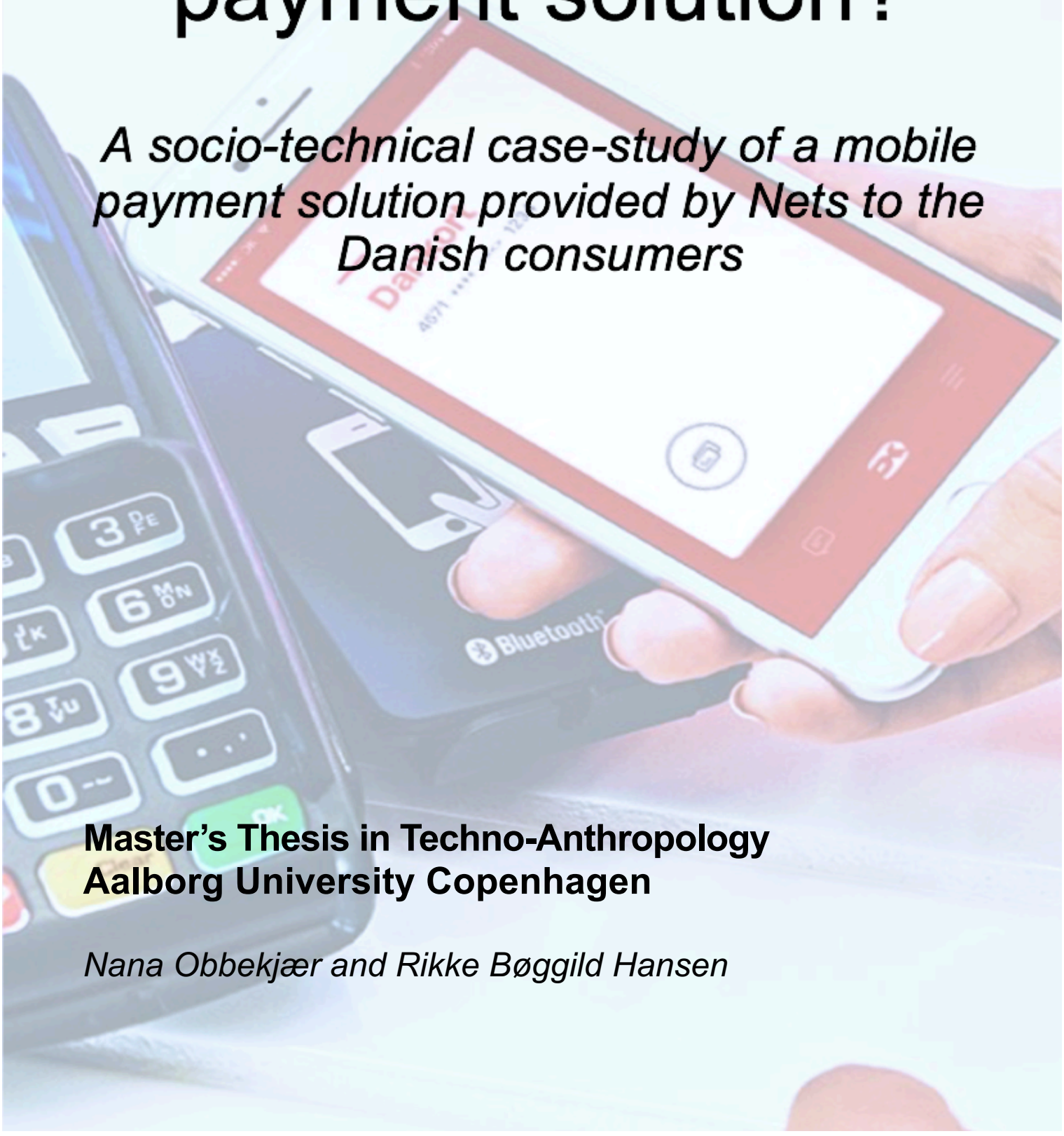
Dankort app – a future payment solution?

A socio-technical case-study of a mobile payment solution provided by Nets to the Danish consumers



Master's Thesis in Techno-Anthropology
Aalborg University Copenhagen

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Abstract

This thesis focuses on how Danish consumers, with a special focus on Dankort app's users experience the development, which consistently is to be found on the Danish payment market. There is a myriad of payment options for Danish consumers, and in this thesis, we will present, analyse and discuss how Dankort app's users experience that their payment practices change. Nets have competed against their competitors and the constant pressure on new, easy and more digital initiatives and have therefore developed the Dankort app for their Danish consumers. Dankort app has made it possible for Danish consumers to pay with their smartphones in many stores and supermarkets. According to Nets, they will continue to develop their products so that they can maintain their status as the Danish people preferred means of payment. This thesis will also present the challenges that Nets has encountered during the implementation process, and we will make our offer of why these challenges have arisen.

The thesis has ended in having two purposes, along the way will be answered on the overall problem formulation, but the intention is also to contribute to the existing literature on mobile payment, namely in a Danish context. In the literature, we have noticed a significant knowledge gap, why we again intend to contribute to how one can also study the payment practice with inspiration from practice theory and constructs from TAM and DOI.

Dansk resumé

Dette speciale fokuserer på hvordan danske forbrugere, med særligt fokus på Dankort app's brugere oplever den udvikling der konstant kan ses på det danske betalingsmarked. Der er et utal af betalingsmuligheder for de danske forbrugere, og i dette speciale vil vi præsentere, analysere og diskutere hvordan Dankort app's brugere oplever at deres betalingspraksis ændre sig. Nets har taget kampen op mod deres konkurrenter og det konstante pres på nye, nemme og mere digitale tiltag og har derfor udviklet Dankort app til deres danske kunder. Dankort app har gjort det muligt for de danske forbrugere at betale med deres smartphones i mange butikker og supermarkeder. Ifølge Nets vil de blive ved at udvikle deres produkter, så de kan bibeholde deres status som Danskernes foretrukne betalingsmiddel. I dette speciale vil der ligeledes blive præsenteret, hvilke udfordringer Nets er stødt ind i under implementeringsprocessen og vi vil komme med vores bud på hvorfor disse udfordringer er opstået. Specialet er endt ud i at have to formål, undervejs vil der blive besvaret på den overordnede problemformulering, men vi har samtidig ønsket at bidrage til den eksisterende litteratur omkring mobilbetaling. I litteraturen har vi bemærket en stort videnshul, hvorfor vi vil komme med vores bidrag til hvordan man også kan studere betaling praksissen med inspiration fra praksisteori, Technology and Acceptance Model (TAM) og Diffusion and Innovation (DOI).

Acknowledgement

First of all, it is of course important for us to say thanks to the people working in Nets for their time and support during our thesis period. To understand, what size a company like Nets are, it is necessary for researchers like us, to get a climb of their work and what moves in the company. Therefore, we wish to say thank you to both Julie Carlsen and Thomas J. Hansen, as they helped us to understand where the idea with Dankort app came from, and where they anticipate not only the app, but also mobile payment in general will be in the future.

In addition, we will also say thanks for our opportunity to witness the UX research presentation Smart Payments did, as this gave us more insights upon how our role as techno-anthropologist can be used in a real-world setting, where field world combined with qualitative data collection, actually can be very fruitful for a company, where user insight normally is not to be considered.

Also, we should mention our informants, as their knowledge and insights on how they use mobile payment in their everyday life's, indeed challenged our own knowledge on mobile payment, and, moreover, contributed with valuable findings. This thesis could not have been carried out, without their help.

Finally, we will like to send our gratitude to our supervisor, Anders Koed Madsen, as he through our process have helped us to navigate in a landscape, where tremendously many stakeholders have something to say upon mobile payment, and inspired us to write a perhaps other type of thesis, than we first anticipated.

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1. Introduction

Today, it is more than 36 years ago, since Dankort was introduced to the Danish consumers. Dankort is the most widely used payment card in Denmark as Danish consumers made just under 1.4 billion DKK, Dankort transactions with a total value of over 400 billion DKK in 2017. Denmark is the EU country where the consumers most often use payment cards. On average, a Danish consumer made 329 Dankort transactions in 2016 compared to Swedish and Finnish consumers, who are number 2 and 3 (Kfst.dk, 2018)

The small plastic card has gradually been further developed in line with the possibilities and expectations of a modern and technologically up-to-date payment card - now also as a payment solution on the smartphone. The latest initiative in the development of Dankort is Dankort app, provided by Nets, which is the innovation we will present and focus on in this thesis. The app makes it possible for the Danish consumers to purchase products with their smartphone and has, moreover, various functionalities that will be presented later on.

It is a relatively new trend in the Danish payment market that the Danish consumers now can pay with their smartphones. Some believe that this is an inevitable technological development in the payment market and, therefore, means that the payment service providers need to keep up with this trend in order to maintain their consumers. Danish consumers are increasingly using mobile payment solutions in the form of applications (hereinafter app) on smartphones.

Some of the most well-known and used are; MobilePay, Apple Pay, Google Pay, COOP app, where the consumers also benefit from a loyalty program, and lastly Dankort app. Besides, many banks offer so-called "wallets", where it is also possible to attach several payment cards to an app, whereby a consumer can use it as a payment instrument. The mobile payment solutions are typically based on regular payment card transactions or what we will refer to a consumer to business. When the consumer uses a mobile payment solution in a physical store or on the Internet, a consumer to business transaction is thus carried out.

Dankort was introduced to the Danish consumers in 1983, and since then, many technological updates have been carried out. Previously, the Dankort users themselves could not choose to 'update' their credit card, since all new cards that were issued came with the new technology, such as a chip or the latest update contactless function.
It is another dilemma with Dankort app, as it for the first time is possible for the user to choose the technological update. If the Dankort user wants to be able to pay with Dankort app in physical stores or on the Internet, then the consumer needs to download the app and sign up themselves.

Since it is not up to Nets, to 'decide' whether or not the consumer should have the app, they have met new challenges. We will address some of these challenges later in this thesis.

It is very natural and expected that challenges arise, when a well-established technology such as Dankort is further developed and renewed, further when a new solution such as Dankort app is to be implemented. Dankort is indispensable for many of its users, and it is, therefore, forced to engage in new technological initiatives when it changes - whether the consumer wants it or not. Again, this means that the consumer needs to change his or hers payment habits, and adopt a new payment practice, which is not always in everyone's favour, as they cannot see the meaning with the new solution.

As techno-anthropologists, we want to utilize our skills to understand the interplay between technology and the user. The exciting thing about this case is precisely the extent of users affected when the technology changes. We are therefore concerned in investigating how a new payment solution as Dankort app is implemented in practice, and how this affects its users. However, in addition to this "classic" techno-anthropological problem, we also want to prepare a use-oriented thesis - this means a study that is also practical oriented.
With the help of qualitative ethnographic methods, we will shed light on how Danish consumers experience their well-known payment practices change in step with new technological changes in the payment market. The payment practice will be a sharp actor, and it is this practice that we will process both methodically and analytically.

2. Problem Area

Our interest has been to investigate how the development and further user adoption of technology such as Dankort involving such a large number of users is established. It is the transaction as well as the challenges that arise when a company as Nets needs to follow the fast-growing payment development and at the same time accommodate both payment market demands and the consumer's interest in mobile payment solutions that have caught our interest. We will, therefore, dig deeper into Nets latest technology initiative for Dankort, namely Dankort app.

We are assuming that the success criterion for Dankort app, is that the consumers find it functional in practice, and it fits into the user's everyday life. The premise must, therefore, be that the Danish consumers have been willing to change an old habit and have replaced it with a new one.
Based on our ordinary everyday observations, interviews and our own experiences, we know that the practice that arises in a payment situation is rehearsed and characterized by routines. In Denmark, more than 1.4 billion transactions are made each day, and it is a practice that most citizens exercise on average several times a day. (Kfst.dk, 2018) This practice can make the routines even more ingrained, and it is, therefore, a whole pattern of habits that must be broken and rearranged when changes occur. It can be a daunting, fun, exciting and annoying transition, and this is the transition we are interested in exploring.

Our research question for the thesis reads as follows:

How do Dankort app's users experience the way the mobile payment practice has changes in the Danish payment market, and what challenges have Nets encountered during the process?

In addition to our main research question above, have we prepared some sub-research questions, which we will continuously answer through our analysis and discussion.

- Where does the practical triangulation; material, skills and meanings occur, when the payment practice changes from payment with card to payment with Dankort app?

- How do carriers of Dankort app lead the way in the implementation process of Dankort app?

- How can the constructs from DOI, TAM and contribute to our research upon payment practice with Dankort app?

- How can the constructs from DOI and TAM contribute to practice theory and what happens when they are merged?

In order to answer our research question above, have we made a collaboration with the company Nets, as mentioned earlier, those who own Dankort. This collaboration will be presented later in subchapter 7.5. It is from our as well as Nets' perspectives that we will explain what challenges arise when a technology such as Dankort app is developed and to be adopted by the consumers. We will investigate the significance of the changes in payment practices for the user - including figuring out what has worked in the implementation of Dankort app, and what has not worked.
We will also provide perspectives on what is needed for the practice to be disseminated - with inspiration from Shove, Pantzar and Watson's practical, theoretical triangulation.

Subsequently, we will analyse what influence these changes in the technology have for the consumer and their payment practice. We will start with Elizabeth Shove, Mika Pantzar and Matt Watson's book; "The dynamics of social practice: Everyday life and how it changes" (Shove, Pantzar, & Watson, 2012).
The book presents a practical triangulation, consisting of the following three elements: skills, materiality and meaning.

It is argued that these elements must be present and connected in practice - and be given equal importance before a practice can pass or change.
"... practices emerge, persist, shift and disappear when connections between elements and these three types are made, sustained or broken" (Shove, Pantzar, & Watson, 2012, p. 15)

Besides the practical triangulation, does Shove, Pantzar, & Watson also describes how they use the practical, theoretical terms; carriers. We found it interesting to study who the carriers are in Dankort app payment practice, we will with inspiration from the term examine how the carriers of Dankort app potentially leads the way for the adoption process of Dankort app and may eventually help stabilize the changing payment practices. In Nets, they refer to this type of user as a 'super-user'. A super-user is a user who always uses Dankort app and thereby paves the way for other possible users, which we find corresponding to the carrier term.

With inspiration from our literature review, and from previous mobile payment studies, it also occurred to us, that two information system theories namely; *Diffusion of Innovation* (DOI) and *Technology and Acceptance Model* (TAM) have been widely used to investigate consumer adoption upon mobile payment solutions.
We, therefore, saw potential in the theories diverse elements and constructs to our research, which on an experimental level with be used to see if they potentially could add valuable insight into our case. Following the theories, whom primary are using quantitative data collections. Our intention is further to see, how our qualitative method can add more valuable knowledge to the mobile payment research field, as it at the moment are missing perspectives from real-world scenarios.

After we have analysed how TAM and DOI can be used to give us a different insight into Dankort app payment practice, we have also found it interesting in the end to discuss how the constructs from DOI and TAM can contribute to practice the theory and what happens when they are merged. Here we would investigate what some of the constructs that have been used in previous mobile payment studies can do for our practice theory study.
We will discuss the advantages and disadvantages of merging such two ways of investigating and whether it can be done at all.

Lastly, we will present our conclusion on the overall research question.
Here we will both make our contribution to Nets and how Dankort users experience the way not only the mobile payment practice changes in the Danish payment market but also conclude on what we think we have contributed with to the existing literature about mobile payment.

3. Literature Review

As we are seeking to explore mobile payment, and more specific user adoption and practice in regards to the Danish mobile payment market and Dankort app, a literature review is of great importance for us as researchers. A literature review can for us obtain definitions upon mobile payment, relevant knowledge in terms of payment habits and the adoption of new perspectives such as other theories trying to explain and clarify the domain issues. It is, therefore, our intention that the literature review on mobile payment, can provide us with a deeper understanding of the problematization or issues other implementation processes can cause not only for the service provider Nets, but also related to consumers and stores, since these actors are of great importance in terms of establishing a mobile payment practice.

In this chapter, we will, therefore, elaborate on the insight and knowledge we have gained through our literature search in the already existing mobile payment research field.

3.1 Managing our literature review

We conducted a systematic literature review on three different databases, AAU library Primo, Google Scholar and IEEE Xplore. These three databases were suggested to us by AAU library, due to their diversity. e.g. IEEE Xplore provides researchers with highly-cited publications in electrical engineering, computer science, and electronic (Ieeexplore.ieee.org, 2019), which was relevant for us to gain knowledge upon mobile payment research. A librarian at AAU recommended AAUs' own database Primo and Google Scholar as databases where we could find relevant articles from Denmark, and in more exploratory manners in regards to mobile payment in general.

Before the search, we predefined our inclusion and exclusions criteria and used these in all three databases (See table 1).

(Table 1: Used inclusion and exclusion criteria)

Inclusion criteria	Exclusion criteria
• Primary articles • Reviews • English and nordic written articles	• Articles published before 2000 • Articles not describing mobile payment

• Articles focusing on mobile payment implementation • Articles focusing on both NFC and Bluetooth payment solutions • Articles focusing on mobile payment users, their behaviour, and their intention of use e.g.	• Articles not written in English or Nordic written. • Articles focusing only on mobile technology.

To begin with, we focused on finding literature on mobile payment studies from Denmark. Our primary search was therefore in Danish; “Mobilbetaling OG brugere OG/ELLER Dankort app”. That, however, did not give us any results, and we, therefore, changed the initial search quote to English; “Mobile Payments AND User OR Dankort app”. Again, it was a ‘dead end’, and we started up searching with the same quote, but now with “Mobile payment AND user OR Denmark”, which gave us two results on all three databases, which are presented in table 4.

On all three databases, we now searched on “Mobile payment AND user” combined with the various words and synonyms which we found relevant to our case, presented in table 2, e.g. “Mobile payment AND user AND/OR practice”.

Using this approach, gave us significant more results, and we have in table 3 listed those quotes, where there were hits to find besides our search on Danish.

(Table 2: Search words)

Mobile payment	**Experience**	**Provider**
• User • Provider • App • Bluetooth • Denmark	• Practice • Behaviour • Acceptance	• Challenges • Implementation • Process

(Table 3: Quotes which provided us with results and the amount of hits)

Database	Search	Hits
AAU Library Primo	Mobile payment AND app AND user experience AND Denmark	2
	Mobile payment AND app AND user practice	2633
	Mobile payment AND acceptance AND user experience	1810
	Mobile payment AND provider AND challenges	1854
AAU Library Primo (Danish)	Mobilbetaling OG brugere OG/ELLER Dankort app	0
Google Scholar (Danish)	Mobilbetaling OG brugere OG/ELLER Dankort app	0
Google Scholar	Mobile payment AND user	1.810.000
	Mobile payment AND app AND user experience AND Denmark	2
	Mobile payment AND user AND experience	16.800
	Mobile payment AND Bluetooth AND user experience	3
	Mobile payment AND provider AND challenges	21
IEEE Xplore	Mobile payment AND user	553
	Mobile payment AND app AND user experience AND Denmark	2
	Mobile payment AND	44

	user AND experience Mobile Payment AND Bluetooth AND user experience Mobile Payment AND Provider AND Challenges	3 19

However, many of the provided hits were not related to our case, e.g. articles focusing only on smartphone technology, as we were not interested in smartphone components and the technical aspects of a phone, but only how the smartphone can be used in a payment situation.

Therefore, it was necessary for us to look into the articles most cited in order for us to narrow down relevant literature. As a minimum, the articles must have been cited more than 100 times and was also articles with the highest impact factor. With that approached, we obtained in a total of 11 articles, where we found nine of them, to be relevant in regards to mobile payment practice. The nine articles, have provided us with definitions, references, themes, and valuable knowledge upon mobile payment and how users perceive the use of mobile phones as a payment solution.

The nine papers do, however, covers very different scopes upon mobile payment, but for all of them, is user acceptance and adoption the primary focus, and, moreover, does not focuses on a specific mobile payment solution, such as mobile payment apps.

We also found one critical paper, and two reviews, which will also be presented later.

We have in table 4, listed in a total of 11 articles from the earliest to the newest studies, were two of them is conducted in Denmark and with a focus on the Danish mobile payment practice.

(Table 4: Finale list of articles found through literature review)

	Title	Theme	Year
1	Trust enhanced technology acceptance model - consumer acceptance of mobile payment solutions	Adoption	2003
2	Exploring consumer adoption of mobile payments – A qualitative study	Adoption	2007
3	Quo vadis, TAM?	Critique	2007
4	Past, present and future of mobile payments research: A literature review	Overview	2008
5	An empirical examination of factors influencing the intention to use mobile payment	Adoption	2010
6	Understanding consumer acceptance of mobile payment services: An empirical analysis	Adoption	2010
7	Consumer attitudes on mobile payment services – results from a proof of concept test	Case-study	2013
8	A critical review of mobile payment research	Overview	2015
9	The race to dominate the mobile payment platform: Entry and expansion strategies	Ecosystem	2015
10	The new normal: Market cooperation in the mobile payments ecosystem	Ecosystem	2015
11	Mobile payment- Understanding the determinants of customer adoption and intention to recommend the technology	Adoption	2016

3.2 Literature Contribution of Previous Research on Mobile payment

Several researchers state the definition of mobile payment. According to Karnouskos, (2004), the definition of mobile payment is "a kind of payment in which some kind of a mobile device is used to initiate, authorise, and confirm an exchange of financial value in return for goods and service" (2004). Dahlberg, Mallat, Ondrus, and Żmijewska, (2008), agrees that mobile payment is "payment for goods, services, and bills with a mobile device (such as smartphone, or personal digital assistant (PDA) by taking advantage of wireless and other communication technologies" (p. 165). Moreover, is mobile payment defined by Ghezzi et al. (2010) as "a process in which at least one phase of the transaction is conducted using a mobile device (such as mobile phone, smartphone, PDA, or any wireless-enabled device) capable of securely processing a financial transaction over a mobile network".
Due to the latest near field, mobile technology, e.g. NFC and Bluetooth, the term 'proximity' is now adopted into the mobile payment family (Zhou, 2013).

We, therefore, obtain the definition of mobile payments, as payments in which the purchase is made through an app, where the user's payment card is applied. That also means that a smartphone is needed since a mobile phone cannot download apps. We will, therefore, refer to the usage of a smartphone when speaking of Dankort app. Moreover, do we understand mobile payment as a purchase made between a payer and the payee, who are in the same location or space, and where the communication between their devices takes place through a proximity technology such as NFC, Quick Response (QR) codes or Bluetooth technology.

3.3 Mobile Payment Research

To understand where mobile payment studies are today, we find it necessary to explain, where the research on mobile payment takes its point of departure, as we learned through our literature search, that studies on mobile payment have been ongoing over the past two decades.

Since 1997, where Coca Cola experimented with the first mobile payment transaction through SMS on vending machines in Finland (Dahlberg, Guo, and Ondrus, 2015), researchers saw potential in mobile payment, since mobile phones already back then, had several characteristics which made them ideal for payment purposes. Most notably, (Mallat, 2007), points towards the proliferation of mobile telecommunications technology, which made mobile phones increasingly common, and available for users. Secondly, compared to computers and phones, mobile phones are much closer to the user, and, therefore, enables the storing of personal information within the phone, and facilitates their use as a payment instrument. Thirdly, scholars write that consumers were already accustomed to using their mobile phones for payment purposes, in the form of purchasing services such as logos, ringtones, and public transportation (Dahlberg, Mallat, and Öorni, 2003; Mallat, 2007).
Dahlberg, Mallat, and Öorni made one of the earliest studies we came across (2003). Tomi Dahlberg, professor at the department of information systems science of Helsinki School of Economics, has in particular contributed to the research field with several papers and critical literature reviews upon the mobile payment subject.

As one of two studies, we found using qualitative methods Dahlberg, Mallat and Oörni, (2003), in their study "Trust Enhanced Technology Acceptance Model - Consumer Acceptance of Mobile Payment Solutions".

Highlights through their focus-group interviews, issues that may potentially slow down the development and implementation process of mobile payment services, such as service providers and merchants which do not have direct access to sophisticated mobile payment solutions or the undefined roles and responsibility of various market participants; mobile payment service providers, their consumers, merchants, financial institutions and telecommunication operators. Also, the implementation process needs to be solved before mobile payment solutions become used mainly (ibid.).

