strong belief is that in the early days, to stimulate this ecosystem, heavy investment in incentives and marketing is required on both sides of the transactions.

MO: We were talking to Dr Farrah Arif, she is an expert on the Easypaisa solution in Pakistan. It is also a collaborative effort by Telenor and Tameer Bank, and she was concerned about the other side of the transaction. The transaction between the merchant and the supplier. Because in Pakistan, as well as Myanmar, it is a very cash based economy and the merchants rely on having cash at hand in order to pay their merchants, or their suppliers again. Is that the same situation in Myanmar, more specifically for the corner shop, the local grocery stores

BJ: I am sure it is. I just think we are a little bit immature yet to see the impact of that. Easypaisa is a far more mature business than we are, given that we have only been in the market for less than a year.

MO: Back to the infrastructure again, and also the regional aspects of Myanmar. Are there any regional conflicts that obstruct Telenor's infrastructure development to a certain degree today?

BJ: As in physical conflicts?

MO: Yes, in rural parts of Myanmar

BJ: Yes, it is definitely an issue. Not so much on the payment side, but more on the money transfer side. There are multiple conflicts in the country, and multiple townships where there certainly as foreigners we can not go. There are areas where we have shops where they will technically be in conflict zones, or they will be in zones that become conflict zones for a period and then calm down. For example up in Shan state, between Muse and Lashio there are periods where it has been off limits for a period of time, and there will be shops that we have up there. Our people will not go there, but we see that there are distributors, and business continues in those areas. There are varying levels of severity. We do for example payments to internally displaced people up in Kachin state and we are doing that in a township that in December last year would have been off limits because it was a conflict zone. So as the security situation resolved, there are IDPs up in that area and we are sort of doing payments directly to them and they are cashing out their stipends that they receive from NGOs. So I would not say that...I mean Myanmar is a massive country, and as we get bigger and bigger it will become a bigger issue for us to sort of expand into areas which may be more difficult to operate in. But at the moment, we are only on the margin [of that]

MO: The main presence is in Yangon, is it?

BJ: No, we are everywhere. So when I say ⅔ of the townships, there are 330 townships, and we are in at least 260-270. We are very remote, we are in Kanchin, we are in Kayin, Mon. So there is not a state or area or district or province that we are not in now in Myanmar. Somewhere, we are thinner than others, but we are represented in every district and state in the country now.

MO: What do you believe are the biggest obstacles, or the biggest barriers for merchant adoption of mobile payment solutions in Myanmar today?

BJ: I think the first thing is cash. Cash is king. This is a cash-based economy. People… there has been multiple demonetizations in Myanmar, there has been multiple bank runs, the latest bank run was in 2003. So trust in the banking system is extremely low. People do actually...they don't want to put their money in a bank account, so the concept of digital money is something that is still quite foreign. Getting people around to understanding why having digital money is safer than cash is a challenge, I think that providing the incentive to merchants and customers to use digital cash as an alternative to physical cash is a challenge. Getting cash into the system is a challenge. We have to find enough ways allowing people to pull money from bank accounts if they are banked, and allowing people to get paid salaries so that they have money in their account. There is a friction point around cashing in. Finding easy ways, and multiple ways for people to put cash into their accounts is always a challenge. On the merchant payment side… money transfer is a bit easier. You have a need to transfer money, and we are more convenient. We are priced more expensive than banks, but the convenience factor outweighs

the costs, so it is worth going and cashing in, transferring money or doing an OTC transaction. When you look at a merchant payment, typically a quick service restaurant or something similar, it's got to be quicker and more convenient than cash. And it is not always easy to get to that point.

MO: Thank you for that. You are cited in the Center for Financial Inclusion blog, from the 8th mobile banking summit, by emphasising the importance of following the GSMA code of conduct for mobile money providers. It was something about avoiding missteps in order to not create less trust in mobile banking. Are there any particular missteps that one should avoid?

BJ: The subtle point I was maybe not so subtly making is that the Central Bank in Myanmar has not applied a consistent rule about how mobile money is emerging in the country. So we had to wait quite a period of time, and we applied the GSMA code of conduct. We also obviously used the regulations here as the foundation for how we operate. But we have competitors, one particular competitor that has not applied for any license, and is flaunting the regulations completely. And the Central Bank does not take action. The point I was making in that particular presentation is that the industry is in a very nascent stage and if industry players and government does not force compliance to regulations, there is risk to consumers that will actually impact customer trust. I will give you an example. This particular provider which is unlicensed and operating has in their terms and conditions the right to take money off customers if they do not perform transactions in a six month period. Which is completely against the GSMA code of conduct and the Central Bank regulations. So to me, if I had a situation where you take the customers' money simply because they did not transact, then you are fundamentally affecting customer trust in the digital payment ecosystem. So this is a major concern for me, because obviously as a Telenor company, we apply very good governance. We operate in a legal an compliant fashion. And we think that for the industry sector to thrive, the rest of the industry has to comply.