Dahlberg, Mallat and Oörni, (2003), also points towards another significant issue, which is the consumer's and merchant's willingness to adopt or accept mobile payment solutions.

We learned that specifically adoption[1] and acceptance, for many years more or less have taken the researchers attention, since there existed speculative arguments in regards to practitioner's subjective experience, and markets analyst's insight and forecasts.

Therefore, Dahlberg, Mallat and Oörni, (2003) agree that due to little empirical evidence on what value mobile payment solutions could provide to the consumers or why consumers at all would shift from current payment solutions, e.g. checks, cash or credit cards to mobile payment solutions such as mobile wallets need attention.

They suggest that since user interface of mobile payment solutions belongs to the information system domain, studying mobile payment would benefit from not only looking at it as a new payment instrument and new technological payment methods but instead as new technologies waiting for user adoption (ibid.).

3.4 Technology Adoption Models and Theories

Surprisingly, we did not succeed in finding any papers using practice theory, but we did, however, referring back to Dahlberg et al, (2008) learned that researchers primary through information system theories and models have investigated mobile technology, mobile payment ecosystems and consumers acceptance of mobile payment, to mention some of them; Diffusion of Innovation model (hereinafter DOI) (Rogers, 1995), Theory of Reasoned Action (hereinafter TRA), (Ajzen & Fishbein, 1980), Technology and Acceptance Model (hereinafter TAM) introduced by Fred Davis in 1986, and the latest one Unified Theory of Acceptance and Use of Technology (hereinafter UTAUT) formulated by Venkatesh et al. (2003). To offer implications and constructs for organisational matters to marketing mobile payment solutions to increase consumer's intention to use their services (Dahlberg, Mallat, and Oörni, 2003; Mallat, 2007; Schierz, Schilke and Wirtz, (2010); Kim, Mirusmonov and Lee, (2010).

[1] Adoption should be understood as an individual process detailing the series of stages one undergoes from first hearing about a product to finally adopting it.

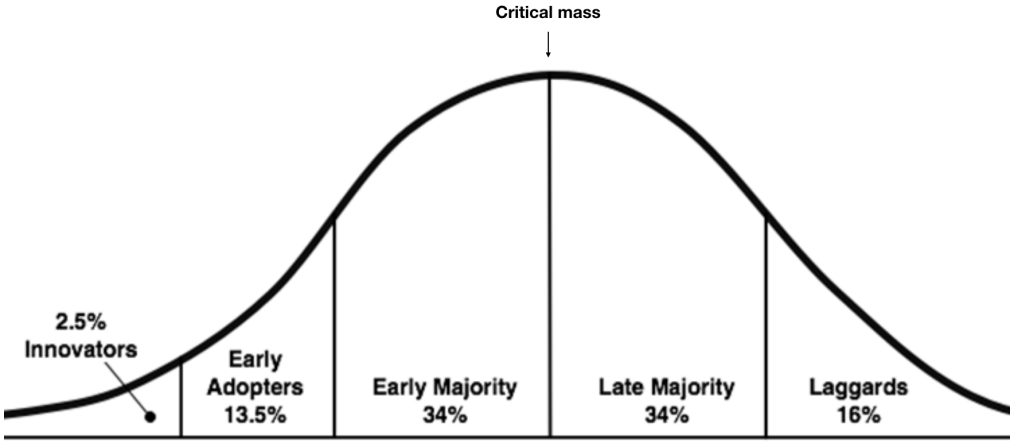
Since these theories primary builds on quantitative data collections provided by surveys and questionnaires to be analysed statistically and calculated into already predefined values, it is a whole new area for us as techno-anthropologist to move in.

We will, however, attempt to explain DOI and TAM used in the articles we found, as these are overall the most widely used and accepted theories to explain and predict which constructs and factors consumers in general, are affected by, when it comes to usage intentions and adoption towards mobile payment solutions.
We will in the following sections explain the theories origins and concepts, and also look deeper into the already existing literature on mobile payment research, and see if we can find any constructs and variables, with the potential to drag parallels to our theoretical approach practice theory, and our thesis in general.

3.4.1 Diffusion of Innovation Model (DOI)

The earliest model used in three of our papers written by Mallat, 2007: Arvidsson, 2014, is the DOI model formulated by Rogers, (1995). The theory was made to establish a foundation for researching innovation acceptance and adoption. DOI seeks to explain how, why, and at what rate[2] innovation spreads.
Rogers, (1995) further explains; "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995, p. 5). DOI is based on the conceptual idea that innovation first is accepted and used by a small group of interested people, and then over time, diffused to more and more people within the population.
In the end, the rate will reach critical mass, and the innovation is now self-sustain (ibid.). Rogers further suggested that adopters could be categorised in five categories: Innovators, Early Adopters, Early Majority, Late Majority and Laggards (ibid.). (see figure 1)

[2] The rate of adoption is by Rogers (1995), defined as the relative speed in which participants adopt an innovation. Moreover, is rate usually measured by the length of time where a certain percentage of the members of a social system have adopted an innovation is required in order to state that the innovation has reached critical mass, and thereby is self-sustaining.



(Figure 1: Illustration showing, the percentage in which adopters categories are divided into, in order to reach critical mass (Rogers, 1962, p. 283).

Innovators are defined as the ones willing to take risks, the ones with the highest social status, have financial benefits, and are socially closer to scientific sources and interaction with other innovators. Since financial resources help absorb possible failures, innovators risk tolerance still allows them to adopt technologies (Rogers, 1962, p. 282).

Early adopters are individuals with the highest degree of opinion leadership in regards to adopter categories.

Opinion leaders are defined as an individual, capable of affecting other people's opinions, actions and behaviours. They have a higher social status, financial benefits, advanced education, and are more socially forward than late adopters. By using rational choices of adoption, they are likely to be more discreet in their adoption, and, moreover focuses on maintain a central communication position (ibid.).

The early majority adopts technology after the different degree of time, significantly longer than innovators and early adopters. They have above average social status, contact with early adopters and does not hold positions of opinion leaders (Rogers, 1962, p. 283).

The late majority does, however, holds a high degree of scepticism on technology, and, therefore, adapts an innovation after the majority of society had adopted the innovation. Individuals found in this category have below average social status, little financial flexibility, contact to others in late majority and early majority and little opinion leadership.

Finally, there are laggards, which, unlike the other categories, show little or no interest in innovation, and therefore has no opinion leadership. They typically have an aversion to change-agents, and tend to be focused on "traditions".

Laggards have the lowest social status, lowest financial flexibility, oldest among adopters, and are only in contact with family and close friends (ibid.).

The theory, moreover, determines five innovation characteristics that affect adoption: relative advantage, complexity, compatibility, trialability, and observability (Rogers, 1995, pp. 212-251), whereas relative advantages, complexity, and compatibility have provided the most consistent explanation for the adoption of mobile payment (Teo and Pok, 2003; Wu and Wang, 2005).

The other of the two qualitative papers we found was Mallat, (2007), qualitative DOI research: "Exploring consumer adoption of mobile payments – A qualitative study".

They used 61 participants in a focus group format, where the interviews anticipate, compatibility, complexity (adapted from DOI theory), and two added constructs: network externalities, and perceived security and trust in mobile payment service providers. In terms of how these constructs "affect their willingness to use a mobile phone as a payment instrument where the money is transferred from a consumer to a merchant in exchange for a product or service" (Mallat, 2007. p 428).

Relative advantage

In traditional IS research, the relative advantage of mobile payment systems is studied in an organisational context, where the factors consist of performance measures such as performance increase, effectiveness, and time-saving.

Whereas, in Mallat's (2007) study where commerce and payment are in focus, one of the critical factors regarding the advantage of mobile technology and service is their independence of time and location (Mallat, 2007 p. 429). E.g. the users can pay for transportation tickets without the need to visit an ATM, a ticketing machine or a parking metre. The participants also answered, that the possibility to make payments ubiquitously, independence of time and place, and the possibility to avoid queues, had a positive effect, and especially remote payment was perceived as convenient for them. In merchant context, many of the interviewees stated that mobile payment was also advantageous, as they more or less is always carrying their mobile phones, and they often either did not have any cash or small coins with them or had forgotten their credit card (Mallat, 2007).

Also, Arvidsson, (2014) uses DOI in his proof of concept study "Consumer attitudes on mobile payment services - results from a proof of concept test", to investigate which attitudes consumers have, in terms of adopting payment services. Through a quantitative data collection, he found that relative advantage was found to be a critical factor for the adoption of mobile payment service. Which he explains was not surprising, given that consumers are bound to compare the innovation with the actual payments they use today. Therefore, studies on mobile payment services must consider the impact already existing and traditional payment services have on the adoption of mobile payment services.

Moreover, he found that both consumers and merchants use regular payment card transactions as a benchmark for the mobile payment service, and they, therefore, perceive that mobile payment should be at least as quick, simple, inexpensive, secure as a card payment in order for them to be attractive.
In other words, Arvidsson (2014) states: "If the new service is not better - in some respect - than the payment service currently used, there is simply no reason to start using it" (Arvidsson, 2014. p. 164).

Complexity

Also, in DOI, complexity, is determined as the "degree to which an innovation is perceived as challenging to understand and use (Rogers, 1995, p.16). If the complexity of a specific innovation gets too high for the potential adopter's, it could cause a low adoption and thereby never reach critical mass. The responses to the complexity were mostly upon the usage of SMS services, which by the interviewees was considered to be complicated, slow to key in, and had the failure of various payment codes. Also, complex registration procedures were a factor the interviewees found to be a barrier for them to adopt mobile payment services, which, therefore, in this study indicated that complexity, had a negative influence on the adoption process (Mallat, 2007, p. 428). Convenience has also been presented together with complexity, as being determinants for consumer’s adoption of mobile technology and service, like mobile payment, in general, are expected to increase consumer’s convenience by reducing the need for coins and cash, and increasing the availability of payment solutions (Mallat, 2007).

Compatibility

Compatibility in a DOI setting means the consistency between an innovation and the values, experience, and needs of potential adopters (Rogers, 1995). In adoption research, have the compatibility of the innovation commonly been assessed concerning the potential adopter's work and task.

Which in a mobile payment context means, that the consumer's ability to adapt the innovation into their daily life is a significant determinant of the service adoption (Teo and Pok, 2003; Wu and Wang, 2005).

That could, for example, be the consumer's ability to use diverse payment solutions. Therefore, is the compatibility of mobile payments expected to correspond with the consumer's purchase transactions and habits (Mallat, 2007. p 416). The interviewees respond to this that they, in general, found a mobile payment to be most compatible with small value payments such as movie tickets, public transportation, car parking or chocolate bar or newspaper purchased over a card terminal.

Mobile payments with larger value purchases were by the interviewees perceived as inferior due to concerns about security and payment documentation (Mallat, 2007. p 422).

The overall findings, therefore, indicate that compatibility is a significant adoption determinant. Schierz, Schilke and Wirtz support this finding, (2010) whom in their TAM study "Understanding consumer acceptance of mobile payment services: An empirical analysis" also found compatibility to have a meaningful impact on consumer’s willingness to accept mobile payment services since consumers must find them reconcilable with their existing behavioural patterns. They further point to, that their finding is of particular interest, since compatibility is not part of the original TAM, and is therefore often not considered by acceptance researchers (Schierz, Schilke and Wirtz, 2010).

Network Externalities

The added construct network externalities are further considered to be an essential determinant in mobile payment adoption since payment technologies exhibit indirect network externalities (ibid.). Since mobile payment is still a relatively innovation in the payment market, a consumer's decision on adapting the innovation is profoundly affected by the number of merchants providing the mobile payment service.

The interviewees in Mallat's (2007) study also states that a lack of merchant acceptance prevents their adoption of the innovation, and, furthermore, that the potential for the mobile payment service to complement cash and card payments get smaller if mobile payment is not in general accepted (Mallat, 2007, p. 11).

When new consumers indirectly adopt the network, the value of the network for all consumers are increased, as also the merchants now are joining the network. Therefore, is consumer's adoption of mobile payment likely to depend on the amount of adopting merchants as well as other consumers (ibid.).

Security and Trust

The last added construct we found relevant to our case in the DOI research area, is security and trust. Because of the exchange of personal information such as phone number and credit card information, previous studies have found perceived security and trust in mobile payment providers to have a significant meaning in order for a mobile payment service to succeed (Siau et al. 2004; Xu and Gutiérrez, 2006).
Usually is consumers concerns about privacy and security related to authentication and confidentiality issues, and also concerns in regards to secondary use, and unauthorised access to payments and user data (Mallat, 2007, p. 11).

Mallat (2007), therefore, states that it is expected that perceived security and trust will have an impact on mobile payment adoption.

Arvidsson (2014) also adds trust and security as two constructs to his study. He found that it is vital to separate security and trust, as they are two different factors. Security is namely defined to be a technical and system-related issue, whereas trust primary is related to actors to mention banks, card companies and operators (Arvidsson, 2014. p. 154).

In terms of security, the interviewees in the study from Mallat (2007) points to the lack of transaction record and documentation as being a risk, as it made a follow-up on previous transactions more difficult. They suspected that without a receipt, they could end up spending more money than they intended. Moreover, without the receipt, the payer has no proof of the purchase, and, therefore makes a potential refund difficult. Errors in payment transactions were, moreover, also found as being a potential risk. It could be confusing if it were not clear, whether it was a system error of their own mistake Mallat, 2007. p. 424).

Also, a common concern was the vagueness of the transaction, and perceived lack of control, since they could be unsure upon if the payment had taken place or not, and if the payment had charged. Lastly, the interviewees agreed on, that the reliability in the mobile device and mobile network could be a risk since they worried that the mobile phone's battery could run out, and the network connection, therefore, could fail in the middle of a payment transaction (ibid.).

In regards to trust, the interviewees were concerned that someone potentially could be able to use and pay with their mobile phone if the phone was lost, stolen or hacked. Besides, privacy was for some of the interviewees perceived to be a risk, and, therefore, were unwilling to lease their personal information to payment service providers (Mallat, 2007. p. 425).

She further adds, that trust in mobile payment service providers and merchants reduced the perceived risks of mobile payment, and, moreover, that interviewees, in general, were more willing to conduct payments with reliable transaction parties and regarded established banks or credit card companies (ibid.).

The results upon security and trust, therefore, supports the importance of trust in the consumer's adoption of mobile payment. As Arvidsson (2014) also found both trust and security to be essential factors in regards to the adoption process, he points out that there in his study is no correlation found between them, and that future research, therefore, should continue separating the two factors (Arvidsson, 2014, p. 164).

3.4.2 Technology and Acceptance Model (TAM)

The overall most recognised and well used IS theory we came across during our literature review on mobile payment research was the Technology and Acceptance Model (TAM) (Dahlberg, Mallat, and Oörni, 2003; Dahlberg et al. 2008; Arvidsson, 2014; Dahlberg, Guo, and Ondrus, (2015). TAM is an extended version of the Theory of Reasoned Action (TRA) which shortly described aims to explain the relationship between attitudes and behaviours within human activity. The TAM theory, however, aims to explain how users come to accept and use a specific technology. The theory builds on the idea, that when users are presented to new technology, there will exist many external variables or determinants influencing the users' decision about how and when they will use it (Davis, 1989).

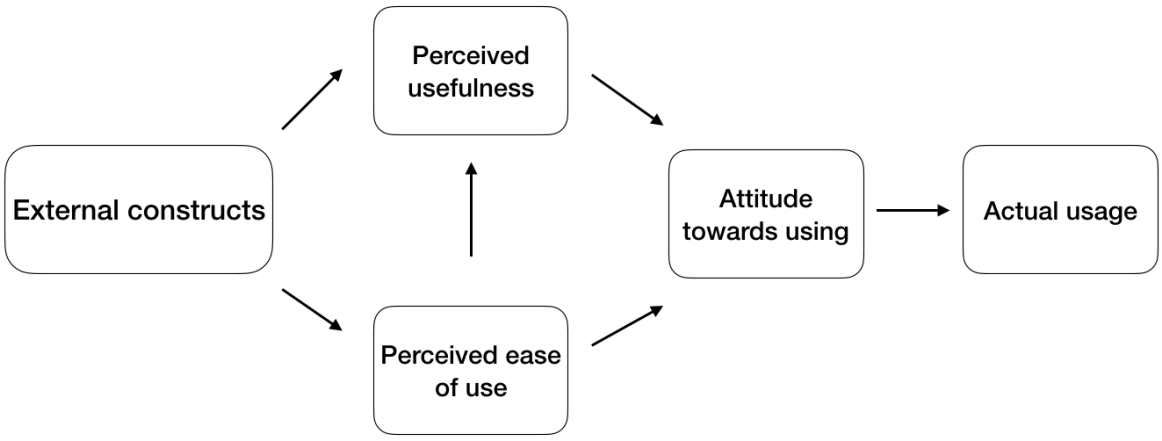


Figure 2: Modified version of Technology Acceptance Model.

Particular two beliefs explain what causes people to accept or reject technology. First Davis (1989) points to that people tends to use or not use technology to the extent where they believe that it will help them to perform their job better, he refers to this variable as Perceived usefulness. He defines the variable as "the degree to which a person believes that using a particular system would enhance his or her job performance." followed by the definition of the word useful: "capable of being used advantageously." (Davis, 1989, p. 320). When technology is high in perceived usefulness, a user thereby believes in the existence of a positive use-performance.

Secondly, he explains that even if users believe that particular technology is useful to them, then perhaps, at the same time believe that the technology is too hard to use, and the effort of using the technology outweighs their performance benefits of usage.

Therefore, in addition to usefulness, usage is theorised to be influenced by perceived ease of use (ibid.). Also, is perceived ease of use referred to "the degree to which a person believes that using a particular system would be free from effort." followed from the definition of "ease": "freedom from difficulty or great effort." (ibid.). He, therefore, claims that when a particular technology is perceived as being more comfortable to use than others, the technology is more likely to be accepted by users (Davis, 1989, p. 320).

By adding several external variables or constructs, TAM has been studied and expanded further by Venkatesh, and Davis, (2000), into both TAM2 and TAM3, where more constructs have been added to the model.

After TAM3, Venkatesh, Morris, Davis, and Davis, (2003) formulated Unified Theory of Acceptance and Use of Technology (UTAUT) after studying previous models/theories. UTAUT more or less aims to explain the same as TAM, except that this model builds on four key constructs; performance expectancy, effort expectancy, social influence, and facilitating conditions. The first three constructs are used as determinants of usage intention and behaviour, and the forth a determinant of user behaviour.
UTAUT has since then, been used widely within the IS research. Because these factors and constructs look very much alike, we will not dig deeper into the UTAUT theory. Instead, will we look at one of the papers using the original TAM model Kim, Mirusmonov, and Lee, (2010), and use it as an example on how researchers apply TAM to their research, and which variables they have found to be important in regards to mobile payment adoption.

Kim, Mirusmonov, and Lee (2010). Explores in their modified quantitative DOI and TAM study "An empirical examination of factors influencing the intention to use mobile payment", how two user-centric factors: personal innovativeness and mobile payment knowledge together with two mobile payment system characteristics: mobility and compatibility may influence the user's adoption behaviours upon mobile payment. They also use the adoption categories from DOI to explain the differences between adoption levels within user groups.

Personal Innovativeness

Personal innovativeness refers to an individual who is willing to try out any new technology or innovation. Innovative individuals have, moreover, shown to be communicative, curious, dynamic, venturesome, and stimulation-seeking. (Kim, Mirusmonov, and Lee, 2010).

Even though the majority of these individuals have relatively little expertise regarding new mobile payment services, innovativeness is, therefore, expected to be an essential but positive variable in regards to perceived ease of use, and by that influence user's intention to adopt mobile payment (Kim, Mirusmonov, and Lee, 2010. p. 313).

Out of the 269 participants answering the questionnaire, 43.9 % of them referred themselves as early adopters, while 56.1 % considered themselves to be late adopters (Kim, Mirusmonov, and Lee, 2010. p. 318).

Their results suggest that there is a significant difference between the two groups, in regards to the effect of mobile payment knowledge, and personal innovativeness on perceived ease of use. That can be seen in the case of early adopters, where none of the constructs had any significant influence on perceived usefulness, whereas perceived ease of use was explained by personal innovativeness.

On the other hand, late adopters found compatibility to be related positively to perceived usefulness, and perceived ease of use related positively to personal innovativeness. Besides, were perceived ease of use found to be positively related to perceived usefulness in both cases, which points to that both beliefs were positively related to the intention to use mobile payment (ibid.).

According to Kim, Mirusmonov, and Lee (2010). It is therefore vital, that service provider applies different business models and strategies depending on which user group, and, moreover, at which diffusion level of mobile payment service, they wish to target (Kim, Mirusmonov, and Lee, 2010. p. 320).

3.5 Critical Review on Mobile Payment Research

As we are only looking into a small amount of the research conducted upon mobile payment, we will briefly look into one of the significant reviews "A critical review of mobile payment research" made by Dahlberg, Guo, and Ondrus (2015). As this critical review, in particular, illustrates the extent of mobile payment research, and under which circumstances it has been investigated.

Through a systematic review, they found 188 papers published between 2007 and 2014, where consumer, technology and mobile payment market and providers were the three main research topics. Out of the 188 papers, 44 studied technologies, 34 studied consumers, and 20 studied the mobile payment market, and providers (Dahlberg, Guo, and Ondrus, 2015). Out of the 44 papers studying technology, approximately 75% of them focused entirely on security, which made security the dominant topic.

On the other hand, the 34 studies on consumer's adoption showed that the well-established adoption theory TAM was still applied, and confirmed the factors that impact consumer's adoption of mobile payment namely; perceived ease of use, perceived usefulness, trust, and risk remained as the dominant factors regarding consumers' adoption of mobile payment (ibid.).

Dahlberg, Guo, and Ondrus (2015) do however speculate on why no new approach was introduced in the papers after 2007 even though this set of papers has a better empirical data collection and more rigorous statistical analyses.
By looking at the diverse approaches, they point out that authors of the articles published after 2007, directly have played it safe with their methodological choices, by avoiding newer and riskier approaches (ibid.).

One of the 34 articles applied the design science methodology, two are based on interviews, and the remaining 31 publications have collected empirical data with survey questionnaires with the purpose of being analysed statistically, where it for 23 of the publications again is shown, that perceived ease of use again is a vital adoption factor for mobile payment service.
Dahlberg, Guo, and Ondrus (2015) therefore point out, that researchers have not responded to the recommendations outlined by the previous literature review since it is still unknown what ease of use means and how it can be contextualised into something meaningful.
Besides, they are again asking for researchers to investigate actual real-world payment scenarios, as mobile payment in a real-world context is only one alternative rather than the only alternative to payment Dahlberg, Guo, and Ondrus (2015).

Criticism on TAM and UTAUT used in Information system research upon mobile payment have according to Benbasat and Barki, 2007, also become a bit complex, since both TAM and UTAUT have been extended various times, and researchers independently have made attempts to adapt the continually changing not only IT but also mobile payment domain by adding diverse constructions.

Expansions such as TAM2, TAM3, and UTAUT2 has caused what (Benbasat and Barki, 2007) calls "theoretical chaos", and, moreover, points to the theoretical concerns moreover states; "despite the models significant contributions, the intense focus on especially TAM has diverted researcher's attention away from other important research issues, and has created an illusion of progress in knowledge accumulation (Benbasat and Barki, 2007).

3.6 Literature Review on Mobile Payment studies in Denmark

Compared to studies conducted on mobile payment solutions worldwide, the existing literature in Denmark is relatively small. In all, we found two mobile payment studies from Denmark conducted after 2000, which is briefly explained here. The two papers are more or less focusing on the rise of Danske Bank's mobile payment solution MobilePay, but with very different approaches.

Hedman and Henningsson (2012), investigated in their paper "The new normal: Market cooperation in the mobile payments" how technological payment innovations such as MobilePay, influence payment ecosystems by bringing in theories of market cooperation with the pieces of literature on business and technology business.
With the help of mobile payment market cooperation (MPMC) framework, they found that digitalisation of payments has caused ecosystem instability and created a new arena for competition and therefore requires new collaboration methods between stakeholders (Hedman and Henningsson 2012).

On the other hand, Staykova, and Damsgaard (2015) looked into which factors that determined the success of a mobile payment platform and built a framework to analyse the entry and expansion strategies with a focus on MobilePay and a now unavailable app called Swipp.
They argue that for the given solution, it is essential whether the solution is a first-mover or a late-follower, and with the right strategy influences the future ability to attract customers Staykova and Damsgaard (2015).

Both papers mention TAM and other consumer adoption theories, in regards to what previously has been investigated around the world.

However, since none of them uses the theories or focuses on consumer adoption or behaviour, it is, therefore, our view, that research on mobile payment and in particular with the focus on consumers in Denmark is lacking, and we, therefore, could bring in more insights on what is moving in the field at the given moment.

3.7 What do we take with us from here?

The already existing mobile payment research has been ongoing in many years, and thereby, the idea and definition upon the subject also changed, due the mobile technology evolution and app innovation. In an organisational context, it has, therefore, been relevant to look into, a what adoption level consumers are moving in, in terms of their willingness to adopt new mobile payment solutions.

From what we know, it has primarily been through information system theories, in which hypothesis upon consumer adoption have been tested. Therefore, a knowledge gap seems to appear, as it according to Dahlberg et al. 2008 still is unclear what ease of use and usefulness means, and more importantly knowledge upon real-world payment scenarios and not only users adoption and intentions to use mobile payment solutions
Moreover, research on mobile payment in Denmark appears to be relatively small, which again creates a knowledge gap, where we intend to contribute by investigating the Danish consumer's payment practice primary with Dankort or other payment solutions.

We have been presented to a series of new theoretical terms, and many constructs in regards to mobile payment adoption. Many of these constructs are either related to each other or in fact, have the same characteristics, which, therefore, also makes the mobile payment research landscape complex to enter. Moreover, as new researchers in this landscape, it can be challenging to see through all these constructs, and, therefore, makes it hard to find a relevant starting point.

As this thesis is a practice theory oriented project, we do not intend to make a DOI or TAM research, by adding a quantitative research method to practice theory.

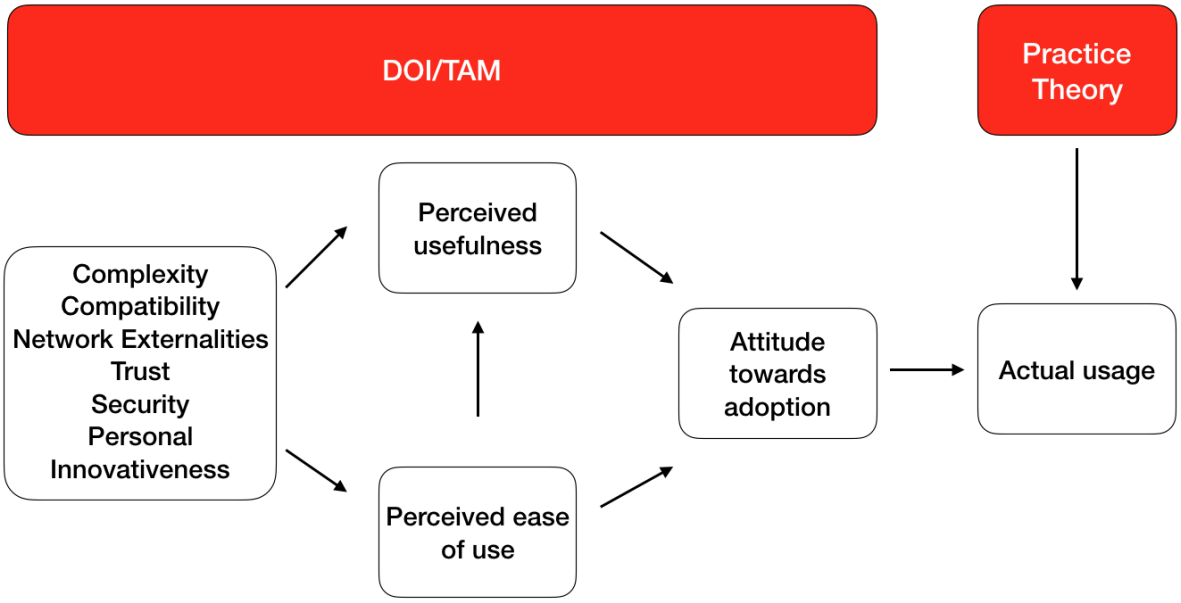


Figure 3: Modified illustration of the constructs used later on in this thesis, and where we intent to contribute with our research and use of practice theory.

We do, however, want to take some of the relevant constructs (see figure 3) with us further to our case and analysis, as we have found some of them, to be relevant in regards to our findings. We believe that we through practice theory, and a qualitative research approach can give a more varied picture of the constructs, as we are in a position to complete these constructs with findings from the real world.

We did not manage to find any literature, where researchers have so to say been out there and explore mobile payment in a real-world setting. Researchers have instead continued to focus on consumer adoption and technology, with a modestly attempt to provide any new knowledge to the field (Dahlberg et al. 2008).
Furthermore, the existing mobile payment adoption literature has primary through quantitative data collections, focuses on examining consumers' intention to adopt mobile payment. Not on their actual usage of mobile payment, which is why we are interested in bringing in our anthropological expertise where observations in the field and in-depth interviews could contribute with valuable knowledge on the consumers and users of Dankort app perspectives on mobile payment and usage of Dankort app. This is not to say, that quantitative data is not relevant to mobile payment adoption research, but as it was the case in the study conducted by (Mallat, 2007).

The contribution of responses from their focus-group interviews gave a more detailed picture of, what is the problem out there. Where studies using quantitative data collection indeed have provided us relevant information upon which constructs are influencing each other in terms of consumer adoption, but did not inform us about what the through behind their survey or questionnaires answer was.

With inspiration from Dahlberg et al. 2008 and Dahlberg, Guo, and Ondrus, (2015), which again encourage researchers to investigate actual real-world payment scenarios, as "mobile payment in a real-world context is only one alternative rather than the only alternative to payment" (Dahlberg, Guo, and Ondrus, 2015 p. 274). We, therefore, again intend to contribute with valuable knowledge upon mobile payment, in regards to filling in the knowledge gap, which in particular, are found in Denmark.

4. Demarcation

Continuing from what we will take with us further from our literature review, it also means that we need to delimit from many other paths this thesis could have taken us in as e.g. many mobile payment solutions as touch upon earlier are influencing the Danish payment market. It has therefore been necessary for us, to stay to our original plan and only look into the mobile payment solution provided by Nets, Dankort app. Primary because of three reasons; the first one is that it would require much more time, to gain insights in all the different apps and solutions, primarily since much of our empirical data builds on observations from the field, as well as in-depth interviews with the users of the app. It would take away our focus, which is primarily the users.

The second reason is because of the knowledge gap, which at the moment exist upon mobile payment in Denmark, and, moreover, knowledge about Dankort app practice. It is for us as researchers, essential to contribute with knowledge to the mobile payment field, where the readers would primarily benefit of gather information about the Danish consumers currently preferred payment method, namely Dankort, and moreover how the implementation of Dankort app potentially could affect consumers and potential users, already existing payment practice.

Thirdly; the mobile payment market or what Hedman, & Henningsson (2012) calls the mobile payment ecosystem, quickly becomes very complicated, since many diverse stakeholders are taking part in this. Not only Nets but also card terminal providers, banking institutions, mobile manufacturers and merchants, (see figure 4).

Moreover, we could have contributed with insight upon how the ecosystem works, and how the diverse stakeholders are, e.g. either committing or lacking in their responsibilities in regards to maintaining a consumer-friendly mobile payment market.
Especially since we have a collaboration with Nets, we could have benefitted with that type of project, to learn more about the company, and how they work with other stakeholders to provide the Danish consumers with optimal payment solutions.

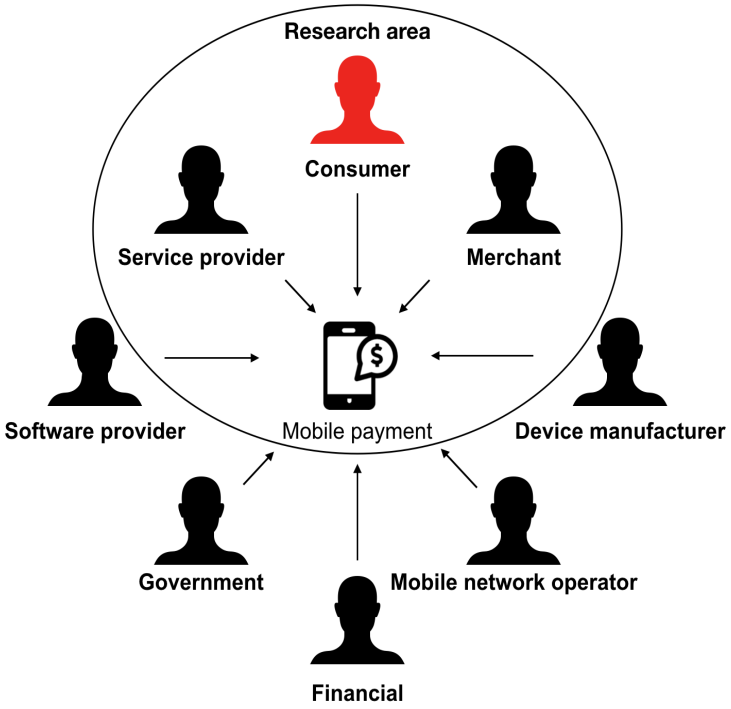


Figure 4: Showing all the possible stakeholders within the mobile payment landscape, and where we intend to take our point of departure (service provider-customer-merchant).

Again, we have decided not to go with this type of project, since it would require us to use another theoretical approach, which would not be a problem, but again turning our focus away from the users and the practical understanding, which we are seeking with our attitude now.

5. Case

5.1 Nets

Nets is an abbreviation for Northern European Transaction Services, which is the leading supplier of electronic payment solutions. Nets head office are placed in Ballerup, a short way from Copenhagen, Denmark.
Previously, Nets was named PBS, but in 2007, PBS merged with Norwegian BBS, which together became Nets, the company offers the same solutions and products that they did before they merged. For a couple of years, Nets was owned by, among others, ATP, but now the company has been sold to a US private equity fund. The total price for the shares was approximately DKK 33.1 billion or NOK 165 per share (Dinero. 2018). The equity fund Hellmann & Friedmann has thus taken over the ownership.

The company, Nets, is one of the leading providers of payment and information solutions in the Nordic region. Nets write about herself: 'By constantly enhancing current offerings and developing new solutions, Nets is helping to make life a little bit easier for every citizen, bank and business.' (Nets.eu, 2019) Which points out the company's broad professional expertise. The company's product portfolio consists of, among other things, payment service (PBS), NemID, Nets' own card terminals, - and Dankort, which is why they are an interesting actor in our case.
Dankort is, as mentioned, the Danish consumers preferred payment method, and it has therefore been the department that works daily with Dankort and Dankort app, we have collaborated with during this thesis.

Nets works closely with the banks, which pay a transaction fee to Nets for the transactions made on the cards they have out. In return, they receive a fee amount from issuing their payment cards. Stores enter into a redemption agreement with Nets in order to redeem Dankort in their business. For this, a fixed subscription fee is paid to Nets, which is based on how many transactions the business gets, why businesses and Nets also work closely together. The consumer belongs to the bank's, and Nets, therefore, does not have a particular focus on this. The consumer's card is linked to an account in a bank, which is why the banks have a daily dialogue with them.

Nets own the technology in the card, but the bank owns the physical card. It is also the banks that charge any payment fees on payments by card. Therefore, Nets has limited consumer contact, although initiatives such as dankort.dk and Dankort's Facebook site are made. Nets describe itself as a leading player in the Nordic payment market, and also a frontrunner in the digital payment solutions. The Nordic region has led the way for the development of digital payments and related services and is the most digitized region in Europe. Nets have played a central role in this development through a focus on innovation, stability and security. (Nets.EU, 2019).

For us, Nets has therefore been a completely inevitable player in our case. Nets is a huge company, with many services and products, we have only found it necessary for us to cooperate with team Dankort, as it is here our focus lays.

5.2 The Dankort Journey

The idea with Dankort started when the Danish banks for several years had considered launching a simple Danish payment card and therefore in 1979 established The banks' Buying and Credit Card Company (translated from Danish), which was tasked with developing a standard Danish payment card and hereafter introduced the Dankort in 1983.
On September 1, 1983, CEO of the banks' buying and credit cards company, Mogens Munk Rasmussen, buys a pair of women's shoes with Dankort. That was the first time Dankort sees the light of day, but it is not like the plastic card we know today.
The first Dankort was made of paper, where payments were made by the store taking an impression of the Dankort with 'fluesmækkeren'[3]. The paper was then signed and send to the bank who took care of the transaction.
In 1984, the automated teller machine (ATM) came, which made it easier for Danish consumers to withdraw money from their Dankort. The ATMs were called 'Kontanten' and were soon to be found on many street corners. In 1985 the first stores got electronic card terminals, where the consumers could enter their PIN-code, which improved the Dankort safety.

[3] 'Fluesmækkeren' was a physical tool, used in stores to make a paper copy of the consumers' payment card, which was then send to the banks. It functioned in many years, as the first electronic attempt to outsource cash and coins from the payment markert.

1985, was, moreover, the year where over 1 million Dankort payments were made, and now Dankort began to persuade the old traditional bank books. In 1986, the banks' buying and credit cards company merged with Banking Payment Service which today is known as the Banking Institutions' Payment Systems, (PBS), which took over the rights for handling Dankort (Betalingsservice, 2019).
In 1988 it became possible to combine Dankort with a visa card. However, it was first when the internet trade was widespread that visa-credit cards breakthrough. (Herlufsen, 2019).
January 2001, the rights to the Dankort were separated from PBS and transferred to the newly established company Dankort A/S, which was owned by the Danish banks. Later in the same year, the banks took over the role of acquirer from PBS. Payment recipients could now choose which bank they wanted to use as the acquirer. In 2010, PBS and the Norwegian company Nordito, the Norwegian counterpart to PBS, together with the card redemption company Teller merged with the company Nets. Nets have since then kept the rights to and the role of redemption of Dankort. (Nationalbanken.dk, 2014)

The popular plastic card was initially introduced to the Danish people to create a national charge-free payment card that could be used in all Danish stores. Dankort was in 2004 equipped with a chip technology that, together with the PIN-code, ensured that the card is a secure and recognized payment solution. The data in the chip is encrypted to prevent unauthorized access to it.
In Denmark, almost all card terminals can receive payments with Dankort, an argument for using and owning a Dankort is to limit the use of cash. This is considered to be an advantage for supermarkets and stores since fewer real money reduces the risk of theft and reduces the possibility of difference when today's earnings are counted. It is also an advantage, with less cash for the consumer, who can more easily control his or her money. In a broader perspective, cash handling is a financial burden for both businesses, banks and society in general. A report from 2018 conducted by Danmarks Nationalbank shows that an average cash payment costs society just over DKK 4,5 per person. while a payment with Dankort costs approx. DKK 2,4 per. payment (Danmarks Nationalbank, 2018).

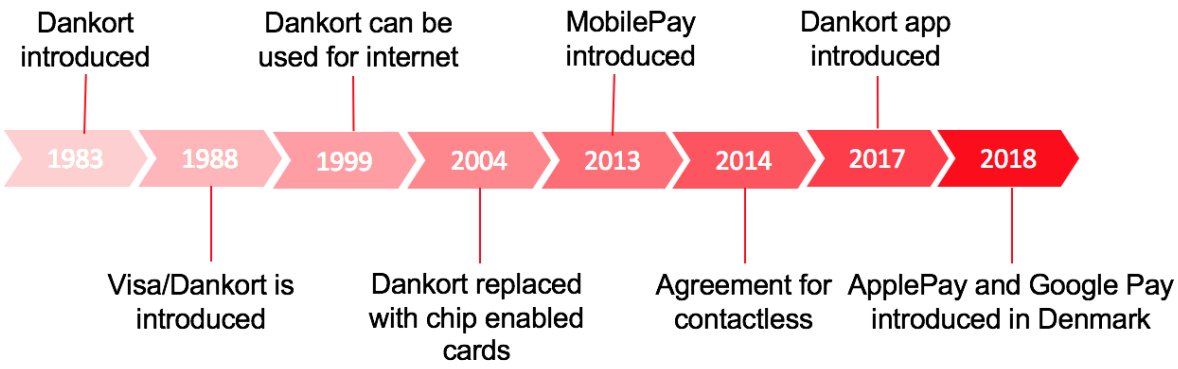


Figure 5: Showing the technological development on Dankort and other mobile payment solutions over the last two decades.

Looking back at the technological development Dankort has gone through the past decades (see figure 5) it is clear that the latest update with Dankort app stands out since it is the first time that the card is developed to be completely separate from the plastic card.
This is a technological development that is quite cutting edge in the Danish payment market, but it is not the first time the Danish consumers can pay and transfer money over their smartphones.
MobilePay was launch in 2013 by Danske Bank, which since then has been on the market and has become a popular payment solution among the Danish consumers.

The latest update to the physical plastic card came in August 2014, when all newly issued cards now had the contactless functionality, where payment worked with Near Field Connection (hereinafter NFC) technology. Finally, in the spring of 2017, Dankort app was launched and was now available on smartphones.

5.2.1 Introducing Dankort on the Smartphone

In 2017 Dankort app was launch after the demand of the merchants, primary supermarkets. Marketing director at Dansk Erhverv Henrik Hyltoft is also pleased with Nets' decision to develop an independent app for Danish consumers. He also believes that the new payment solutions provide consumers and businesses with more choices and help drive development towards more comfortable and faster retail payments (Dankort.dk, 2019a).

Likewise, expressed Nets also, that they were pleased with the supermarket's interest in an independent app.

> *"… Merchants have in recent years invested in developing the contactless Dankort and then Dankort on the mobile. They have expressed a strong desire that Dankort should also be supported via an independent app so that we create the best conditions for Dankort to remain the Danish consumer's preferred payment method."* (Jeppe Juul-Andersen, Nets Dankort.dk, 2019a).

Nets started off, by introducing an iOS beta-version of the app, which meant that not all types of smartphones but only iPhones were compatible to download and use the app (Dankort.dk, 2019b). Together with the beta-version, Nets introduced a development forum, called Dankort Idea Lab, where consumers were invited to share their ideas and proposals to improve the user experience, so the ongoing development of Dankort app was made on the consumer's premises.
In particular, consumers with diverse educational background such as engineers and from merchant's environments was invited, as it was Nets vision, that innovation or product cannot be development, without incorporating the users (Dankort.dk, 2019b).

As we have seen on particular Dankort own Facebook page, the decision on only introducing a beta-version has met some resistance, as consumers with Android smartphones, was not pleased with that type of marketing.

Also, we noticed that many of the users, who started using Dankort app, was frustrated when Nets decided to shut down the beta-version, to replace it with an updated version for both iOS and Android.

5.3 Technology Clarification

As touch upon in subchapter 5.1, the contactless Dankort is the Danish population's' preferred payment solution, which for good reasons is why it is accepted almost everywhere in the Danish payment market. One should, therefore, think, that since it is also Nets which are providing Dankort app, the two solutions can be used the same places.

That is, however, not the case, as there are some technical differences between the two solutions. Compared to the contactless Dankort, which as already mentioned in subchapter 5.2 uses NFC technology, Dankort app uses Bluetooth technology. We will, therefore, in this subchapter elaborate on how the app looks like when the user has downloaded it, how it works technically, and most importantly, how the app works in a payment scenario.

5.3.1 Mobile Payment Technology

Near-Field-Communication (NFC)

NFC technology is a set of communication protocols which enables two electronic devices, where one of them is usually a portable service such as a smartphone, to establish communication bringing them near each other (approximately 4 cm). NFC technology can be implemented in mobile devices, and are similar to those used in contactless credit cards.

Bluetooth-Low Energy (BLE)

Bluetooth Low Energy (BLE) is a wireless technology to exchange data over short distances using short-wavelength (radio-waves). The Bluetooth technology replaces, therefore, cables connecting electronic devices, and found in millions of products we use every day, e.g. headsets, smartphones, laptop and portable speakers.

Within mobile payment, Bluetooth also allows consumers to purchase products and services, as the mobile devices receive the payment information via low energy Bluetooth turning on the Bluetooth signal. That, however, requires the card terminal to be updated with a Bluetooth chip inside the card terminal or attached next to it.

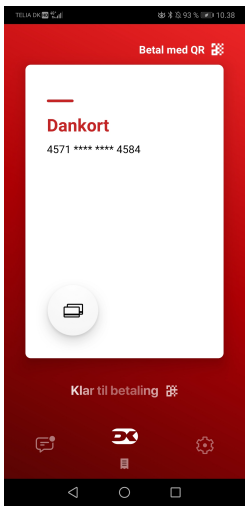
Quick Response (QR)

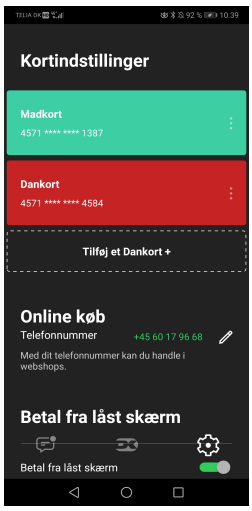
QR-codes is a trademark for a type of matrix barcode. The QR barcode is a machine-readable optical label containing information about the product or service to which it is attached. By scanning these codes, the consumer can easily access websites, search for reviews and information about products or even download products. (Okazaki, Li, & Hirose, 2012).

5.3.2 How does it look like?

The app can be downloaded from either the IOS App Store or Google Play Store depending on whether the user owns an iPhone or an Android smartphone. The user will need to go through some initial steps in order to start using the app. We will, however, not go into details with these, but instead, focus on how the app looks like when the steps are done. Since Nets does not provide the app in an English format, the following pictures are all shown in Danish.

Picture 1 shows how the apps 'front page' looks like, and it is also from here in which the user can enter the various functions the app has. E.g. is it possible to add more cards to the app. The new card(s) can be added to their specific colour, so it is possible to distinguish between them (see picture 2).





Picture 1 and 2: Showing the front page in Dankort app, and where to apply more payment cards. (Screenshots from own app).

At the moment, can Dankort app be used in 25.000 supermarkets around Denmark, and Nets are working on applying more merchants to the list.

It is primary supermarkets under Salling Group A/S such as Føtex, Netto, COOPs' stores, Rema, and Menu where the app can be used, but also bigger chain stores such as Matas and Bahne does accept the app.

5.3.3. How does it work in a payment scenario?

As touch upon, the normal contactless Dankort uses NFC technology, which means that the plastic card can be used more or less anywhere since most card terminals already have the NFC receiver installed.

Dankort app, however, uses Bluetooth technology which builds on another technical set-up, but more or less works in the same way as NFC.

Using the NFC technology in the Dankort app would be preferable since it would not require a Bluetooth update on all card terminals. However, since Apple closed the NFC signal on their products, Nets was more or less forced to use Bluetooth instead in order for consumers with iPhones to use the app (Thomas, Nets, 2019).

The main difference between the two solutions is therefore primary when the user needs to make their purchase, and not in regards to the technology since Nets wanted the app to use the same technology for all users, no matter if they are using iPhone or Android. It would merely be too problematic if the merchants should know what type of smartphone each user have (ibid, 2019).

Card terminals

There exist several card terminals on the payment market, where the three shown below, are those we came across during our fieldwork (see picture 3, 4, and 5) Since it is up to the individual store or supermarket to contact their card terminal provider and make the Bluetooth update, it is not every store or supermarket who provides Bluetooth transactions.

The two first card terminals have the Bluetooth chip installed inside the card terminal, whereas Bluetooth is attached next to the card terminal in a so-called Bluetooth-box.

Picture 3, 4 and 5: Showing diverse terminals we have meet during our fieldwork (Own pictures).