MO: So that one player does not...let's call it they are ruining it for everyone else?

BJ: Exactly. The question sort of begs, why is this player allowed to do that? I have my theory, and I have been told part of the reason, but it is one of these "only in Myanmar" type of scenarios, where relationships they may have with officials in the Central Bank have enabled they situation they currently have.

MO: Do you think you can help us understand the competitive situation for mobile money in Myanmar. How many actors are there, and are they all competing on the same services?

BJ: So it is a complex situation. I can send you another document on this as well. There are at the moment 13 competitors in the market. And having said that, out of those 13 competitors, there are probably only 4 or 5 that will anyway be relevant. A number have previously launched and failed. And a number I think will probably fail in the future. So I think that really at this stage. There are 2 licensing regimes, there is a regime to launch through a bank license, and there is a regime to launch through the mobile operator license. We have the only license holders for that, but Ooredoo and MPT,

the two other operators they will launch a competing service. We believe that they will be strong competitors. And under the bank-led model, there are 11 or 12 operating under the bank-led model, but often they are not banks, they are service companies set up by entrepreneurs or whatever. And I think many of them underestimated the investment that was going to be required to go into distribution. Some of them like MyChat, Myanmar Mobile Money have basically fallen by the wayside. So yeah, it is a...That is pretty much the situation.

MO: Could you say something about Wave Money's market share, both in OTC and mobile accounts?

BJ: So, as mentioned before, there are about 320 000 mobile accounts, and I would say our market share is...we do not have the exact numbers and this is a bit hard to gauge at the moment, but on the top of my mind, it is sitting at about 66%. Our nearest competitor, which is an unlicensed operator, is sitting around 19%. So from brand awareness, we are clearly number 1 on the market. But the challenge will of course be to maintain that position as better funded and professional competitors come into the market.

MO: You said there were 4 or 5 other solutions that were in direct competition with Wave Money. Are they bank-led, is that what you were saying?

BJ: No, I mean if I look at them, MPT and Ooredoo are the mobile operators. TrueMoney is a part of the True corporation out of Thailand, but they are basically using terminals to do money transfer and airtime top up and the rest of it. There is OK Dollar, which is the illegal operation, is certainly a competitor. So they are probably the four that we would worry about the most.

MO: Is Ooredoo not considering mobile money?

BJ: Yes they will launch it in the coming months. So they are one that we see as likely competitor.

MO: What are your thoughts on trust and security in Myanmar, especially in relation to banks. What are the factors that affect this?

BJ: The trust level in banks is very low, so in 2003 was the last time customer deposits were lost, and that is not very long ago. People have memories of loosing their money. So I think in terms of trust in monetary value, it is gold first, US dollars second and Myanmar Kyat third. Another aspect with the Kyat is that it is often...it depreciates in value against the US dollar quite regularly. Which isn't really surprising. Myanmar is a resources based economy. And you know from Norway, and certainly Australia that resources based economies often fluctuate quite widely against the US dollar, but it causes greater concern in a place like Myanmar because people are more and more susceptible to shock and they are also less trusting of the financial system. So now that the Myanmar Kyat is a relative open currency and floated against the US dollar, they do get worried when they see major fluctuations. So I think all these things affect trust.

MO: Do you think the high proliferation of smartphones in Myanmar creates any special opportunities for the country of Myanmar as an example. Do you think it opens up possibilities that are inaccessible in other countries, because of the high proliferation of smartphones.

BJ: Yes definitely. We are already seeing that the majority of our transactions are through app, so we basically have 75 daily percentage of our transactions for both customers and agents through app. So that caused us to think through a far different business model. We had to build human centre and design principles, we had to build app development capability, we had to build release management and app life cycle, intellectual property. So it is a very different business model to what is happening with Easypaisa where the app is a secondary channel. For us it is the primary channel for both customers and agents.

MO: We have seen from for example Pakistan that people are satisfied with using cash. You were saying something about this earlier as well. People think that is convenient enough, and they have a hard time moving over to digital currency. Do you see the same thing in Myanmar right?

BJ: Yes, I think so. As I said, money transfer is an easy transaction because you have a need and it is all about convenience. Is it easier to go by a Wave Shop or send it by my Wave Account than to actually go to a bank? Digital payment is a much bigger challenge. You got to have a reason to have mobile money in the account, and that is usually driven by incentives. You got to have a reason to use it at a merchant, once again driven by incentives, and you got to have a way to easily get cash into the account. So there is certainly a lot of barriers.

MO: Do you think you can say something about the number of transactions, both total and on a monthly basis for both OTC and P2P?

BJ: So we are doing now around 60 000 OTC transactions per month, and that is growing at about 35% month on month. So we are forecasting about 95 000 or so this month. And then on the customer airtime top up, around half a million transactions per month. Again, 60 000 OTC, it is about the same for mobile account to mobile account, and half a million for airtime pop up. Those are the big three we have for transactions at this moment. In addition, when you are adding cash in and cash out, we are pushing up against 1 million transactions each month now.