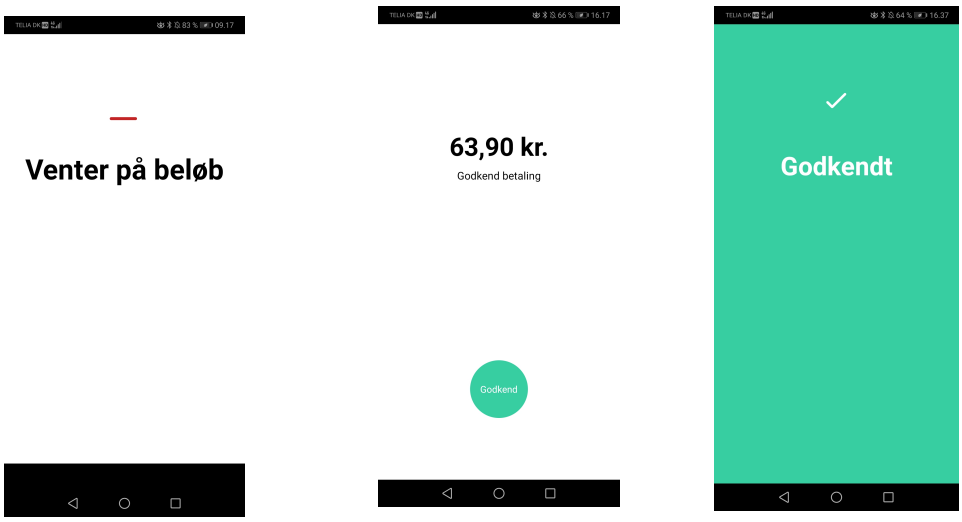
5.3.4 Payment Situation

With Dankort app, the user, first of all, needs to have an active Bluetooth signal on their smartphone, since the Bluetooth connection to a card terminal, cannot be done otherwise. If the user enters the app without Bluetooth signal, the app will ask the user to turn it on before continuing the purchase.

Usually, when using a contactless Dankort, the user will need to place the card directly on the card terminal display. When using Dankort app, the user should also place their smartphone directly on the terminal, if the card terminal does not have a Bluetooth-box attached next to it. If it is a card terminal with a Bluetooth-box, the smartphone should be placed on the Bluetooth-box in order to make the connection between the card terminal and the smartphone.
If the card terminal does not have a Bluetooth-box attached or an already built-in Bluetooth chip, the user will need to scan a QR-code, which will be shown on the card terminals display, when the user has tapped on the menu bottom at the card terminal.

When the user has either placed their smartphone on the Bluetooth-box or scanned the QR-code, the app will now make the transaction connection and wait for the full amount to be transferred. Picture 6, shows how it looks like when the app is in a sort of 'waiting' position, for the amount to be shown (see picture 7).

This can, all depending on the signal take everywhere between 2 to 10 sec. Picture 8 shows the last action; the user needs to do in order for the transfer to be fulfilled. This can be done either by pushing on the 'godkend' tap or with fingerprint if the user's smartphone offers that service.



(Picture 6, 7 and 8: Showing the purchase stages (Screenshots from own app).

5.3.5 Features

Because Bluetooth allows a more extended connection range than NFC, the user can make use of what Nets calls check-in function, which more or less means that the user should only make the connection to the card terminal, and then he or she can remove the smartphone, and start packing his or his products. Then the service employee can finalise the transaction as usual, and the user will not need to go back to the card terminal.

Picture 9: Showing the receipt feature within Dankort app (Screenshot from own app).

From the front page, it is also possible for the user to view all the transactions done in the app. By tapping on the little white icon under the DK logo, the user will have access to all the receives, which we find to be a highly important feature, as Dankort app is the only payment app, where the service with a detailed receipt is provided.

6. Theoretical Approach

In order for us to obtain an understanding of how Danish consumers experiences and use Dankort app, we have utilized the approach of practice theory, primary because of the tools and insight into the users' practices. In this thesis, we intend to use the term practice as an action carried out by human beings in a particular situation: namely, the payment scenario carried out by the users of Dankort app, but also associated practices carried out by some of the actors who are involved in the payment scenario.

We are well aware of that the payment scenario is not necessarily the same for all consumers, as they can carry out a practise differently, mainly the practice of payment which has changed over the years, due to newer technological solutions.

> *"Technical change is often central to changing practices over time"* (Shove and Pantzar, 2007).

Given that Dankort app is still a relatively new form of payment solution, compared to the regular Dankort, which for many consumers are the preferred payment solution our focus is on payment scenarios with a smartphone and the relating users in that specific practice.

6.1 In the name of Practice Theory

The theory of practice takes its point of departure in studying and explaining everyday life where people are engaged in practices in doing, to mention a few: sleeping, cooking, eating, working, shopping (Røpke, 2009).
Asking people about their everyday life, they will most likely describe the practices they are engaged in, which makes these embedded practices meaningful to people, and, therefore, worth paying attention to.

Practice Theory has for decades been used and explained by diverse disciplines, and are, therefore, according to the social philosopher Theodor Schatzki defined not as a unified theory, but as a "body of highly diverse writings by thinkers who adopt a loosely defined 'practice approach" (Bräuchler and Postill, 2010 p. 4).

Besides, he argues that practice theory can be defined into four categories, namely philosophers, social theorists, cultural theorists and theorists of science and technology. Besides, Practise Theory is considered to be explained over two waves, where the first wave contains the original thinkers and philosophers of Practical Theory: to mention Bourdieu (1977), Foucault (1979), Giddens (1979/1984) and de Certeau (1984). We do not intend to dwell more on the first wave, as the perspectives from here, have led towards the second wave, where the newest generations of thinkers are considered to be. Those who attempt to build on the foundations of practice theory (Bräuchler and Postill, 2010 p. 4), and, moreover, presents the theoretical determination we wish to take on, in this thesis.

6.1.1. How do we utilize Practice Theory?

Among the newest thinkers is aforementioned Schatzki (1996) for whom the idea of a 'total field of practices' is fundamental, since actions and bodies are embodied in practices, so actions become entirely understandable within their practical context (Postill, 2010, p.7), Andreas Reckwitz (2002) who points out the importance of routines and emphasises that humans should not ignore the "crises of practice", as they can cause significant changes (Postill, 2010, p. 7), and finally Elizabeth Shove and Mika Pantzar which primarily focuses their work on "how practices emerge, evolve and disappear" (Shove et al., 2012, p.5, ch. 1).

The work of Shove and Pantzar is where we primary will take our point of departure, as they use the three main elements; skills, meaning and material to analyse practice. They argue, that for a practise even to exist and thereby be performed, the three elements and their interconnection needs to be present; to say - imaging a stool, where each of the three legs is one of the elements, and the seat the practice. Without one of the legs, the stool cannot stand and therefore not obtain its original purpose.

With inspiration from Andreas Reckwitz, Pantzar and Shove further builds on their theoretical assumption by adding that practices are social, and, therefore depends as well are based on both physical and mental elements - to mention; understandings, things and bodies.

Reckwitz defines a practice in the following quote:

> *"A practice is thus a routinised way in which bodies are moved, objects are handled, subjects are treated, things are described, and the world is understood"* (Halkier, 2008, p. 52).

Contextualised to our case, Dankort app, one could argue that to practice the payment scenario with Dankort app, it is not only about the app itself, but also the understanding of the whole payment scenario, the understanding of the technology within a smartphone e.g. Bluetooth and the card terminal, interplay with the service employee, and choice of payment.

Again, the interconnections between the elements are crucial for a practice to be exerted, and Reckwitz moreover adds on that they should include forms of 'bodily knowledge, forms of mental activities, 'things' and their use (Pantzar and Shove, 2010).

With inspiration from this perspective, Shove and Pantzar defines the three elements of practice in a way so that the elements in large covers many different sub-elements or themes.

6.1.2 Materials

The first element, the material is a prerequisite for a practice to be established, or as Shove et al., (2012) explains it: "Materials including things, technologies, concrete physical entities, and the stuff of some object are made" (Shove et al, 2012, p. 15, ch. 1).

Within practice theory, the body is also seen as materiality, and, the material element, therefore, also covers the body, since the individual is not the main focus. Material is not perceived as a personal ability or quality, but again to be understood as an element for a person to perform the practice. From the perspective of skateboarding, Shove writes this as an example:

> *"By implication, the significance, purpose and skill of skateboarding are not simply contained within the heads or bodies of skateboarders; rather these features constitute the practice of skateboarding, of which the rider is merely a carrier."* (Shove, Pantzar, & Watson, 2012, s. 9, cap. 1)

From our case perspective, is Dankort app obviously, an essential part of the practice, but it could not work without the presence of a smartphone, a body who can use the smartphone, the card terminal receiving mobile payment, Bluetooth connection on the smartphone, and final the Wi-Fi-signal which needs to be attached to the smartphone.

Besides, the materials not only need to be present. The design of the material also needs to be designed in a way, which supports and interacts with the skills and meaning element. This, therefore, make the elements interdependent. As Pantzar et al., (2010) puts it, one can merely not, though it may seem obvious, prioritise one item higher than others, as they are to be understood as a triangulation.

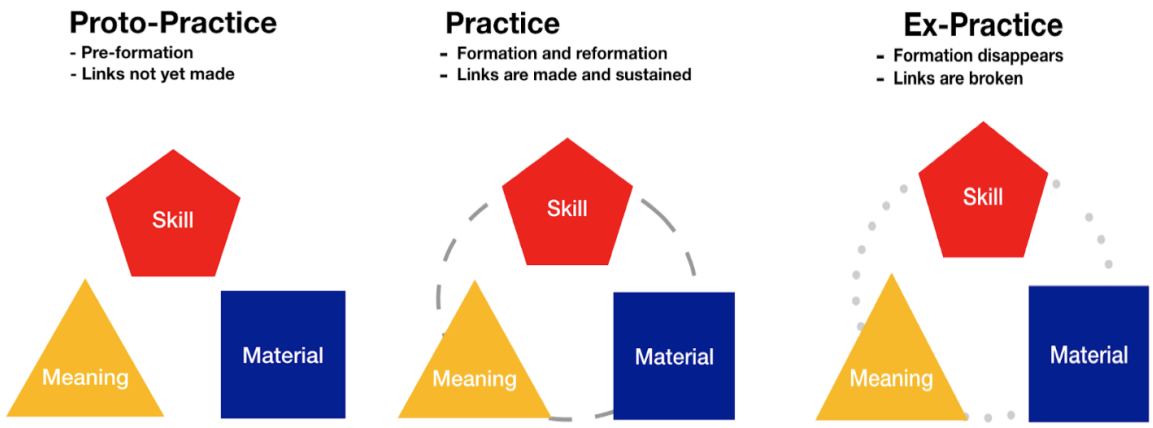


Figure 6: Shows the three elements, meaning, skills and material, in three possible formulations.

Looking at figure 6, one can identify three possible formulations. The first formulation Proto-practice shows that all three elements do already exist independently of each other, just waiting to be linked by the performance of the practice. The second formulation practice is when all the three elements are to be interconnected, and, therefore, becomes a Practice. The contactless credit card is an excellent example of an already established practice since the overall Danish population practises this practice.

The third and last formulation is to be known as Ex-practice and occurs when the interconnections between the elements are no longer existent. Again, an example from our case could be payment with checks or those mentioned above, since a tiny amount of the population practises this type of practice.

So, to say, practices are established, reproduced and broken, when the connections between the three elements are made, continued or vanishes.

6.1.3 Having the right Skills

The second element we will look deeper into skill. As mentioned earlier, the existence of practice requires that all three elements are present, and, moreover, are connected. Within the following statements, Shove, Pantzer and Watson (2012) thus describe it:

> "*The first is that social practices consist of elements that are integrated when practices are enacted. The second is that practices emerge, persist and disappear as links between their defining elements are made and broken."* (Shove et al., 2012, p. 3, ch. 2).

Having the right skills in order to exercise a given practice, can be challenging to determine, as a skill can be perceived individually, which makes the concept difficult to define. Practice Theory, however, simplifies the concept to cover the know-how, background and experience. "Competences - which encompasses skill, know-how and technique" (Shove et al., 2012, p. 15, ch. 1).

To contextualise, we use the same view of the competence or skills to analyse on the payment scenario with Dankort app: if the skills element is not present in the payment situation, the practice cannot exist. To say, the consumer, first of all, needs to know how to use a smartphone, secondly know how to purchase or pay for a product or service and thirdly, know how to access Dankort app, and make the purchase. Given that we also have another actor at play, namely the sales assistant or service employee, the skill element for him or her, would be that they know how to handle a payment scenario, which contains more than just registration of the goods, but also knowledge upon the cash register, card terminal, and finally knowledge upon different payment solutions. Skills should, therefore, be seen with the handling of all the materials which are present in a particular practice.

6.1.4 Seeing the Meaning

The third element: meaning, must be understood as mental activities, where the symbolic and social meaning or value comes to its rights. Shove et al. (2012) writes about meaning, saying that:

> "*The dynamic relationship between the status of participants and the meaning of the practices they carry is widely discussed (...) by participating in some practices but not other, individuals locate themselves within society and in so doing simultaneously reproduce specific schemes and structures of meaning and order*" (Shove et al, 2012, p. 13, ch. 3).

Meaning, therefore, covers the mental element of practice, such as meaningful incentive and understanding. Since a person's meaning or understanding of a specific practice can differ, the meaning element is not quite as concrete as skills and material. In our case, we do see a list of meanings, which could be added to Dankort app, to mention; the value in using Dankort app as a payment solution, receive the product, using a safe payment solution, making a quick and easy payment, no physical card needed, and features within Dankort app.

As this is our idea of meanings or values attached to the use of Dankort app, it is obviously with an open mind, that more meanings and values can be added to it. Shove et al, 2012 also points out, that since anyone practitioner has limited the first-hand experience of how others reproduce a practice, it is nearly always the case that elements of meaning are quite literally mediated (Shove et al, 2012, p. 15, ch. 3).

6.1.5 Carriers of Practice

Earlier, we briefly touch upon the term carrier. The term carrier is presented by Pantzar and Shove, which we would apply to this thesis. Carriers are used to explain; further, the three formulations explained in subchapter 6.1.1 where a carrier is to be understood as the sum of the three formulations proto-practice, practice and ex-practice.

For a practice to be established, a carrier is one who performs the practice, and, therefore helps to collect the interconnections between the elements presented in that specific practice.

By doing so, the interconnections in other practices perhaps break, and, thereby, drive them towards the deformation phase. The carriers, therefore, spread the practices by showing them to other potential practitioners (Shove and Pantzar, 2007).

Consumers who are already using Dankort app, are in our case to be seen as carriers, since they are carrying the practice of Dankort app, and through their expertise as super-user promotes this specific mobile payment solution. A super-user has in addition to a carrier, incorporated a specific practice into his or her everyday life, and more or less outsourced other practices in favour of the specific practice.

We will in our analysis part 8.2 elaborate more upon the carriers of Dankort app.

7. Methodology

In this section, we will present what methodological approaches and refinements we have chosen to use in the case concerning Dankort app. The methodological approaches we have chosen have helped to create empirical basis for the forthcoming analysis and discussion and thereby answer our main research question as well as the sub questions. In order to understand the dynamics of a field where both people and technology interact, influence and create a practice, is it necessary to take some predominantly choice of method to acquire empirical data.

As techno-anthropologists, we practice the qualitative data collection methods, which is also the case in this thesis. We began with making a brainstorm on all the actors we could come up with that had something to do with Dankort app and the payment practice.

We then wrote down all these actors, this method has helped open up our field and give us an overview of relevant actors, and at the same time, it was already in this process that we got the first considerations and wonders. This method has also helped us find relevant actors who might be interesting for us to interview or observe later on.

The following ethnographic methods are chosen based on their ability to open up and help understand the different perspectives and opinions that are about Dankort app and the changes which currently are taking place in the Danish payment market. They also provided us with an understanding of what elements excite in the payment practices that exists with payments solutions, as well as Dankort app.

7.1 Word clarification

Since we are investigating a relatively new innovation on the market, it is natural that many consumers do not yet know about Dankort app. Therefore, is there also many types of ‘users’, where we in order to avoid confusion upon the term user, will come up with a brief clarification.

Individuals we have spoken to through our informal interviews as well as observed at our field work will all be referred to as potential users as it was not always clear if the person had Dankort app or not. If we refer to a person, whom we know are using Dankort app, we will refer to this individual as a user.
Some of the consumers are also found to be either sales assistants if they are working in stores or service employees if they are working in supermarkets. These informants are also a relevant actor in this study, as these users contribute to a Dankort app practice.

7.2 Informants

As mentioned above have we found it interesting to talk and observe a lot of potential or already existing practitioners of Dankort app. We have, therefore, held four semi-structured interviews with four informants, where one is found to be a potential user of Dankort app, two already using Dankort app, and one previous user of Dankort app.

E.g. we spoke to the 28-year-old Tobias, who is working as a service employee at Kvickly in Sundby. He had much excellent knowledge upon payment solutions, both with contactless Dankort, but also Dankort app, as he from time to time, experiences some consumers using Dankort app. He, however, do not use Dankort, and will, therefore, be referred to as a potential user of Dankort app. Another informant was Camilla, age 25, who as Tobias is also familiar with Dankort app, as she is working as a sales assistant at a pharmacy, but opposite Tobias is using Dankort app daily. Camilla will be referred to as Dankort app user.
It has been rewarding for us, to get an insight into how Dankort app is to be perceived on the other side of the cash register, with a more in-depth understanding. Then the one received in the field.

One of our other informants, Kristian, age 25 is what we will refer to as Dankort app user, since he is using Dankort app daily, and was found to be highly technological updated. Also, a fourth informant Thomas, age 28, who are no longer using Dankort app, but instead have moved over to use Apple Pay, we also found interesting to speak to, as he indeed is to be found as a first mover within mobile payment solutions. Thomas will be referred to as former and potential Dankort app user. We will, through our analysis, use our informant's first names.

We also did a semi-structured interview with a valuable informant, and what we would refer to as an expert is Thomas J. Hansen, who is working as a Business Development Manager at Nets. Expert interviews have given us a unique insight into Dankort and Dankort app as a product. It was both incredibly rewarding in terms of understanding the technology itself but has also given us a sense of how 'team Dankort' has chosen to implement Dankort app. Although this thesis is particularly user-oriented, we wanted to use an expert angle that could address specific challenges that technology providers face when such a comprehensive technology is developed. Thomas will be referred to as, 'Thomas from Nets' since we also have another informant named Thomas.

Besides speaking to Thomas, our contact person at Nets, Julie have also been a vital informant to us, in terms of providing us with more practical knowledge upon Dankort app, and made the connection with Thomas. She will, however, not be mentioned in our analysis, as she was still new in the Dankort app team, and, therefore, saw Thomas as a necessary person for us to speak to.

Lastly, we should mention our attendance with Smart Payments, which is a department under Nets, where we had the pleasure of witnessing a UX design research about Dankort app. Here we became familiar with some of the findings. The smart payment team had done through their research, and how Nets are now working on changing the design of the app into a more user-friendly version.

Table 5: Listed informants, title or profession, and location where the interview took of.

Name	Title or Position	Interview Place
Tobias	Service employee in SuperBrugsen Sundby	Copenhagen University
Camilla	Sales assistant at a pharmacy and Dankort app user	Private location in Hillerød
Kristian	Dankort app user	Private location at Nørrebro

Thomas	Former user of Dankort app, now user of Apple Pay (Potential user)	Café in the center of Copenhagen
Thomas J. Hansen	Business Development Manager at Dankort	Nets Office in Ballerup
Julie Carlsen	Business Development Manager	Contact person
Smart Payments	UX design Team	Vibenshuset located a Østerbro

7.3 Data Collection Methods

In order to understand the dynamics that occur in a field where both consumers and technology interact, influence and create practices, it is necessary to make some well-considered method choices for empirical collection. As techno-anthropologists, we practice the qualitative data collection methods, which also applies to this study. When doing fieldwork, we have selected places where it was possible to see Dankort app in action, and where stores or supermarkets are receiving Dankort app. During meetings with Nets, we also asked what stores they see as their target group; a combination of these two elements has been the basis of our chosen places. These include takeaway places, high street shops, speciality shops, pharmacies and other grocery stores. It is, therefore taken into account that the store or supermarket mentioned can be considered to be part of Nets' target group.

7.3.1 Formal interviews

Empirical data collection has included qualitative interviews with both experts, users and potential users of Dankort app. As we will elaborate on further down, we found it incredibly challenging to observe the payment moment when an agreement upon observing users either paying with either Dankort app or other payment options was not made. We, therefore, chose early in the process to supplement our observations of the payment moment with more in-depth interviews.

These interviews have helped to construct the knowledge gained through conversations with various relevant actors and also contributed to opening up the field further (Kvale & Brinkmann, 2009). In this way, we have gained a deeper understanding of the user experience and the actual implementation of technology, as these have been discussed.

We have mainly used the semi-structured method to interview users and experts. The semi-structured interview guides were based on themes with headlines and pursuing questions. This method is particularly useful as there is room for follow-up questions, if of course also means that the interviewer does not necessarily have to follow the interview guide slavishly. When there is room for follow-up on the informants' answers, can there be made dialogue between the interviewer and the informant which lead to a more dynamic conversation. The semi-structured interview is thus neither "an open everyday conversation nor a closed questionnaire" (Kvale & Brinkmann, 2009, p. 45)

> "*A semi-structured life-world interview attempts to understand themes from the daily life world based on the interviewees' perspectives*" (Kvale & Brinkmann, 2009, p. 45).

This method gave perspectives on the issues we wanted to uncover, which we were not necessarily prepared for. We used the semi-structured method when interviewing experts and users of Dankort app. Semi-structured interviews gave us an in-depth understanding of both Nets and the user's experiences with Dankort app. Furthermore, this interview method helped to get the user to interpret their perspective on the technology development that the payment card has undergone and their experience there. All semi-structured interviews have been recorded and later transcribed.

7.3.2 Informal Interviews

In addition to semi-structured interviews with experts and users, a large part of our empirical data collection was done through informal interviews. We made plenty of informal interviews or conversations, both with sales assistants in stores and with users and potential users of Dankort app. In these informal conversations, we have neither received the informants' name or profession.

Quotations and observations from these informal conversations will be used to provide examples that take into account our pointers in the same manner, as the formal interviews.

These interviews were done in connection with our observations, where we informally asked users questions regarding payments. As mentioned earlier, users cover all users of a payment card, since we often didn't know what kind of payment they were using when starting a conversation with them. This covers both Dankort app user, those we call potential Dankort app users, sales assistants and service employees as we perceive these as being equally essential users of Dankort and thereby Dankort app. However, there will be times in our case where we need to split up the user concept. In those cases will we make it clear which user we refer to.

These informal interviews allowed us to ask for the users' preferred means of payment, as well as their experiences with or without Dankort app. There were often short interviews, consisting only of a few questions, which nevertheless gave good insight, as these often took place immediately after payment.

7.3.3 Observation

In addition to the challenges of implementing new technology, it is the users' practices in the same connection that we are concerned with exploring. With observations as a method for collecting data, we have gained insight into everyday practice that can be difficult to articulate. A practice that is often performed, which is the case with the payment practice, can be characterised by routines and tacit knowledge. In the book 'The Tacit Dimension' Polanyi (1966) writes:" I shall reconsider human knowledge by starting from the fact that we can know more than we can tell." (Polanyi, 1966, p. 4) Moreover, emphasised a point we have been working on in this thesis. The tacit knowledge is the knowledge we have, but we cannot explain why we have. This is exemplified by man's ability to remember a face between millions of faces, as well as our inability to explain why.
"We know a person's face, and recognise it among a thousand, indeed among a million. Usually cannot tell how we recognise a face we know. So most of this knowledge cannot be put into words." (Polanyi, 1966, p. 5)

That means, based on Polanyi's belief, that the payment practice is also characterised by the tacit knowledge, just as all our other actions do. Field observations where the practice takes place have therefore given us an insight into the user's behaviour during the payment moment and the tacit knowledge that is simultaneously involved.
Our interest was both understanding of payments made with Dankort app, but also payments with the Dankort, in general, cash or other payment cards. This is to watch the user's different ways of making a payment to get a feel for Dankort app's spread.

Observations as a method, we have used in various shops in different places in Frederiksberg and Copenhagen. This is to get a picture of how the payment practice takes place 'out there'. Before the fieldwork began, we expected field observations to become our primary source of empire collection. But we met some challenges, as the moment of payment constitutes a very personal and private moment. In many situations, it has been challenging to get close to the consumer during the payment. We tried to become part of the field and act like other consumers, yet we sensed that some felt our presence inappropriate. Potentially, this could create an atmosphere that made us uncertain, and we felt how fieldwork could also be cross-border and challenging.

As we have wanted to study the payment practice, we have found it extremely necessary to get an understanding of how Dankort app users pay with Dankort app in practice, and how potential users pay with other payment options. Early in the process, we made significant considerations about what kind of observation we wanted and which we thought would work best in this study.
We had a notion that the closer we got to the payment practice, the easier it was for us to understand it. We, therefore, chose to make participant observation. Participatory observation is an essential method in ethnography and anthropology. It is a method used to study and understand people in social contexts. When making a participatory observation, you use yourself and your body as a form of instrument to study the culture you want to investigate. By using one's own body and participating in other people's practices, you also capture part of their everyday life and understanding by feeling it on their own body.

Some requirements must be fulfilled when participating observation is made. It requires that you participate in a social situation and that you also observe activities, people, physical conditions and other actors. Participants' observation also requires understanding and adaptation to see and understand the world with other eyes. In order to document and validate interesting observations and reflections during the fieldwork, it is necessary to write both observations and reflections into a field diary either during or after the field work.

During our fieldwork in, for example, the Frederiksberg Centret, it was a bit difficult to get notes during the actual observations as well as during informal interviews, since the exact moment of observation was quickly over and therefore it required that we were both concentrated at the moment. After each observation / informal interview, however, we took us time to sit down, and we wrote the observation and reflexes down. One of the reasons why it is so important to write everything down during or after an observation is that it is difficult to see what is vital in the situation. You can, therefore, risk forgetting or taking data for granted, data which is subsequently crucial for further understanding and analysis.

During our observations, informal interviews and especially auto-ethnography, it has not always made sense for us to document everything immediately. Although James Spradley, under the chapter Doing Participant Observation, describes that it is essential for him to document everything, we have not always had the opportunity. It is not all situations where it has made sense. Mainly when we have made unplanned observations in our private daily life or when we have done auto-ethnography, as these sometimes occur spontaneously. According to Spradley, under the chapter Doing Participant Observation, there are different types of participatory observation studies where the degree of direct involvement in the field varies (Spradley 1980 pp. 53-62). Both concerning people in the studied field, but also about the activities they perform.

However, it has varied a lot how much and whether we have been able to participate ourselves in the observation. Particularly at the payment moment, as we have previously described, we have found an incredibly private moment. Available when we have made auto-ethnography we have made full participation observation. We have therefore changed a lot between studying the field as insiders and outsiders.

At the beginning of our fieldwork, we had a desire to make a great form of participation as possible, but we quickly realised that it was not quite as easy to do in practice, partly because, as mentioned earlier, could not be 100% — part of other users' payment moment. When we tried to observe other users' payments, we were made aware that they felt the situation uncomfortable, and therefore, we were never seen as an insider. We were, therefore forced to scour our expectations to be a big part of the observation, and we decided to supplement our observations with other qualitative ethnographic data collection methods.

In connection with most of our observations, we have made use of thick descriptions (Geertz, 1973), which is about making a detailed description of an event. The thick descriptions are made to gain a deeper understanding of behaviour, as well as the context in which the behaviour takes place.
Since we started this study, we have been on many field visits, from which all details as described just before can be challenging to remember. Especially practices we are concerned about, and as previously described, there are several elements in play when a practice takes place. The context in which the practice exists is, therefore, for us, crucial before we gain an understanding of it. The close descriptions have served as our tool to minimise the possibility of overlooked actions, feelings etc. in the field.

7.3.4 Auto-ethnography

In addition to the previously described observations we have made in the field, we have also used auto-ethnography. Early in the process, we quickly got caught by interest and curiosity about Dankort app. We both see ourselves as reasonable technological updated persons, but we were not yet users of Dankort app. We, therefore, download Dankort app, then it became natural to see ourselves as part of our field and examine our payment practice. Particularly past Dankort app is not yet a very comprehensive technology, and we did not know much about the app and its functions, our work with auto-ethnography has been a new size in this study - which at the same time opened up some internal discussions between us in the group.

> "*Auto-ethnography is a qualitative research strategy. The researcher starts from his personal life by paying attention to his physical reactions, thoughts and feelings*" (Baarts, 2010, p. 154). 12 June 17.00

The concept, auto-ethnography, was introduced in the 1980s and thus meant that the researcher must include his own experiences and sensory impressions for the science, in order to gain a more in-depth insight into the given field. Thus, the researcher is made into the subject matter for both observation, reflection and study (Baarts, 2010).

As previously mentioned, have we acquired Dankort app ourselves, and since we are part of Nets target group, has it made good sense for us to investigate ourselves as users of Dankort app. We have used our own experience to understand how widespread the technology is and how well it works in practice. In this way, have we found out what we see as the advantages and disadvantages of the technology, we have been able to use these understandings in our further research, and finally it has given us an essential technology understanding.

Auto-ethnography, like all other scientific work, is the subject of criticism. This criticism is directed both at the perception that the formation of knowledge, based on own experiences, does not interest others, but also forms a question of validity. By positioning itself so that research is also formed from one's feelings, experiences and thoughts, the auto-ethnographic text can obscure the relationship between one's own constructed accounts and those collected through other ethnographic methods (Baarts, 2010). We have therefore been particularly reflective and aware of this problem during fieldwork. So, to prevent some misunderstandings, we will be evident in our referrals when we use our own experiences versus observations or interviews of informants. This method has given us an even more in-depth understanding of the practice of Dankort's app. The advantages and disadvantages we have become aware of through our auto-ethnography have made it easier for us to understand our informants. We, therefore, believe that our choice of this method has been entirely inevitable and has been very generous for this study.

7.3.5 Netnography

The physical ethnographic method that observes either own or others' practices during fieldwork is not the only one we have used.
Early in the process, we became aware of the fact that the Internet is primarily used to discuss topics and express opinions. It also applies to social media when it comes to Dankort and Dankort app. Nets have their Facebook page called Dankort. The Facebook page has a lot of activity with the content of this particular character.

> *"Netnography," or ethnography on the Internet, is a new qualitative research methodology that adapts ethnographic research techniques to the study of cultures and communities emerging through computer-mediated communications. ... "netnography" uses the information publicly available in online forums to identify and understand the needs and decision influences of relevant online consumer groups*" (Kozinets, 2010, p. 2)

The empirical data we have collected on the Facebook page consists of one-to-one copies from the virtual field. Which means that we have copied selected comments selected, translated them from Danish into English, and copied them into our case.

The method is used to research and study online communities, cultures, forums, communication, interests and more among the actors involved. Our netnography work has only involved the communication and the attitudes that are written in the public space on Dankort's Facebook page. This means that we have not complied with the ethical research procedure, which, according to Robert V. Kozinets (2010), characterises proper online observation research (Kozinets, 2010). Since we have just dealt with a public media where personal issues are not affected, we did not find this approach relevant. However, we have ensured that our online informants are anonymous, so both images and names are obscured. Our role as online observers has been passive, as we have not been involved in any discussions or have had direct communication with the actors on the Facebook page.

The method has made us aware early on in the process of which elements mainly focused on Dankort app users. It is, among other things, via our netnography that we became aware that many users experienced that the technology did not work, especially the Bluetooth signal was discussed a lot, all this will be presented much more detail in the analysis.

7.4 Methodical reflections

We have now presented the qualitative ethnographic methods we have chosen to use in this thesis. The chosen methods have been chosen based on their ability to give us, as researchers, a more in-depth understanding of our field and technology. We have gained a broad understanding of the problematic issues that flow out among the Danish Dankort app users and have thus been able to angle our research question in such a way that we can fill out the knowledge gap we argue for there is, precisely about the payment practice with Dankort app. Later in the process, we have become aware that many of our informants are what we want to call 'super users'. All the informants we have interviewed know, and are either or have been users of Dankort app. Had we been able to rewind the time, we had chosen to interview some more technology scared, in order to get a more nuanced picture of the potential users. Although we have not done in-depth interviews with this user group, we however still have data on these. Data from our netnography and informal interviews during our observations have given us an idea of what problems and thoughts some of these potential users have.

As previously described, where we faced with some challenges when we started our fieldwork early in the process. Since it was the payment practice we wanted to investigate, it was very natural that observation was one of our most significant forms of data collection methods. We wanted to observe the actual payment moment and had also prepared to stand out in a supermarket and observe the customers' payment at the checkout. As mentioned earlier, we quickly became aware that the payment moment was an incredibly private moment, and therefore, we did not get it out from the observations that we had first wanted. Later we made a significant number of discussing what we could have done differently to obtain the knowledge about the actual moment of payment that we wanted. We were considering making an in-depth, more extended observation of a user paying with Dankort app.

In this connection, we discussed whether we should be inspired by George Marcus' thoughts on Multi-sited ethnography.
Multi-sited ethnography is a data collection technique that allows you to follow an object through different fields. More specifically, we considered following the object, where you follow the same actor through several different networks. In our case, we could potentially have followed Dankort app around different locations to observe and describe how each player used the card. With this method, we could explain whether Dankort app would make sense in the observed networks.

Based on the previous studies we have touched upon in our literature review, we can see that the vast majority of other researchers have used the TAM theory, which builds on quantitative studies, such as significant surveys or questionnaires.
These studies benefit from their massive data collection, and, therefore, gives a more general picture of how consumers are adopting mobile payment. It is, however, also criticised by, e.g. Dahlberg et, al (2008, 2015). That these forms of data collections do not provide any in-depth insight upon mobile payment such as perceived ease of use, as there stills seem to be a knowledge-gap in regards to actual real-world scenarios. The one study by Mallat 2007, using focus-group interviews, also points towards the lack of situational factors, and newer research, therefore, would benefit from using a multi-method approach, where rich descriptions and new insights are first gathered with qualitative methods, then a new theoretical approach, in our case practice theory, and then tested with additional methods (Mallat, 2007).

We have several times considered whether we should also design a questionnaire to get a broad understanding of our users and potential users, but have continued to return to the more qualitative research methods, as they can more precisely give us the desired knowledge about users' payment practices. We do, however, by using different types of empirical work, believe that our research still can contribute to the mobile payment knowledge, especially here in Denmark, where more or less nothing has been investigated in terms of user adoption and experiences with mobile proximity payment, thereby Dankort app.

7.5 Cooperation with Nets

Early in this thesis work, we created a valuable contact with two contact persons in the company, Julie and Thomas. It is through this collaboration that we have had the opportunity to include perspectives from Nets in this thesis. We wanted to develop an understanding of the field and the payment practice with a particular focus on Dankort app, but also for Nets, as they as developers and experts have some unique visions for the technology. After an introductory meeting in Nets, it was clear that this collaboration did not only arise for our sake but that our contacts, also had an agenda. Their vision is to get Dankort app integrated into the user's payment practices, but also to get to know the user better so that they gain insight into how future payment solutions can be implemented in user-friendly manners.

One of our challenges in connection with this collaboration, therefore, consisted of creating a shared understanding platform for the finished product. We have, therefore tried to produce a product that could reconcile their wishes with our thoughts on the study. Besides our informants in Nets, Nets has also been helpful in other ways. We were allowed to attend a meeting with Smart Payment, which is a separate business unit under Nets. Smart payment had been out in the field and got some qualitative studies on the use of Dankort app. This meeting was incredibly educational, and the findings they presented were very similar to ours.

With this collaboration, we have been able to act as a kind of link between the user and the experts, including Nets. We wanted to give Nets a better understanding of consumers, and especially their users, as we believe this could provide the potential for future work to be optimised.

As a large international company with a broad product and customer range, Nets has specially cultivated quantitative studies. We believe that this thesis can help and provide Nets with qualitative insight into everyday life with their product.

We have now presented the qualitative ethnographic methods we have chosen to use in our case. The chosen methods have been chosen based on their ability to give us, as researchers, a more in-depth understanding of our field and technology.

We have gained a broad understanding of the problematic issues that flow out among the Dankort app users and have thus been able to angle our research question in such a way that we can fill out the knowledge gap we argue for there is, precisely upon the payment practice with Dankort app. Later in the process, we have become aware that many of our informants are what we want to call carriers. All the informants we have interviewed know, and are either or have been users of Dankort app. Had we been able to rewind the time, we had chosen to interview individuals, who consider themselves as technology sceptical, in order to get a more nuanced picture of the potential users. Although we have not done in-depth interviews with this user group, we however still have data on these. Data from our netnography and informal interviews during our observations have given us an idea of what problems and thoughts some of these potential users have.

As previously described, where we faced with some challenges when we started our fieldwork early in the process. Since it was the payment practice we wanted to investigate, it was very natural that observation was one of our most prominent forms of data collection methods. We wanted to observe the actual payment moment and had also prepared to be present in a supermarket and observe the customers' payment at the checkout. As mentioned earlier, we quickly became aware that the payment moment was an incredibly private moment, and therefore, we did not obtain what we initially wanted from the observation. Later we made a significant number of discussing what we could have done differently to obtain the knowledge about the actual moment of payment that we wanted.

We were considering making an in-depth, more extended observation of a user paying with Dankort app. In this connection, we discussed whether we should be inspired by George Marcus' thoughts on Multi-sited ethnography. Multi-sited ethnography is a data collection technique that allows you to follow an object through different fields. More specifically, we considered following the object, where you follow the same actor through several different networks. In our case, we could potentially have followed Dankort app around different locations to observe and describe how each actor used the app. With this method, we could explain whether Dankort app would make sense in the observed networks.

8. Analysis

In particular, our interest has been to investigate how the payment practice changes when the technology in the payment card is developed. For this purpose, as described in chapter 6 we have obtained inspiration from the practical triangulation (Shove, Pantzar, & Watson, 2012). Moreover, as shown in chapter 3, have our literature review brought us, great knowledge upon previous mobile payment studies, and inspired us further to investigate in experimental manners, what the used adoption theories primary DOI and TAM, potentially could contribute with to our research.

In the first section, we will, therefore, primarily analyse our empirical data with inspiration from the practical triangulation, material, skills and meanings and analyse where they are found in the payment practice with Dankort app.

In the second part, we will, inspired by practice theory, look into what carriers mean to the establishment of Dankort app practice, and, moreover, analyse upon where the app at the given moment is to be found in terms of proto-practice, practice or ex-practice. Here, also with inspiration from previous mobile payment research present some of the adoption categories, we have found valuable to our paper.

The last and third part will primarily focus on, wherein our empirical work, we have found the two adoption theories DOI and TAM, together with their adoption constructs, to have a significant meaning to our practical findings. The interplay between the three theories will further be discussed in subchapter 8.3.

8.1 Where does the practical triangulation; material, skills and meanings occur when the payment practice changes from payment with card to payment with Dankort app?

As touch upon, we have examined the practice with Dankort app. In addition, since in particular the contactless Dankort, as mentioned in subchapter 5.1 is used by the vast majority of Danish consumers, it has also been interesting for us to get a glimpse of other already existing payment practices, and what is needed before a new payment innovation as Dankort app can be fully adopted by the Danish consumers as well as the supermarkets and stores.

"What is it?" or "It doesn't work," are perhaps the phrases we've encountered most often in this thesis. Based on the knowledge we have gained through our fieldwork around stores and supermarkets, we have found that there is confusion about what Dankort app is and how it works. Also, many of the people we spoke to, and from what we observed as well as encountered through our netnography, is that people know about mobile payment solutions, but often tends to refer to MobilePay or bank wallets, and not Dankort app.

In this chapter, we will, therefore, focus on practices with Dankort app, where the early stage of Dankort app implementation process, have made it more or less inevitably to also investigate the payment practice with the contactless Dankort since it as mentioned is the Danish consumers preferred payment method. The challenges do not stop until the technology is established and part of the Danish consumers' payment practice. As previously explained, the entire user experience of payments with Dankort app is changed and users must, therefore, change their payment habits.

We have here illustrated, which factors we perceive as being necessary for a still-developing Dankort app practice to exist, within the practical triangulation. The following section will explain them further.

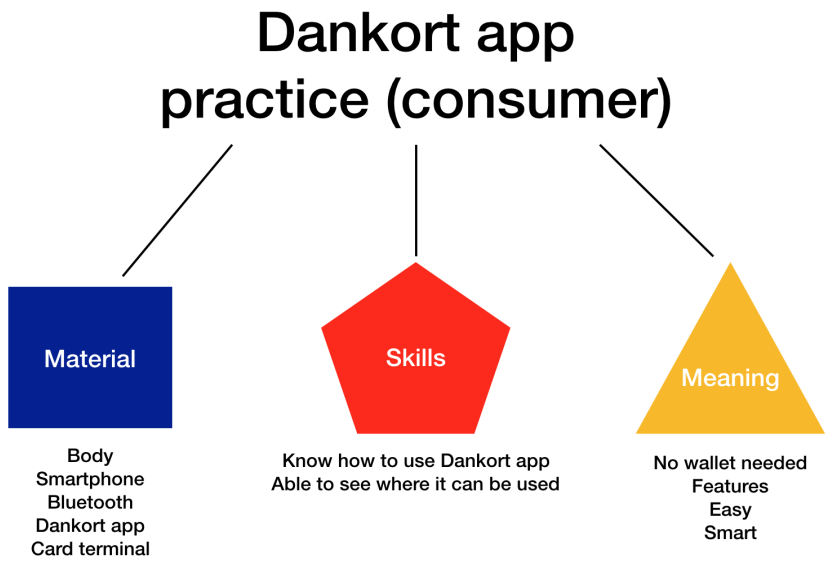


Figure 7: Practical elements found through empirical data, and needed for a Dankort app to be practised.

8.1.1 What Materials do you need?

The materiality element in our case is central to the fact that a Dankort app payment practice cannot be established unless the consumers decide to download the app. Therefore, is the app in itself of course of great importance, especially as mentioned earlier, where Nets are not the ones to decide, if the consumer should download the app or not, where Danish consumers in regards to the contactless Dankort, were more or less forced to start using it, or at least know about it, since all issued cards now has the NFC technology installed.

Based on observations we obtained through our auto-ethnographic and netnography, it was our general impression that one of the biggest material challenges, is that not many consumers have downloaded Dankort app, and despite its introduction in 2017, still seems to be quite unknown to most Danish consumers. Due to confidentiality from Nets, it has not been possible for us to get an accurate number on, how many people who have downloaded the app. But from what we found on App store, and Play store, the number indicates that the app has been downloaded over 100.000 times, which compared to e.g. MobilePay with over 4.000.000 downloads, does not seems to be much (MobilePay.dk, 2019).
However, it is worth taking into account, that many potential users can have downloaded the app, without actually using it.

In addition, consumers who already know about the app, have criticised Dankort app for its technical composition with the use of Bluetooth, instead of the NFC technology found in the contactless Dankort, and other mobile payment solutions.
This issue was in particular highlighted on Dankort own Facebook page, where two Facebook users write: "The two times I wanted to use the app, it went down with an error every time I keep it to the reader? (Dankort Facebook page, 2018)

> "*Hi Dankort. I just want to inform you why Dankort will never become a standard mobile payment method. The problem is that you do not use NFC. So, the stores must have a special Bluetooth box/card reader to receive Dankort app. So, you must still have your card with you*" (Dankort Facebook page, 2018)

When we spoke to Nets upon Dankort app's technical composition, Thomas replied that Bluetooth in general works the exact same way, as the NFC technology in the contactless Dankort.
The only difference is that the card terminals needs to be updated with either a Bluetooth chip inside the card terminal or attached next to it. Nowadays, all smartphones have Bluetooth installed from the manufactures side, so this materiality is provided to the users, already when they are in possession of a smartphone.

During this thesis, we ourselves have paid or tried to pay with Dankort app several times. But, on several occasions, we experienced that the card terminals did not accept payments with Dankort app.
It is, of course, a necessity that both supermarkets and stores accept Dankort app on their card terminals before the user can pay with Dankort app. However, we often experienced that the service employees and sales assistants in the supermarkets or stores were not aware of whether their card terminals accepted payment with Dankort app. This is seen here, for example: "I ask the sales assistant if it is possible to pay with Dankort app, which she is not sure of and must consult with a colleague standing behind her" (Observation, Matas, 2019).

This example was far from the only place where the sales assistant had doubts about whether the card terminal accepted Dankort app or not. The problem in terms of the Bluetooth materiality is therefore found to be within the card terminals provided by the stores and supermarkets, and not something the users can help themselves with.

One last materiality we need to mention is the body. The body is also seen as a material in practice theory, as it is not the individual, which is the main focus, but instead, the individual is treated as a carrier of the practice, as we will touch upon later. Therefore, is the body also of great importance in order for a practice to be established. In our case, we highlight the body, as the body is necessary in order for an individual to use a smartphone, and hereby, Dankort app. We will bring in, the body material in the next section.

Through our empirical work, we had an agenda, where we intended to use the app, every time there was an opportunity. But we imagine that the same is not the case if a user is denied several times to use Dankort app in various stores. This can lead to the use of a more well-known and already practised payment solutions.
The infrastructure, in this case, is therefore crucial. If the card terminal, and Bluetooth technology within the smartphone, who acts as a necessary material in correlation to the card terminal, does not support a practice, there is no practice, as this provides the basis for the practice to arise.
Our informant, Thomas from Nets, explained that in Nets, they hoped and believed that the potential users would take Dankort app practice further, once tested one site successfully. But according to practice theory, there is no practice until the materiality element is present.

8.1.2 Having the right Skills

We have described how the practical triangulation is structured in chapter 6, and it is therefore clear that the skills element constitutes one of these three parts. In order to integrate Dankort app into one's existing practice, an extension of the elements therein is required. In this section, we will look more closely into how the skills element plays a crucial role in ensuring that a Dankort app practice can be established.

Since the contactless payment card was implemented in 2015, the users have already changed their payment practices from having to deposit the card into the card terminal to place the card on or next to the terminal, which is the same skill the user must have to pay with Dankort app.
The skill element in this practice means that the individual and the potential carrier of the practice knows how Dankort app is manoeuvred. This applies both to the user and to a service employers who are both considered as potential carriers of Dankort app's practice if they own Dankort app.
For the user, this means that the individual knows, how a smartphone works, knows how Dankort app works, how to download the app, and finally be able to see when one can pay with Dankort app. It is here, where we, in particular, refers back to the body material, as the eyes within the body, becomes a necessary body part in order for the user to recognise where the app can be used.

Also, we obtained that the service employee must know how the store's card terminal must be managed when a consumer wishes to use Dankort app in a payment situation.

Because we live in the time we do, were many are quite technologically updated and most people have a smartphone, one should think that the skill element is not the most challenging element.
Nevertheless, we received a perception of both field observations, interviews and auto-ethnography that there were some challenges when using Dankort app.

We quickly became aware that it was not about having the skills to download the app, how to purchase a product with it, or how to use the app. It was surprisingly mostly about the user not having the skills to see if the terminals accepted Dankort app or not.
As we know, more than 25.000 supermarkets in Denmark are accepting payment with Dankort app (subchapter 5.3.2). Despite that most supermarkets accept Dankort app, our informants do, however, not find it visible, to know whether or not stores accept Dankort app. As Kristian says: “It is not very often that the stores provide, or accepts it. It is more visible with the regular credit card, and they do not promote Dankort app at all (Kristian, Dankort app user, 2019).

From our own observations, we also found it hard to know where the app could be used. In some stores and supermarkets, it was first visible to see, when standing in front of the card terminal, where it on the display would say ‘pay with your mobile’, and then show the original Dankort logo (see picture 3 in subchapter 5.3.3).
In addition, we also saw that service employees indeed have the skills to manoeuvre the cash register in order for a user to pay with Dankort app, but, however, often do not have knowledge about how Dankort app works in a payment situation, and therefore do not have the necessary skills to help the user if problems occur.
As we have been in many stores and supermarket, and talking to the sales assistant and service employees, we were early aware on that there was a challenge in not telling or training the employees about the technology on how it worked. We, therefore, asked Thomas from Nets about, who has the responsibility in learning the sales assistant and service employees in how to use Dankort app, to which he replied:

> "*It is a mix! The merchants have primarily used our 'how to use' videos, and communicated through their magazines to their employees (...) what we did, was that when we visited the merchants, we told them that now there is this solution, and we also brought a lot of materials to the employees*" (Thomas, Nets, 2019).