MO: Salary disbursements. Is that something you are looking into?

BJ: We are definitely doing that. And we are running salary disbursement across about 20 different clients. We would be pushing out salary disbursements into the thousands each month. Not 10s of thousands, but probably around 3 or 4 000 salary disbursements each month. As an example, KFC is here now in Myanmar, and we are doing salary disbursements for 300 KFC employees. And we are also doing salary disbursements for about 300 of the bank employees with the bank we are partnered with. We are also paying out all incentives for Telenor CECs who work in their distribution network. So that is a big area. I think the bigger area we are working with, because there is not really a lot of

money in salary disbursement, it actually gives people a reason to have money in their accounts, which we are keen to see. But we want to do more in the bulk disbursement for NGOs. Because there is a lot of money here that is transferred to aid recipients. Given that Myanmar is a very poor country and a lot of the population are at the level of extreme poverty or risk of extreme poverty. So we have organizations like World Food Programme, Save the Children, International Red Cross all making payment to people in the mixture of conflict afflicted zones and non-conflict zones. So we are already running a program for World Food Programme with Kachin internally displaced people. We are also running a program for 550 families, people on the edge of extreme poverty living in the outskirts of Yangon with Save the Children. And we are also looking at ramping those programs up and add more, because it is a real win win. It's a win win for the recipient. To give the World Food Programme example: Before the recipient had to be at the camp at the allotted time to wait for the money to be received. If they weren't at the camp at the allotted time they didn't get their money. Now they are really happy because they get their money electronically and they can go and cash out when they choose. The benefit for us is that we can pay...We think we can charge up to 5 % of the total disbursement, because the cost of disbursing cash for these NGOs is really high. So for Save the Children for example, they said that the cost for disbursing 1 dollar can be as high as 50 cent. So it is win win for the NGO, it is win win for the client, and win win for us. So this is an area that we are putting a lot of focus on at the moment. And it is great because it is also a great CSR story. Because we are obviously helping people who are really, are really needing that assistance. We do not get a lot of transactions, they tend to cash out straight away, but it is obviously a revenue stream for us in actually doing the disbursement for the NGOs. That is fine by us as well

MO: So they do not keep the money in their accounts?

BJ: No, we have tracked it, they do some airtime top ups, which is great for us, because we earn commission on airtime top up, so as long as...And I think some of them in Kachin state have also told us that they are saving some of the money, and if they can keep some of the money in the account they are doing that. This is a long game, you got to actually do along these over time peoples' behaviour will start to change.

MO: Do you think...In our thesis we are looking at how merchants, by being associated with mobile network operators and providers of mobile financial services, how that affect their public image, as like experimenters and innovators. Do you think there is a perception that being associated with Wave Money is a positive thing for merchants?

BJ: Yes, absolutely. In the country now, we are the number 1 brand for mobile money. We are attracting Early Adopters. There is a kind of technology adoption curve that occurs with mobile money. We really need to get to the Early Middle or something, the next group you have to get to, that is when you really start to make money, when you get to that next stage. We are very much with Early

Adopters, so we are with people who are more technology savvy, with people that want to try things. A lot of the people who are downloading our app for example are the young Yangonite consumer. On the merchant side, I think that the key for the merchants, and particularly our agents because we are doing more money transfer transactions. They want to see value. So what we are seeing is that provided they are generating anything up to 100 000 Kyat per month, which is about 75-80 USD, they start to get highly engaged. And so more and more people are starting to get to that level. So what I find, is that our agents, as soon as they get to around that point, this is big enough for them to have someone working full time just doing transactions. So for the agents, they want to be a part of something that is helping the country, but there is also a profit motive that is very important as well.

MO: Lastly, what are your personal thoughts on the future of Wave Money, and how does the company plan on growing and expanding its user base as well as increasing the network of merchants?

BJ: There are a few things. We will continue to grow our agent network, and we want to be the biggest in the country. We are currently rolling out around 1000 to 1500 each month. We have to get to a point where we are profitable, that is important from a sustainability perspective. So we are putting attention at the moment on where our biggest revenue opportunities are coming from, and that is moving into these bulk disbursement and increasing the transaction volume. If we continue to increase the transaction volume at the rate that it is going, then we will hit our revenue targets which will keep my shareholders happy. Then on the more innovative areas such as digital payments, we will continue to experiment and actually roll out incrementally, but we are not looking to invest heavily into that until we have actually reached a point where we are generating positive cash flow on a monthly basis. My board may disagree with me on that and want me to invest more heavily in digital payment, but at the moment given where we are at, we want to make sure that we consolidate our position on money transfer before we do a much bigger investment in digital payments.

MO: The agents, are they possible subjects for adoption of merchant payments?

BJ: Yes, definitely. A lot of the merchants that we are operating with now are also agents. I think that that is an area that we would see focus on going forward.

MO: Thank you for taking your time to talk with us

[pleasantries]

[interview ended]