Thomas further points to the problem that approximately 80% of the ones they taught about the app when they launched Dankort app, is no longer working these places, and often the new employees do not take the time to learn about it. He does, however, still believes that it is Nets responsibility to make sure that the supermarkets know about the app (Thomas, Nets, 2019).

This proves that it is difficult to train service employees on how Dankort app technology works, since the employees do not work the same places for very long periods, and moreover, do not have any interest in learning and thereby acquire skills upon the app.

Through our fieldwork, however, we have seen an advantage in the service employee himself being a user of Dankort app and thereby has an understanding of how the app works. We talked to our informant, Camilla, who is both a user of Dankort app and a sales assistant at a pharmacy where payment can be made with Dankort app. She told us that it was easy enough to pay with Dankort app if the terminal was Bluetooth updated and ready for payment, but for example, if the card terminal was asking for a QR code, it could be a little challenging: " (...) if it has requested for a QR code. Then one could easily be standing there, and think, "I don't know why it does that" (Camilla, Dankort app user).

Here it testifies to a situation where the user and service employee is challenged if the card terminal requests a QR code, and problems can arise since the user's experience deviations from their well-known practice.

Through our findings, we, therefore, argue, that many Danish consumers already own the necessary skills to use Dankort app, as the first of all know how to use a contactless Dankort, from where it is the same tapping motion, the user needs to know. Also, they already know how to use a smartphone, and by that knows how to operate apps.

However, if the consumers do not have the skills to see or recognized when he or she can use Dankort app, or if the card terminal asks for or only accepts payment with QR code, problems can arise since the user's experience deviations from their well-known practice. Like all other implementation processes, there is a transition from something old to something new. It is very natural that people should learn to use new technology.

In terms of the sales assistant and service employees having the right skills, he or she do not need any extension of the skill element in terms of the cash register, as a payment with contactless Dankort or Dankort app, is the same.
He or she does, however, need to acquire skills in terms of learning about a new payment solution, and Dankort apps technical composition.
From which we believe perhaps can be hard to accomplish, as long as Dankort app is still unknown to many Danish consumers, and, more importantly, if either Nets, supermarkets or stores pays any attention to train the employee in Dankort app.

8.1.3 Can you see the meaning?

The meaning element is also playing a crucial role in practice. Contrary to the skill element and presentation of the change when it goes from card payment to payment with an app, the meaning element seems is to be more crucial to maintaining and disseminating the practice. From what we obtained through our empirical work, the meaning element of Dankort app practice had shared opinions among current and potential users of the app: "I always have the phone on me, so I don't need to have my purse with me at all" (Informant, Frederiksberg Centret). Many of our informants have come up with the example that Dankort on the smartphone is smart because they don't need to have their wallet or purse with them.

The vast majority of people in Denmark do not leave home without their mobile. With time, the mobile has become a fixture when you leave home, the society speaks a lot about the Danish people becoming mobile-dependent, depending on everything we can do with our mobile, ranging from a constant updating of social media, updates from news media and a constant need for to be in contact with other people.

Over time the mobile has developed into a smartphone which can do much more than just to make calls and write text messages but has become a digital platform where we can gather, many of our day-to-day things. As one informant said: "It's not like the time when you had 100 cards in your purse, now most of the cards are on the mobile" (Informant, Frederiksberg Centret). And, therefore, it is only natural that Nets also provides a mobile payment solution.

As we have mentioned earlier, there is, of course, a transitional period in which Danish consumers must have time to change their payment habits and payment practices. We have found several examples that this is also the case in practice.

"I thought I could use it anywhere like my contactless Dankort, but then I tried several times I couldn't use it, it was put away." (Informant, Frederiksberg Centret). Here, an informant tells that he had actually acquired Dankort app and had seen meaning in using it, but because there are still many stores that do not yet accept Dankort app, a problem arises for the user. During our fieldwork, it has been clear that there has been confusion around where and how users can pay with Dankort app. The overriding quote discloses the problem that arises when one of the three elements is missing and in this case, the user loses the desire to keep trying and therefore stops seeing the meaning in paying with Dankort app.

As we have previously presented in subchapter 5.3.5, there are primary two features in Dankort app. Features that we believed could benefit the users and potential users meaning upon using Dankort app. Features such as saved receipts and check-in function seem incredibly rewarding to us and it was, therefore, a surprise that we did not encounter several positive observations where the user makes use of or even tells about these features.
At the start of this thesis, as we said, we did not have the great technical knowledge about Dankort app, we, therefore, did not know about the features that existed in the app. When we were planning our interviews, and making interview guides, we decided to ask our informants about these features, where surprisingly, none of them knew about them and therefore did not used them.

During the interview with Thomas, we asked if he could see meaning in these features and whether they could make him use Dankort app more in his daily life. To mention, he answered:

> *“For example, now I live with two friends, and we do share some common things, and we use ‘we share’. And before that, we took a picture of the receipt also make the picture and the amount up, where here one could just take a screenshot and lying up*" (Thomas, former Dankort app user).

Thomas has roommates, just like many other young people. And like many other situations, he needs to save the receipt and here he sees a meaning that he does not need to get a receipt in paper form when he shops and at the same time remember to save it until he needs it.
Thomas also said, "I also like that you could get the receipts on the mobile, that's one thing I miss now with Apple Pay" (ibid.). This quote again shows that a feature such as saved receipts may create meaning using Dankort app, and in this example, maybe even more meaningful to the competitors Apple Pay and Google Pay.

However, as we observed in the field, the feature with a saved receipt, kind of loses its functionality with incomes to details upon which products has been purchased, as we recognised that it is only in stores who have an agreement with an app called Storebox owned by Nets, where the receipt can show these details. This means, that the user will only get a detailed receipt, when the purchase is done in stores owned by Salling Group A/S, such as Føtex and Netto. If the store does not have an agreement with Storebox, it is only possible to show the total amount of the purchase, and the idea with a detailed receipt, therefore, seems to be lost. So where we started out with the idea, that this feature indeed was something that Dankort app could offer the users, we now doubt if a feature really can turn the potential user's attention towards using Dankort app.

As we have also highlighted earlier, Dankort app is not the only payment app on the market, which can make it difficult for Dankort app to really break through. However, we have seen that the Danish consumers have a special relationship with the national Dankort and therefore maybe will choose it over foreign competitors.
In addition to the saved receipts, there are also other features that our informants find useful, such as the already mentioned 'check-in' function, here highlighted by Tobias:

> "*There is such a smart method where one can actually connect his phone to the terminal and just as fast as that, it just needs to be within 2 cm, also you can go down and pack its stuff. you also do not actually have to pay, because when it is already connected, the service employee enters the amount also goes through automatically, that is really smart*" (Tobias, Service employee, 2019).

Every time a user or a potential user sees meaning in using Dankort app, rather than other payment options, it strengthens Nets goal, namely that Dankort app will become a well-known and well-liked practice for the Danish consumers.
As touch upon earlier, we did however not encounter other informants who knew about this feature, and we could, therefore, argue, that Nets have not been clear enough upon this specific feature, which potentially could make the meaning element stronger.

From our own observations, we several times tried to do the check-in, which technically did not give us any problems, but, however, made us feel a bit uncomfortable, as we observed more individuals, and in particular the service employee behind the desk, to be speculative upon if we intended to steal, since the purchase was not finished, before we started to pack our things.
We believe, that because this way of purchasing a product is still an unknown practice to most consumers, that could be the reason why some would be questioning this action. In the future, where payments with a smartphone become more regular and more familiar to consumers, probably no one would find this type of action equals intentions of stealing.

As we have previously presented in subchapter 7.3.4, we have found it interesting to study how users and potential users express their opinion on Dankort Facebook page.
We've seen examples of Facebook users who cannot see a point in changing their already existing payment practices. If an already established payment practices, whether it is a contactless card or cash, are working correctly, hence there are some users there are not able to understand why it needs to be changed.

Figure 7: Unestablished practical triangulation, where grey zones appears between the elements.

Also, the meaning element, which must also be present before the practice can arise, is to be found, but as both current and potential users have not yet found the symbolic, social meaning or value with Dankort app, the practice is still not to be found as established.

We will, therefore, with the inspiration from previous literature upon mobile payment research look into if added constructs from two adoption theories DOI and TAM, on an experimental level, can help us to clarify, what these 'grey zones' consist of, and if so, how they are influencing the user's perception on Dankort app.
This will be analysed in subchapter 8.3 after we have explained where carriers are to be found in a Dankort app practice, and what they entail in order for a Dankort app practice to be established.

8.2 How do carriers of Dankort app lead the way in the implementation process of Dankort app?

We will in this analysis part analyse upon how Dankort app practice moves from being a proto-practice, into an established practice since we are interested in investigating what it takes for an innovation such as Dankort app, to be accepted by the Danish consumers.

We presented in subchapter 6.1.1 the practice-theoretical term carrier, from whom we see as an essential contributor to the establishment of Dankort app practice since they are the ones who indirectly, or directly are carrying and promoting the practice regarding Dankort app from being a proto-practice, into a fully established practice.

Through our empirical work and literature review, we recognized similarities between the carrier term, and the opinion leader term (see subchapter 3.4.1) suggested by Rogers, (1962), as both terms emphasise these particular individuals to be the dominant contributors to the establishment of an innovation.

Which is why, we will also be using the early majority and late majorities categories, through this analysis part and our third analysis part, as we again can see a correlation between our findings and the two types of adopters as practice theory does not provide any terms explaining diverse user groups.

8.2.1 Becoming a carrier.

In order for an individual to become a carrier, is it essential that the person can see a meaning with the technology, as well as having the necessary materiality and skills to make use of the technology. In this case, the materials, e.g. having Dankort app and a smartphone as we have previously described in subchapter 8.1.1, and terms of skills, able to use Dankort app.

Our two Dankort app users, Camilla and Kristian from whom we consider as being carriers of Dankort app practice, points towards, that they see Dankort app, as a smart payment solutions, since they are always carrying their smartphone, and sometimes forgets their wallet: “I think the app is very smart, especially in situations where I suddenly recognises

that I have forgotten my wallet" (Camilla, Dankort app user, 2019). Also as Kristian responses:

> *"The thing that you do not need to have your wallet on you all the time. Especially like a hot summer day, where you would prefer not having too much in your pocket if you are having a night out (...) You have the phone on you anyway, and by having the wallet with you, you will use an extra pocket"* (Kristian, Dankort app user).

A carrier is an individual, who is in a position to affect other consumer's behaviour upon adopting and starting using Dankort app, either by saying it directly to people or only by using the app in a payment situation, where others can see the app in action.

When we asked both Camilla and Kristian if they could remember at least one scenario, where they especially felt that they opened up, someone's eyes for Dankort app. They replied:

> *"I remember one time in Fakta, where I asked if I could pay with Dankort app, and they knew nothing about it. Then I showed them, how the Bluetooth box worked, and they were like oh wow, how did you do that? So, for me it was a great experience that I just taught them something new"* (Kristian, Dankort app user, 2019).

> *"Several times, I have experienced that the consumers have forgotten their card, and then I tell them that they can download this app, where they can apply for their credit card, and then use it as a payment method in different stores. In case they should forget their card again. So in that way, I get them to know that there is something newer in the market"* (Camilla, Dankort app user, 2019).

These two quote illustrates in its best way, how Kristian and Camilla himself fits into the carrier term, as they are not afraid of using an innovation, and directly, are leading others towards using Dankort app by showing, and even telling them how to use it, and why it makes sense to use.

Tobias whom we find in the early majority category, do not use Dankort app himself but has considered it, since he has noticed that customers in the supermarket were using it. As he says:

> *"I have seen customers using it… now I do not use it myself, but the fact that you do not even need to unlock your phone, you can just put it directly on the terminal, and then it is connected. I think that is very smart"* (Tobias, potential Dankort app user, 2019).

He, therefore, have been indirectly affected by carriers, to become a potential user of Dankort app. It is among other things this function a carrier has, as carriers can help influence the technology and 'carry' it in a positive direction. A carrier promotes the technology, thereby carrying the practice from formulation to formulation.

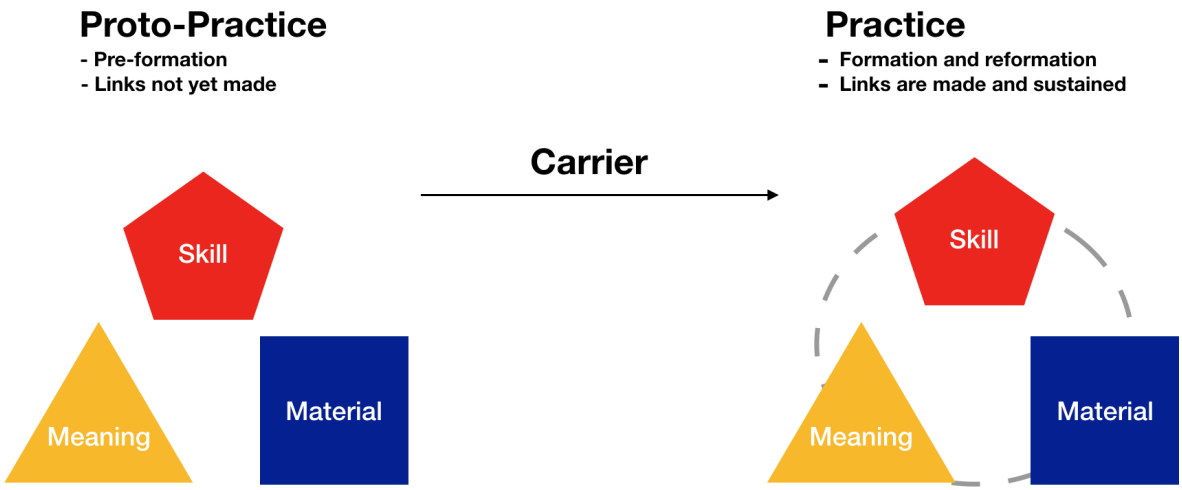


Figure 8: Showing how a carrier potentially could move a practice such as Dankort app from proto-practice to an established practice.

Our findings, therefore, emphasises how essential carriers in a practical view, are for innovation to move from only being a proto-practice, into a fully established practice, as the carriers again are capable of merging the practical triangulation material, skill and meaning together, which often happens among the population.

As mentioned earlier, the practical tree part can exist in three possible formulations a practice may be in. The first is when all elements are present, which means that both the skills, the material and the meaning exist, but are not yet linked together. This is called a proto-practice, where we will argue that the currently Dankort app practice is, and will return to shortly. The next formulation is when the elements of a practice are interconnected when you can call it a 'practice'. An example of this could be payment with contactless Dankort.
The third and last formulation is known as Ex-practice and happens when the links between the practical triangulation no longer exist. A practice will exist, reproduce and disappear when the connections between the practical triangulation are made, continued and broken. We will argue that there are many ex-practices in regards to payment practice, as we already included a part of Dankort app and the contactless Dankort's predecessors as we presented Dankort's history in subchapter 5.2. As an example, we will argue that the ‘fluesmækkeren’, card payment with magnetic stripe and checks is what we want to call an Ex-practice.

Based on the knowledge we have generated through our fieldwork, and analysed upon which in analysis part 1, we will argue that payment with Dankort app is still in the proto-practice formulation. We conclude this because even though all three practice theoretical elements are present, they are not yet fully connected. There are several reasons why, where we have presented some of them in analysis part 1.
As we also mentioned earlier, it is very natural in an implementation process that consumers do not change practices from one day to another, changing of habits and desires occurs over time, and therefore, it is not entirely clear when payments with Dankort app will and can become a fully established practice - according to practice theory.

When a new technology such as Dankort app is presented and comes on the market, it is meant that people should start adopting it. Usually, you could say that the old practice should move towards an ex-practice before there would be room for another.

> *“You must see Dankort app as a supplement to your Dankort. We have - almost - always our mobile phone with us, this is not always the case with our wallet, which can be located at home, at the bottom of the backpack or out in the car”* (Dankort’s Facebook site, 2018).

It is not necessarily what needs to happen in this case, as Nets itself thinks that Dankort app has been developed as a supplement to the old Dankort and Dankort app, therefore, does not need to take full advantage of the current payment practice. Changes have to be made so that there is also room for Dankort app both in the Danish payment market, but also with the Danish consumers. When people's habits and practices have to change, it is natural that it takes some time, as there will always be consumers who can only see the meaning of paying with the old Dankort in e.g. supermarkets. These types of individuals are what we would call late adopters, as they, to begin with, tends to be very critical upon innovations, and needs to be fully convinced over time, that they could benefit from the innovation. Again, when this group of individuals now sees more meaning in paying with Dankort app, they will potentially also be seen as carriers, as they help to carry out the practice.

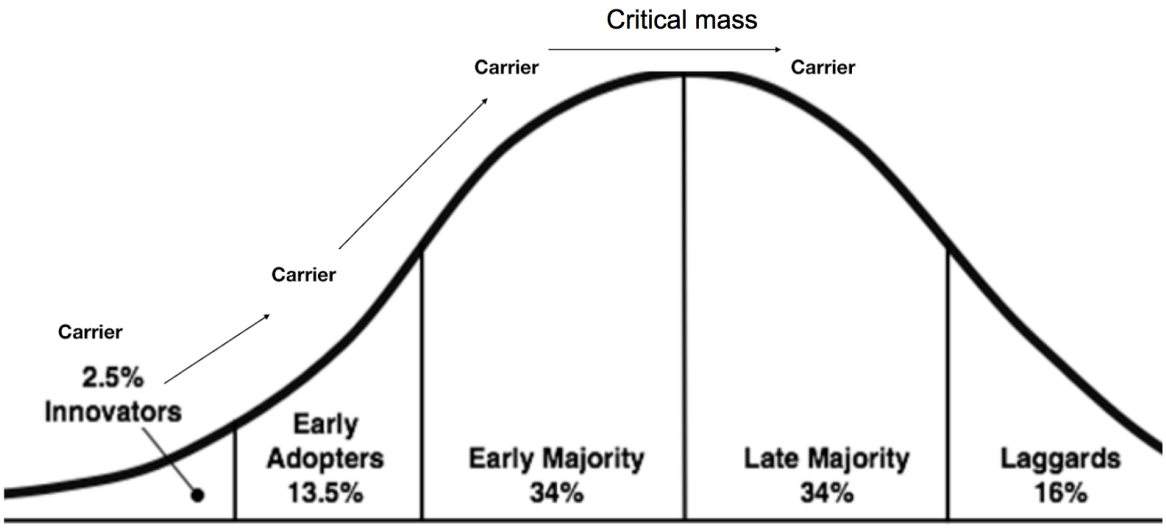


Figure 9: Diffusion model with added carrier term, to show how a carrier potentially could turn more consumers into Dankort app users, and by that secure the optimal percentage of users in order to reach critical mass.

Our argument is that carriers of the payment practices with Dankort app helps Dankort app in the implementation process on the Danish market and slowly push current or old practice to become ex-practice.

This may ultimately mean that there are consumers who see Dankort as their preferred means of payment, but there is also a new group of consumers who have Dankort app as a preferred means of payment.
However, our argument is also that the more carriers that come, the more users will potentially move from being early adopters to early majority, when reaching a percentage of 34% of the popularity and critical mass, turning Dankort app into a sustainable technology, which with a practice theory perspective, is also what we would call an established practice. In this way, the payment practice with Dankort app becomes more and more established. Also, may eventually push payment with plastic cards towards becoming an ex-practice.

8.3 How can the constructs from DOI and TAM contribute to practice theory?

Following what we presented in analysis part 1 and 2, we through our findings upon the practical triangulation found that the elements individually indeed are presented, but links between the elements are stilling missing in terms of moving from a proto-practice into a fully established practice.
From our perspective, and as touch upon previous, there seems to be 'grey zones' between the elements, where we are curious upon, what exists within these zones, and potentially an answer in, why the elements have not yet been merged together.

As mentioned, we, therefore with inspiration from our literature review and previous mobile payment research, would bring in constructs from the two adoption theories DOI and TAM, as an experiment to see, if they can cast light on the grey zones, and from here add valuable knowledge upon potential users and already practitioners of Dankort app perceptions of a Dankort app practice.

8.3.1 How to contextualising Perceived Usefulness and Perceived Ease of Use

Looking back at our literature review, and how the two models DOI and TAM deals with consumer's attitude towards adoption of mobile payment solutions, we found the following constructs to be relevant to our case, namely from DOI; complexity, compatibility, network externalities, security and trust, and from TAM, personal innovativeness.

As an experiment, we will here try to apply perceived usefulness and ease of use, together with our chosen constructs, and see if they can be contextualized into our findings or have contributed to new findings not touch upon through practice theory.

First of all, we would like to illustrate an example of how we anticipate making use of perceived usefulness and ease of use. We do that, since both DOI and TAM in previous mobile payment research, have been used in a more business and marketing oriented manner, where quantitative data have been collected primarily through surveys, and calculated into already predefined values, and from here with the use of added constructs shows either a negative or positive attitude towards usefulness or ease of use.

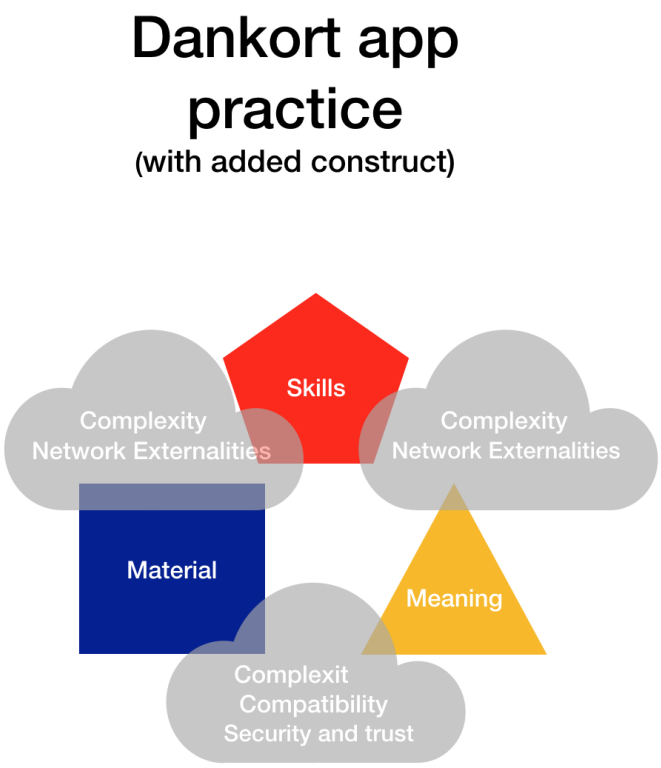


Figure 10: Illustrating where the constructs from DOI/TAM are to be used in order to explain the grey zones.

One thing is that a carrier or potential Dankort app user has perceived usefulness and thereby meaning upon their adoption of Dankort app, another thing is if they perceive Dankort app to be ease to use when using it.

As an example, our informant Kristian said when we asked him upon which advantages and disadvantage he saw with the app: “It indeed has saved me many times, when I have forgotten my wallet (...) I try to use it, as often as I can” (Kristian, Dankort app user).

> *“It would be the wireless signal, if there is the smallest instability or something like that, such as the Bluetooth signal, then you will need to try to make it work several times.”* (Kristian, Dankort app user).

The first statement indicates that Kristian has a positive attitude towards the usefulness of Dankort app, as he sees the meaning in using the app, and tries to incorporate the app as a payment habit into his everyday life. On the other hand, he finds complexities in using the app, when he experiences technical issues, and, therefore, has a negative attitude towards his perception on ease of use.
From previous mobile payment research, we know that a negative attitude towards ease of use, can influence the individuals perceived usefulness, both in negative as well as in a positive way.

In our case, Kristian has already adopted Dankort app, as he is using it as often as he can, and as we analysed in analysis part 2, is to be found as a carrier of the practice. We do, however, speculates on that even though Kristian has a negative attitude towards ease of use, his perception on usefulness is still positive, and could, therefore, indicate that the app, despite some technical issues from time to time, still fits into Kristian’s’ lifestyle, and he, therefore, continues to practise the app.
As also mentioned, Kristian is what we would refer to as an early adopter, as he has used the app since it was on the market, and, moreover, goes in front in regards to technological innovation and, therefore, has a positive attitude towards personal innovativeness. Both early adopters and individuals with high personal innovativeness are known for their eagerness to try out new technology, and, moreover, prefer to have a central communication position (see subchapter 3.4.2).

This example illustrates that Kristian as a carrier and early adopter has a positive attitude towards personal innovativeness, which does not influence his negative attitude towards ease of use, but instead boosts his perceived usefulness, and he, therefore, ends up to continue his Dankort app practice.

8.3.2 A cloudy day to remember

As touch upon in subchapter 8.1.2 who deals with the skills element, we can see a connection to network externalities combined with complexities, due to the fact that the service employees in the supermarkets, or sales assistant at the stores, often do not know either if they accept Dankort app, or how it works. This was also something, our informant Thomas stated:

“I think it is quite often, that the service employees behind the desk, is not that well instructed on how it works” (Thomas, former and potential user of Dankort app).

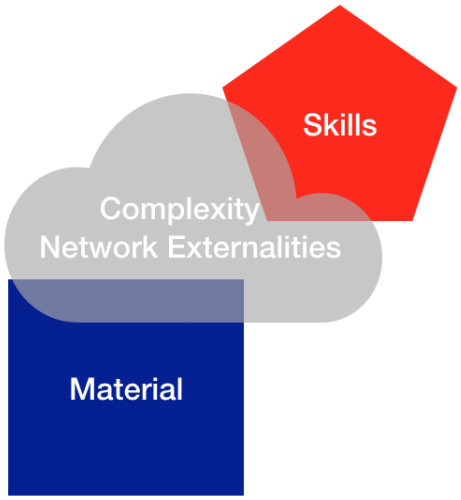


Figure 11: Illustrating the two constructs complexity and network externalities, and where they are to be found between material and skills.

As the employees, do not know that much about Dankort app, and therefore, often is not capable to help consumers when there is an issue with the app, it could easily affect the user’s perception of ease of use.

Due to complexities in getting any help from the service employees, and, moreover, turns into a negative attitude towards network externalities (the stores or supermarkets service), which further could lead to, that the user simply chooses not to try out Dankort app again.

Moreover, as we saw in analysis part 1, the sales assistant and service employees have the skills to manoeuvre the cash register, but in terms of the users perceived ease of use, the user from our findings now also expects them to know how to operate Dankort app, which is a factor the skill element does not takes into account.

Another finding we also touch upon in subchapter 8.1.1, was when materiality such as the card terminal was either not updated with Bluetooth technology or only accepted QR code payment. We found this to be a challenge to the users in their payment practice.
However, as the materiality element only takes into account whether or not materials exist, we could with the use of network externalities highlight a problem in the stores or supermarkets having too many diverse terminals, and, thereby, different ways of using Dankort app, which we experienced take a lot of the user's attention. Thomas responded:

> *"(...) another thing is that all depending on the type of terminal the supermarket is using, you can pay with the app in different ways (...) so it can be a problem, if you are in one store with one type of terminal, and then in another store with another type of terminal, and the service employee, do not know how to use it"* (Thomas, former Dankort app user, 2019).

This indicates, just as it was the case with Camilla in the previous finding from subchapter 8.1.2 that even if a user has adapted Dankort app practice, and thinks that he or she knows how to use it, they can be challenged when standing in another supermarket where another card terminal is used.

Besides, it was our own impression, that as soon as a card terminal was installed with a visible Bluetooth box, this was the best indication for, that Dankort app could be used. This was also something Kristian pointed to:

> *"(...) the only thing I combine with Dankort app, is the Bluetooth box placed next to the terminal, which I believe is only in specific supermarkets, such as Føtex and Netto, who has these terminals*" (Kristian, Dankort app user, 2019).

As we previously concluded, one of the most significant issues in terms of skills, was that users had troubles in seeing or knowing where they could use Dankort app. This finding, moreover indicates that the Bluetooth box is an important materiality, as it is combined with the possibility to pay with Dankort app.

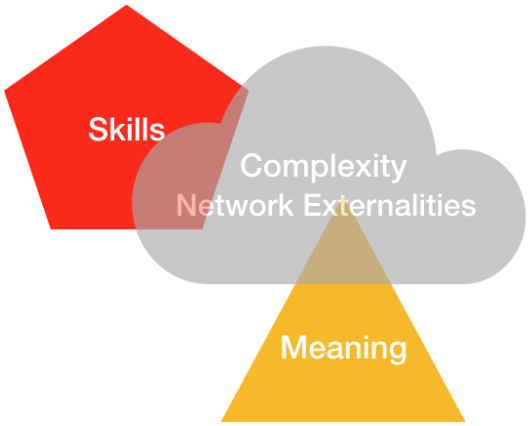


Figure 12: Illustrating the two constructs complexity and network externalities, and where they are to be found between meaning and skills.

That is, from our perspective a crucial issue, as a negative attitude towards complexity in seeing, and knowing where to use Dankort app, easily could influence the user's perceived usefulness. Saying that the meaning in using Dankort app, from what we found to be easy and smart, potentially disappears, since the users still need to have their wallets or credit card with them, as they cannot be sure that they can always use the app.

The chances of people starting to use only Dankort app, is, therefore, dependent on the individual's lifestyle.

Meaning that if an individual is often out in different areas, he or she will not be familiar with the provided card terminals and by that, still needs to have their wallets with them.

Compared to an individual, who perhaps moves around in the same area and knows where Dankort app can be used. Dankort app could, therefore, seems to be a very good payment supplement, in case a user has forgotten to buy something, and knows that the local stores accept Dankort app, whereas going out town, would probably mean that he or she would return to use their contactless Dankort, or another preferred payment method.

As touch upon in subchapter 8.1.3, we spoke to Thomas from Nets, upon specific issues Nets have encountered during the implementation process with Dankort app. In terms of the problem with the different terminals, Thomas says:

> *"(...) Unfortunately, we do not own the whole value chain. We cannot decide what type of card terminal the merchant should have (...) we have made some 'how to use' videos, which the consumer can find on YouTube, the problem is that there are so many different card terminals"* (Thomas, Nets, 2019).

We must, therefore, argue that it can be hard to do anything about the various card terminals, especially since it is not an option to attach a Bluetooth box to all types of card terminals.
We do, however, also believe that within time, all card terminals will be exchanged to newer terminals, which in one way or another contains Bluetooth technologies, and, therefore, makes it possible to use Dankort app anywhere.

We do, however, speculate on the fact that Nets, more or less relies on that the users themselves will look up the videos on YouTube, and learn about the app and different card terminals themselves. A carrier or early adopter would probably do this, due to their interest in new technology, and how it works. It is, however, from our findings clear that individuals from other adoptions categories, namely early majority, and late adopters, probably will never see these videos, as they would never seek information upon diverse payment methods.

As Thomas, further points to, have Nets primary focused on getting Dankort app out in the supermarkets, as it is there, they have found most transactions to be done equals a larger user segment. Just as it was the case when Nets introduced the contactless Dankort, they know that payment practice changes, the places where consumers often see new types of payment being used. Which, therefore, indicates that Nets relies on that Dankort app primary will sell itself in the supermarkets, and from here grow when consumers start to adapt and recommend the app to others.
As Kim, Mirusmonov and Lee, (2010) also points to in their paper, it has become essential for commercial marketing of new innovations, that the consumers find the innovation interesting, and, by that starts to recommend the innovation to friends and family, as consumers are profoundly affected by social influence, in terms of adopting new technology.

Again, we can see a potential problem in the user's attitude towards network externalities, as their payment skills are challenged, when a provided card terminals do not have a visible Bluetooth box attached, which for some users seems to be a necessary materiality, in order for them to see where they can use Dankort app.

These findings, therefore indicates, that the grey zones between the skill, material and meaning elements primary consists of user's attitudes towards complexity and network externalities, which potentially could turn out to a negative attitude towards ease of use, as the users can get confused upon various types of terminals, and by that challenged them when using Dankort app. Moreover, the users miss that the sales assistant or service employee can help them in situations, where the app or card terminals have technical issues.
One could, therefore, fear, that these attitudes, could turn into a negative (red thumb) attitude towards usefulness, and thereby meaning, as the users find too many complexities in terms of having the right skills, and the needed materials provided by the stores and supermarkets.

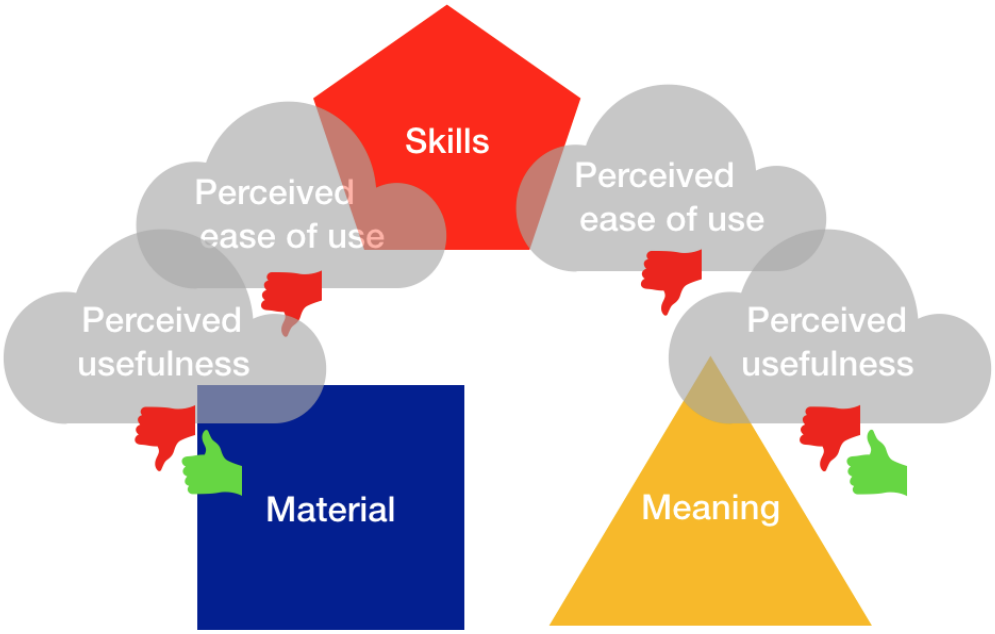


Figure 13: Illustrating where our findings have found consumers and users of Dankort app to have either a positive (green thumb) or negative (red thumb) attitude towards perceived ease of use and usefulness in regards to their usage of Dankort app.

From our example with Kristian, one should of course also have in mind, that all depending on which adoption category and individual belongs to, an individual perception on his or her own personal innovativeness, will most likely also influence their perceived usefulness, whether or not they will start using Dankort app, or continue to use it, if they already have adopted it. However, as these types of users are very eager to try out new innovation, too many negative attitudes towards ease of use, could potentially also make them stop using Dankort app, and move on to try out new payment solutions instead.

8.3.3 Having too many options

Following the previous findings upon many different terminals, another exciting finding made with the added constructs complexity was that we observed, that the Danish consumers, in general, have plenty of payment solutions to choose from.

Through our observations and informal interviews, we learned, that there was a great confusion upon the many different payment solutions, and especially mobile payment solutions as we heard from a service employee in Fakta: “Ah! Sorry, I thought you meant MobilePay, it is quite confusing with all these payment apps” (Observation from Fakta, 2019).
Another in 7-eleven: “I am not sure which one of them it is that you mean, I believe that we accept the one you are referring to, but again I am not sure” (Observation from 7-eleven, 2019). Also our informant Kristian points towards this problem:

> *“I think there are too many options in regards to mobile payment apps, first MobilePay, then Dankort app, Google Pay, Apple Pay, and bank wallets (...) Jesus, what a jungle”* (Kristian, Dankort app user, 2019).

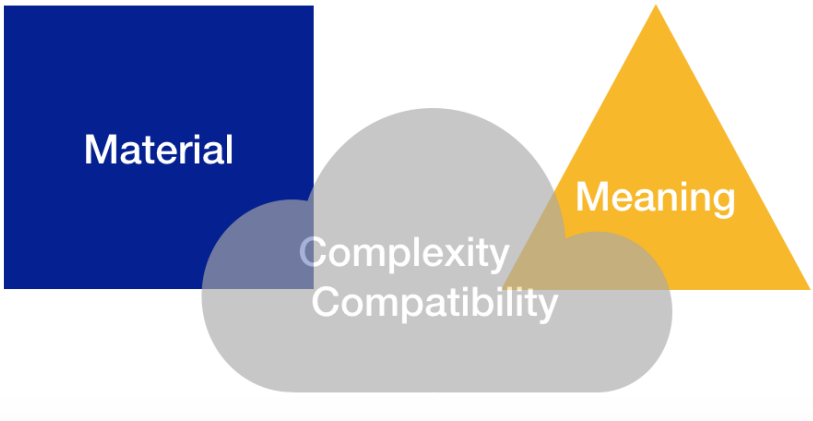


Figure 14: Illustrating the two constructs complexity and compatibility, and where they are to be found between material and meaning.

This is an entirely different scenario, from what we found in the literature review, since it often in other countries, is a problem that payment apps are still a relative innovation at the payment market, and the consumers, therefore do not have the possibilities in using the app, because the stores or supermarkets do not provide purchases with it.

In our case, however, it seems that there are too many options in regards to payment apps, which makes not only the consumers but also the employees in stores or supermarkets confused, which, therefore, makes it hard for the consumer to choose which one of them, would be most relevant for them in their everyday life.
One observation we did in Imerco, was also that the store had a sticker on the window, showing diverse methods, such as Dankort, MasterCard and American Express etc., but not any mobile payment solutions. However, our thoughts were, that users could get confused upon Dankort, and if the Dankort logo, also means that the store accepts Dankort app.

In correlation to this finding, we highlighted in subchapter 8.1.3, that since Dankort app is still in a sort of transition position, to move from being a proto-practice into a practice, some Danish consumers do not find any meaning in using the app, since they prefer to use their contactless Dankort, or other well-known payment methods. This finding was also something our informant Tobias told us, as he often experiences that Dankort app users, tend to use their contactless Dankort as a benchmark if there seems to be a problem either with the app, or an error on the card terminal.
As he points out:

> *"If the app does not work they can get a little worried (...) they become a bit frantically and tries a couple of times with the phone, where they place it the same place as the contactless credit card, turns the phone around in different directions (...) then they often turn to their contactless Dankort instead"* (Tobias, service-employee, 2019).

He, moreover, explains that users do not understand why it is not as quick as the card, and, thereby, ends up using their card instead to pay with.

This was also something we came across during our conference meeting with Smart payment, as one states:

> *"I imagined that Dankort app was an extension of my regular credit card, and I, therefore, could use it anywhere. When I figured out, that, that was not the case, and since I did not receive any help on where to use it, it is merely more ease to find the credit card, and use that instead"* (Informant, Smart payment conference, 2019).

To contextualize this finding into usefulness and ease of use. One could argue, that the contactless Dankort, can make it hard for Dankort app practice to be a fully established practice, as long as the users do find complexities when using the app, and by that has a negative attitude towards ease of use, as they see the contactless Dankort as their benchmark, and to be quicker and easier.

From our perspective, it is therefore crucial in regards to consumer adoption of Dankort app, when both compatibility and complexity, is to be found as negative related to potential users perceived ease of use and usefulness, as they can choose between too many payment solutions, and Dankort app, therefore 'drowns in the crowd' of plenty other payment solutions.
Again, it is essential to disguise between early adopters, early majority and late majority due to their perception on personal innovativeness, and therefore can have different views on usefulness or meaning, despite their negative attitude towards ease of use.

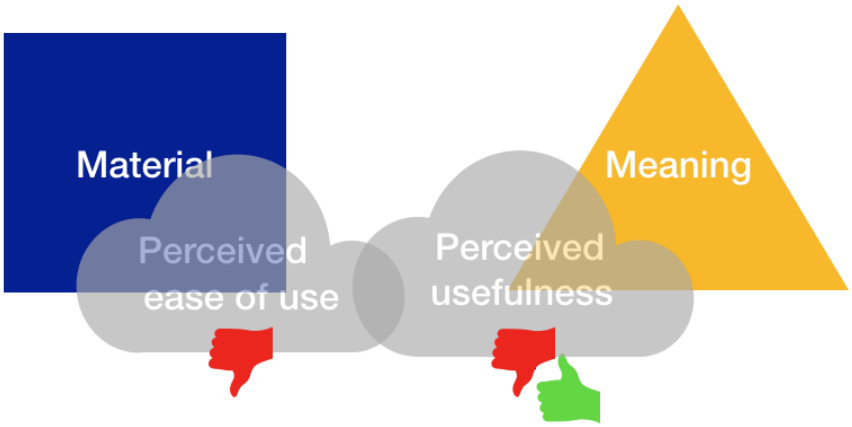


Figure 15: Illustrating where our findings have found consumers and users of Dankort app to have either a positive or negative attitude towards perceived ease of use and usefulness in regards to their usage of Dankort app.

As mentioned earlier, Nets have no intentions with Dankort app replacing contactless Dankort, as they see the app to be a payment supplement. That, however, seems to be a valid point as the user's attitudes towards Dankort app, at the given moment, is only found to be a payment supplement, instead of their preferred payment method.

Security and Trust within Dankort app

As we learned through our literature review, security and trust are both constructs, which often is applied to mobile payment research, as the two constructs are found to be highly relevant in terms of user adoption. In previous literature, they argue that it is essential to distinguish between security and trust, as they are focusing on different things upon different scenarios (Siau et al. 2004; Xu and Gutiérrez, 2006). We will, therefore, highlight findings we made, with the use of security and trust, as practice theory do not takes such elements into account.

Security and trust are indeed found to be two different things, as trust from our informant's perspectives points towards the trust in someone, hereby, Nets from which they perceived as being a trustworthy service provider.

Besides, our informants Kristian and Thomas did not mention anything in terms of having any perceived security risk upon Dankort app technology. We imagine that since these two informants are early adopters, and familiar with new technology, they do not find any security-related issues in Dankort app technology as such.

They did, however, spoke a lot about trust in others, especially related to how Nets are handling their personal information.
As Thomas says: “I do like Dankort app, as I believe it is safer since it is Nets who provides it” (Thomas, a former and potential user of Dankort app, 2019).
Also, Kristian replies:

> *“Compared to the contactless credit card, since Nets are also responsible for that, then I could imagine that the security is the same, if not better (...) I do not see any risk in that”* (Kristian, Dankort app user, 2019).

As Thomas further adds, he feels more confident upon using Dankort instead compared to e.g. Apple Pay, since a Danish company handles all the data contained in Dankort app.

> *I believe that Nets are better at keeping my data safe, and are not using my information, in the same way, that Google or Apple could do”* (Thomas, former and potential Dankort app user, 2019).

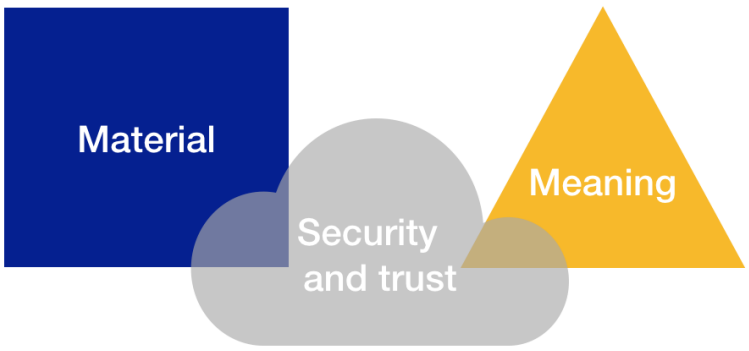


Figure 16: Illustrating the two constructs security and trust, and where they are to be found between material and meaning.

From our findings, these quotes illustrate, that perceived trust in regards to Dankort app, is not a problem too early adopters and is found to have a positive attitude towards both their ease of use and usefulness, which positively influences their adoption and continued use of Dankort app.

Security and risk, on the other hand, deals with the technological aspect of the app, as there seems to be a lack in knowing how the app informs the users about their purchase.
This was touch upon by the users from our conference meeting with Smart Payments. As they when using the app, saw potential security risks in terms of not knowing the full amount of the purchase, and also being insecure if the purchase was thoroughly made only by saying 'accepted', or if they needed to do anything to finish the payment. As shown in picture 7 in subchapter 5.4.5, we our self could see the full amount of our purchase each time we were using Dankort app. That, however, does not seems to be the case for every user, which we are curious about since there seems to be a technical difference from user to user. As one of them said:

> *"(...) It would be nice to have the possibility to react on the amount, before is says approved, as there could be a mistake. I never managed to see that before the amount disappears from the terminal screen, and is not visible on the app"* (Informant, Smart-Payments, 2019).

Especially late adopters, who tend to be very critical upon new technology, need to be fully convinced, that the innovation is made with the intentions of being safe and trustworthy. As one person found through our netnography questions: "What if the phone is stolen, then the app can just be used?" (Facebook-user, Dankort, 2019).

Early majorities, and late adopters, therefore, from our findings tend to have a negative attitude towards perceived trust, since they are questioning, the fact that someone, could abuse the app, when their smartphone was stolen, and, moreover, has negative attitudes upon perceived security risks, as they highlight different design issues within the app, which makes them insecure upon their Dankort app purchase.

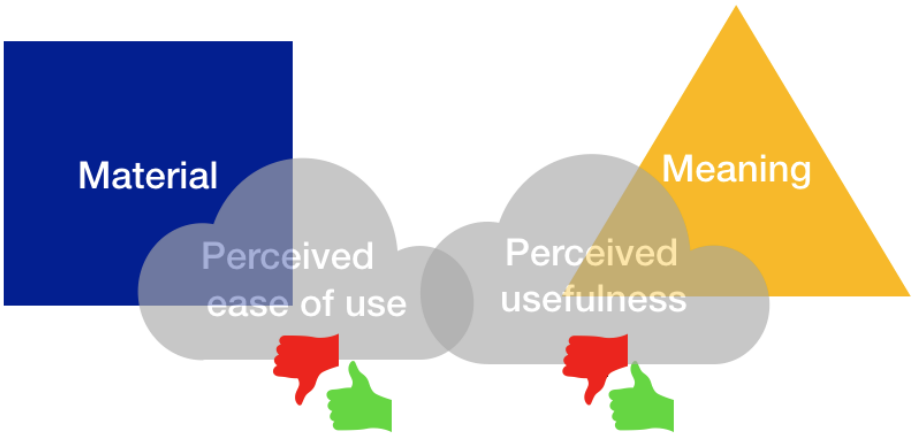


Figure 17: Illustrating where our findings have found consumers and users of Dankort app to have either a positive or negative attitude towards perceived ease of use and usefulness in regards to their usage of Dankort app.

Security and trust, are therefore also in our paper, found to be two essential adoption factors, as users all depending on their adoption level needs to rely on, that the materiality, in this case, Dankort app, is made with the purpose of providing them with a safer payment solution, and they, therefore, need to have a positive attitude towards ease of use and usefulness, thereby meaning in using the materiality.

That, however, does not seems to be the case, if we look at our early majority and late majority informants, as they again tend to have both a negative attitude towards ease of use, and usefulness. Early adopters, on the other hand, have both a positive attitude towards usefulness and ease of use, which again correlates to their curiosity upon innovations and technology.

8.4 Summary

Together with our empirical work and construct from the two adoption theories, we have through this analysis part touch upon diverse findings, and experimented where the added construct, to make the grey zones more visible, in terms of gaining more insights to our findings. The constructs, indeed helped us to acknowledge, that both carriers and potential new users point to several issues concerning Dankort app.

First, our informants despite their role as a carrier, do not always find Dankort app easy to use when they are facing technical issues and finds it difficult to know if the app can be used at all. This finding in particular makes us questioning if the user is then still to be found as a carrier.

Moreover, did we acknowledge through the use of complexity, that the Bluetooth box attached next to the card terminal, often is associated with the possibility to pay with Dankort app, and, therefore becomes an essential material in order for a Dankort app practice to be established.

Second, is that supermarkets, where the app can be used, often cannot provide the users with the needed help, since the service employees do not know about the app, or has different card terminals, which can make it hard for users to know how they should purchase their products.

And thirdly, we found that trust and security indeed are two different things in terms of risk, and all depending on the user's adoption category, plays a role in the user's perceived ease of use and thereby perceived usefulness.

Besides, in corresponds with user categories, it is necessary to look into at what adoption level the potential users or individual person are at since it influences the persons eager to use an innovation such as Dankort app.

9. Discussion

Our discussion will take it point of departure in our overall findings, where we have tried to cover both where the practical triangulation is to be found within Dankort app practice, and, what the appearance or lack of them means in regards to how the payment practice moves from already existing payment practices to a new one with Dankort app. However, also, in which circumstances the incorporated two adoption theories DOI and TAM, have brought us new insights upon mobile payment adoption, and what the added constructs have either applied or conflicts within our findings.

First, we will briefly touch upon why practice theory has been our first choice of theory, and if the theory has brought us what we wanted in terms of investigating Dankort app practice. Second, we will start up discussing, wherein our empirical work the added constructs from TAM and DOI either have brought new perspectives together with the practical triangulation, or where we do not find them relevant to each other. Also, we would like to discuss the use of adoption categories together with the added term carriers from practice theory, and, moreover, discuss how meaning has shown difficulties in terms of contextualising our findings, and what perceived usefulness and ease of use then have helped us with.

9.1 How can the constructs from DOI and TAM contribute to Practice Theory, and what happens when they are merged?

Alternatively, can they learn from each other? That is the question we have been asking our self after we have looked more into Dankort and Dankort app practice, and by doing a more experimental analysis with the use of diverse constructs and terms inspired from DOI and TAM.

Practice theory has the advantage that it is a theory that is easy to convey. This is one of the important reasons why we chose it, as we want to pass on this paper, not only to Nets but also to other interested parties. We want to make our contribution to the already existing literature that we have presented in our literature review.

One of the reasons why we believe that practice theory is easy to convey is because it can be presented without many details, a reader will quickly understand the concept of having the three practical, theoretical elements, material, skills and meaning present to create a practice.
The practical triangulation contains many sub-elements, but because elements are so broad it can be easier for an outsider to understand. It is therefore quite intent on our choice to have fallen on the practice theory, both because we have wanted to study the payment practice, but also because we have wanted to do a dissemination task.
Nevertheless, we were challenged theoretically along the way, as we came across findings that showed that there were other obstacles, which required other types of theoretical elements to be applied.

We, therefore, asked ourselves: What if we tried to combine the practice theory and some of the constructs that have been used previously to investigate mobile payment. In this way, we would be able to get a more nuanced understanding of what lies hidden 'inside' the payment practice.

From a start, we had a clear idea, that Dankort app was out there, and that many Danish consumers were already practising it, as it is provided by the biggest payment service company in Denmark, Nets. However, as we moved deeper into the landscape of payment practices, we also became aware, that it is more complex than such, and we, therefore, doubted if practice theory, with its spatial construct of elements, has provided us with a realistic picture of Dankort and Dankort app practices.

Also, one topic we have touched upon in our method section is the challenges we have encountered during our empirical collection. Namely, being allowed to observe something as private as the payment moment. As previously mentioned, we have had significant challenges with this, and we have, therefore not received so much empirical data based on precisely this moment as we had wished. Therefore, did we find it rewarding to combine our qualitative data from our observations with some of the constructs we have found in the existing literature. Well aware that these constructs are based on quantitative studies on other mobile payment research. The constructs from TAM and DOI are made on quantitative studies that are meant to include much larger user groups.

We have not taken into account this otherwise enormous difference in this paper, as we have included the constructs we have found usable for and directly transferred them to our qualitative data.

9.2.1 Elements vs. Constructs

Seen from a practice theory perspective, we analyzed among many things, that the existent of the card terminal is crucial, in order for the material element to circulate within the practice of Dankort app. We also through the added construct complexity, recognized, that the material element does not consider whether or not the card terminals are easy to handle or becomes too complex for Dankort app users, and pushes them to use another payment method.

This finding made it clear to us that the material element does not consider if the presence of the Bluetooth box, makes a difference in regards of users to recognize the possibility to use Dankort app, as the Bluetooth box is not to be found as a necessary material, in terms of the element to circulate within a Dankort app practice.

We, therefore, argue that practice theory does not take into account whether there is some materiality within the necessary materiality which for some users (in this case, many users) must be present before they are willing to change their payment practices. Only Bluetooth on the users own smartphone was a required material.

The other way around, do neither DOI or TAM provides constructs, where physical materiality is to be looked at, in terms of a technology to be adopted.

That, however, can be explained as the complexity construct together with compatibility, network externalities, security and trust, is meant as guidelines in order to understand attitudes towards user adoption, whereas the material element, requires a physical innovation to be present, in order to study a specific practice. We also believe, that is why we through the use of added constructs and in-depth interviews found more detailed findings upon our empirical work, just as it was the case in the work of Mallat 2007, where she also did interesting findings through the use of focus-group interviews, and could add others aspects of the used constructs into something more, than just users positive or negative attitudes towards mobile payment adoption.

We, therefore, argue that we have benefitted from using the added construct, as complexity in this situation brings invaluable perspectives, to illuminate the presence of materiality, but also how the users perceive the materiality existent and, moreover, their perceived ease of use in relation to their adoption and continued practice of Dankort app.

From our findings upon the second practice theory element skills. We have covered in analysis part 1, that our informants, do own the necessary skills in order to practise Dankort app. We believed that the payment practice with the contactless Dankort, was a skill that more or less every Danish consumer owns, and by that we anticipated that Dankort app would not require much more skills of the Danish consumers. We did however again, by bringing in complexity, acknowledged that our informants from time to time find it challenging to use Dankort app when a card terminal who requires QR code is presented, and the consumers skills, therefore are challenged.
Again, we see that the material element is challenged, and in combination with the skill element, does not provides us with any knowledge about how the user perceives complexity in how to acquire skills to use Dankort app on other types of terminals, or if the users tends to make use of other payment skills, in case they are experiencing that Dankort app, does not work.
We do in this specific situation, need to remember, that when a user for the first time is challenged by another type of card terminal, he or she, depending on their eager to try out another payment method, have now obtained a new skill, and by that, most likely will be capable of using Dankort app, the next time this type of card terminal is presented to them, since they have now obtained knowledge and skills upon this type of terminal.

In addition, the user's attitude towards ease of use can change into a positive attitude, which again influences the user's perceived usefulness.

One thing is, if the users have the right skills to practise Dankort app, another thing is if the service employees at the supermarkets have the skills to manoeuvre not only the cash register but also know how to handle technical issues if the app is not working.

This was a finding we did with the use of network externalities, as our informants perceive the service employee's ignorance upon Dankort app, to be a sort of bad service from the supermarkets side, as they expect that the service employee should know about diverse payment solutions, and what to do about it, when technical issues occur.

Practice theory argues, that we as human beings, tends to move in the same direction as other people, as we are influenced by our social surroundings, however, the finding upon service employees being capable to help users in situations where Dankort app does not work is not presented by the skill element, as the element does not takes into account if a user's skills to practice a given innovation, is dependent on other individual's skills to help out the user.
We, therefore, again benefits from using other types of constructs, which provides us with insights into how the adoption and use of Dankort app are to be found in the payment practice landscape.

Risk upon using Dankort app was also a term we came across through our findings, not through the use of material and skills, but with the meaning element. We did, however, discovered that users meaning upon something being risky, can be many different things, and we therefore again benefitted with the two added constructs trust and security.
Primarily, it was clear that users have different takes on what they perceive as being risky, in terms of using Dankort app. E.g. users who are to be found as early adopters, do not have any critical issues in using new technology and do not find any security risk in the technology or have any trust related issues upon the providers, namely Nets. Whereas users found to be early majorities and late majority to a greater extent sees risks in using new technologies, both in terms of security when using the app, and their trust upon the providers.

As both trust and security as previously mentioned in our literature search are found to have a high influence on user adoption of innovation or new technology, we are again asking, if practice theory covers the full picture of a Dankort app practice, as neither materials, skills or meaning takes this into account.

In a time where users often doubt in technology security, and, the usage of personal information is taking much focus, we believe that we have benefitted from adding these two constructs, as they made us recognise, that trust and security indeed are worth paying attention to, when we are speaking about adoption and potential users to Dankort app. Also, as Arvidsson 2014 points to in his work, we found that there is no correlation between them, as they are covering two different views upon risk, and, therefore should be treated individually in future mobile payment research.

So, to answer the two questions, we started out asking upon the combination of practice theory with DOI and TAM. Our answer would be both yes and no.
We could easily say that constructs from DOI and TAM should be applied each time researchers intend to use practice theory, as they indeed have brought us valuable knowledge to our findings.
But again, we only found the two adoption theories to be valuable to our paper, as they provided us with constructs that fitted perfectly into our findings. So, to say, the terms complexity, compatibility, network externalities, trust and security could possibly have been mentioned in our empirical work, just by using other words, and still resulted in the same findings.
One must also remember, that previous research using namely TAM have been highly criticised for bringing in too many constructs (Benbasat and Barki, 2007), and, therefore, makes their research models to complex in order to fully understand which constructs are the most influential upon perceived ease of use and perceived usefulness.

We, therefore, argue, that future research not only mobile, but payment, in general, could benefit from using a combination of the practical triangulation in terms of adding more understandable and straightforward elements, and all depending on what type of innovation which is to be investigated, could benefit from using diverse constructs, as they can bring in more detailed insights upon user perspectives.

That, however, also means that researchers should have in mind, what type of audience they are communicating to since added constructs quickly turns very simply findings into more complex findings, which requires a certain amount of knowledge upon previous payment research.

9.2.2 User perspectives

Besides diverse elements and constructs, have the three theories also different takes on their user groups. Practice theory, argues that the individual as such is not an important actor, but instead, the presence of the body is to be accountable for having the skills to practice. However, by adding the carrier term, we have shown how some of our informants are to be found as a carrier of a Dankort app practice, and how the presence of carriers, can turn the proto-practice into an established practice.
The exciting thing about carriers is, however, that it does not provides us with other types of individuals who are to be found in a Dankort app practice, and, more importantly how some of them potentially are moving in the opposite direction of the establishment with the practical triangulation.
We are also questioning, if it is too easy to say that a user is now to be found as a carrier, since we through our empirical work, also saw that a carrier still can have a negative attitude towards namely complexity, compatibility and network externalities.

As touch upon in analysis part 3, they still find complexities in using the app, and since they also are to be found as early adopters of Dankort app, potentially could move on to a newer payment method, as they are always seeking the newest technology.
We are therefore, wondering, that since we in analysis part 2, concluded that carriers are very important in order for Dankort app to move from a proto-practice into a fully established practice, if this transition potentially are in danger of never happening, if the carriers are to disappear, and therefore never carry Dankort app practice further to a higher adoption level, where more users have adopted the practice.

It therefore, became interesting for us to bring in the adopter categories, as primary three categories, early adopter, early majority and late majority was to be found in our findings, and by that made it clear, that not all individuals wish to change their already existing payment practice, as they simply cannot see a meaning in changing something, that already works for them.
As we also saw in analysis part 3, it is important to have in mind that people are moving in different levels when it comes to the adoption of a specific innovation. So is the same with Dankort app, where we, despite several of hours in the field, only found one individual using Dankort app.

We can, therefore, conclude that Dankort app from our findings is still very unknown to most Danish consumers, and must anticipate, that the practice with Dankort app, is primary to be found within early adopters, and still needs many more users to reach critical mass, in order to call it a sustainable technology (Rogers, 1995, p. 5).

It is, however, essential for us to emphasize, that the adoption category commonly is used under other circumstances, since the presence of the categories is decided based on calculations, and not just as we did put into another type of context, where they seem to fit it. We do, therefore, also questioning, our way of using the diverse adoption levels, and if we at all can allow ourselves to be using it, in this way.
Again, we could argue that since our thesis seeks to identify the already existing payment practice with contactless Dankort, and how a payment solution such as Dankort app could move into a more well-established payment practice. It is, regardless the way the data have been collected, still valuable to look into a what adoption level the Danish consumers are moving in, since it seems to be necessary, especially for a company like Nets to actually know how people feel about their already existing payment practice, and what happens when newer solutions are put into the payment market.

Just as we saw in the work of Kim, Mirusmonov, and Lee, (2010). we also emphasize that it is important, that service providers such as Nets apply different business models and strategies depending on which user group, and, moreover, at which diffusion level of mobile payment service, they wish to target.
In a future payment study using practice theory, mobile or not. It could, therefore, be relevant to bring in the perspectives on diverse adoption categories, in terms of how an innovation is distributed to accommodate not only one but several adoption categories, in order to secure the innovations fully practical establishment, and not only be dependent on carrier's ability to carry out the practice.

On the other hand, could the diffusion model also benefit from adding carriers, in terms of looking into what types of users, who are to be found as the ones leading the establishment of the innovation, as they often are found to be the ones responsible for passing on their knowledge and practice.

9.2.3 What does Meaning actually mean?

Looking at what practice theory has brought us in our research, it is clear that the meaning element is the element we have had the most difficulty understanding completely, as it can be understood in many different ways and embraces broadly. What is in the word 'meaning'? What makes sense for an analysis like ours, and why is it so important for users to see the meaning of a technology, before they can see a meaning in adopting it?
One of the findings we did in analysis part 1 on meaning is that we found several potential users who can see the meaning of paying with Dankort app, but have not adopted Dankort app, like their preferred payment method. We, therefore, became curious about how much meaning one should be able to see before changing one's payment practices.
We, therefore emphasizes that meaning is a difficult theoretical term, as it standing alone, can be a challenge to understand what meaning implies and means in practice as it requires that the meaning of the word is discussed in context for the particular analysis. As we have analyzed in analysis part 1, there are many places where meaning is interesting in context to Dankort app. It is extremely necessary for a user to be able to see meaning in using Dankort app, but as mentioned just before, we have experienced a number of potential users who could easily see a meaning with Dankort app, but nevertheless did not choose to use it themselves.

We will argue that there is a part that can see a meaning in several different payment methods, so is it really about which payment method they see most meaning in? Or is it okay to have several different payment practices? Yes, it is. Since Dankort app is made as a supplement to the plastic Dankort, it is from Nets' side it is well intentioned that the Danish consumers do not have to see more meaning in one payment method rather than the other. On the other hand, we have argued that before there can be room for a new payment method such as Dankort app, some users need to start using Dankort app, and therefore have to choose it rather than their plastic Dankort app.

We have, however, found out there are two scenarios when we talk about seeing the meaning in several different payment solutions. The first is that we have experienced that users can easily see a meaning in using several different payment solutions, for example, we have experienced users who say that their preferred means of payment in supermarkets is Dankort app, but still prefer to pay with their plastic Dankort in other stores.

Of course, there are several reasons for this, since we have found that it is far from being in all stores where you can pay with Dankort app, and there are many of these stores that do not show that you can pay with this form of payment and therefore the users do not even try to pay with Dankort app. But does it damage Dankort app? It may not damage it, but it can take longer to get the Danish consumers to fully adopt Dankort app and thereby make it their preferred payment method anywhere.

The second scenario is that before Dankort app can gain a foothold in the Danish payment market, all the different mobile payment solutions can be a challenge. As we saw in analysis part 3, the consumers get confused upon the many similar solutions, which often turns them to choose their physical Dankort or one of the other solutions - namely Dankort app biggest competitor, MobilePay, and also other solutions such as bank wallets, Apple Pay and Google Pay.

Moreover, in regards to get a foothold in the Danish payment market, is it also a barrier that sales assistant and service employees, also get confused upon the many mobile solutions, as they tend to mix up the names of diverse solutions, and thereby not necessarily combines Dankort app to be a mobile payment solutions.

We have also argued in analysis part 1 that many can see a meaning in using Dankort app because of the features found in the app. Saved receipts were particularly popular with the informants we have talked to, but since it is far from all stores where the receipts are stored, the meanings element is again challenged. Again, we feel that meaning in its practice-theoretical sense is defective, precisely because it could conceivably users fulfilled the practical triangulation, but nevertheless experienced that Dankort app was not for them, as in practice it did not fulfil their requirements for 'meaning'.

The practice-theoretical term meaning can, therefore, be challenging to understand, especially if one needs a more in-depth understanding. Meaning is just meaning, but what does that really mean? In our case, we have found it interesting and more rewarding to try to divide up manners and examine what elements or constructs lie in the word.
In analysis part 1 we have worked on how practice theory uses meaning and how it fits into our study on payment practices with Dankort app.

When looking at the meaning with practical theoretical glasses, the word itself is well-embracing and easily understandable precisely as we wanted it. However, why is it important to embrace it broadly? In our case, it is important because it helps to make our analysis as well as our total contribution to Nets and the literature easy to understand, you do not have to get to know the theory or have a particular academic mind-set before you can understand the word ‘meaning’.
It makes good sense that it is important that a user should be able to see a meaning in using the technology before they want to use it. It can, therefore, easily have its advantages that theories do not have to be explained in intricate and complicated details.

However, as we also saw in analysis part 3, we have concluded that many other constructs or elements are also important if not necessary for many users before they can see a meaning in starting using Dankort app as a payment method.
We, therefore, speculate if it has brought us any valuable knowledge to add TAM in terms of meaning, as perceived usefulness and perceived ease of use from a TAM perspectives implies the user’s ability to see how an innovation or technology can be useful to his or her performance, and, moreover, if he or she has a positive or negative attitude upon how easy they find the technology to be.
In analysis part 3, we found perceived ease of use and usefulness to help us contextualised meaning, into something more understandable, through the use of diverse constructs, as it became more clear which attitudes the user and potential users had upon diverse obstacles with Dankort app.
E.g. we could conclude that some potential user, primary has a negative attitude towards how easy Dankort app is to use, and also that they, in general, thinks that there again is to many mobile payment solutions on the market.
In these two examples, usefulness by the help of ease of use, was put into a context saying that our informants had either a positive or negative attitude towards usefulness depending on their adoption level, which made it more understandable if he or she then actually would end up using Dankort app, instead of just having a meaning about Dankort app.

We should however still be careful with how we use it, as we cannot compare meaning and usefulness. The reason for this is again because a user meaning upon Dankort app can cover many things, whereas usefulness in a TAM perspective only says something about the users positive or negative perceived intentions to adopt an innovation, based on his or hers positive or negative perceived ease of use.
We do however still find usefulness to generate valuable knowledge when put together with diverse constructs and especially the ease of use, as we believe that this construct is what helps us to understand what usefulness means to the users.
Again, to answer our question upon if usefulness and ease of use have brought us valuable knowledge and can help us contextualise meaning, our answer would again be both yes and no.
As we have mentioned earlier users meaning upon Dankort app did not help us to fully understand if that implied the user's intentions to continue or to adopt a Dankort app practice. Whereas, a user's positive or negative attitude towards usefulness and ease of use, indeed helps us more to contextualise meaning into something more palpable, as it describes in a more detailed manner, the user's intentions to either discard or to use Dankort app.

On the other hand, as we have discussed throughout this section, we still believe that meaning in itself is easy to understand in the case that we wish to contribute with our paper, whereas the add on with perceived usefulness and ease of use, should be seen as a contribution for service providers, who wish to investigate where their target groups in the mobile payment landscape, moves and expects of new payment solutions.

9.3 Summary

To follow up on the question we asked ourselves at the beginning of this discussion, if DOI and TAM then have contributed to practice theory.
We can both argue that practical theory, TAM and DOI are a perfect trio, but still not quit. It depends a lot on what you want with this combination, and it requires that you both know your audience and are aware of how you want your end product to be like.
We have chosen to do a 'two in one' paper, where we both want to convey this knowledge to Nets and other interested parties, but we also want to contribute to the literature that already exists in the field.

If you want to challenge practice theory and wishes to get more specific details on practices, then we believe that it can be extremely rewarding to supplement the practical theory elements, with TAM and DOI inspired constructs. These constructs, have helped us to understand some of the exploratory elements we encountered, where we do not believe that our practice theory analysis covered. It can be seen as the perfect match if you both want the study of the practice theory, but also want the broad and more specific analysis you can get with inspiration from TAM and DOI.
On the other hand, it can also be seen just the opposite. As we started by presenting, practice theory has the advantage that it is easily understandable and therefore easy to convey.

The three practical theoretical elements are incredibly broad and contain many sub-elements, elements that do not necessarily need to have an impact on the final analysis and conclusion of the practice, precisely because all of these sub-elements exist in the three main elements. That being said, it does not mean that these sub-elements are not found in a practice theoretical analysis; they do not get their own 'element'. This is a great advantage when it comes to reducing it to non-specialists, companies and other people who do not know this type of academic science. If you want to do a dissemination task and want to make it easy to understand for many different interests, we do not see it as a perfect trio.

9.4 Have our paper then managed to contribute?

We believe that we have taken the best of both worlds. With inspiration from the practice theory perspective of studying a practice, we have an in-depth understanding of how payment practice with Dankort app at the given moment is and can be further established.
We have managed to collect important knowledge based on the practical triangulation, which has given us an understanding of which elements are already present and which elements are not yet fully in place. In addition to including practice theory, we have chosen to include constructs from TAM and DOI, which we were inspired by earlier research in the mobile payment landscape. These constructs have helped us to answer where the grey zones between the three elements are to be found, and what they consist of.

A combination we have discussed above that has given us a whole new view of the payment practice.

From the start, we wanted to investigate the payment practice using Dankort app, precisely because no combination of a qualitatively oriented and practice-inspired study of Dankort app had previously been made in Denmark. We wanted to fill this knowledge gap with our techno-anthropological competencies, which are mainly in the qualitative part. Since then, however, we have become aware that not only is the knowledge gap around Dankort app we have tried to contribute to. We have also challenged Practical Theory, both on its structure and with its content, with respect for what it can without our contribution as well. A pure practice theoretical analysis was not quite enough for us, as we, moreover, needed more specific words, we could add to our findings. Especially since practical elements from practice theory, turned out to be different in practice.

Elements such as the Bluetooth box, the importance of service employee's knowledge upon mobile payment solutions, trust and security were, as mentioned earlier, difficult to place in one of the three practical theory elements, as they are not necessary for the practice - at least not for all users. We find this finding as evidence that the practice theory has some shortcomings, and therefore we certainly believe that we have been able to contribute with a new way to see the payment practice.

Besides that, we have also argued that we have chosen to do a communication task, precisely because Dankort development is something that affects the vast majority of the Danish people. We, therefore, wanted to contribute with a new way of seeing the Danish consumers' payment practices, both in order to show Nets how consumers practice mobile payment, but also contribute with general knowledge to the Danish people and their payment habits. Last but not least, we also think that we have contributed to the literature. We have come up with an examination that has not been seen before, we have tried to combine a classic socio-technical theory as practice theory with constructs that comes from a slightly different world. In this way, we have achieved to show the payment practice with others and perhaps more nuanced eyes.

10. Conclusion

The overall idea with this thesis was to investigate how an innovation as Dankort app, have been introduced to the Danish consumers, and how it potentially could change the Danish consumers already existing payment practice, which we have found to be primary with the contactless Dankort.

As we also touch upon in the analysis, the implementation of new innovation takes time, and as we are looking at Dankort app, in a period where the app indeed is out there, but still seems to be more or less unknown to many consumers, it can be hard to get a clear vision on, where the practice with the app actually happens and which attitudes the consumers have towards using it.

It is, therefore, necessary to have in mind, that many individuals out there, have not yet obtained the practice, as they do not know it exists. If they know about Dankort app, they do not practice it due to lack of meaning or perceived usefulness, or they are satisfied with their already existing payment practice. Based on analysis parts 1 and 2 can we conclude that we do not yet believe that Dankort app can be called an established practice, but it is on its way. As described earlier, from the outset, we have been aware that it is quite natural that challenges arise in an implementation process like this. We will therefore not conclude that the Dankort app cannot become an established practice on that argument alone. Again, it is an essential point that Dankort app is meant as a supplement and not a substitute for Dankort as we know today. Dankort app is therefore still a proto-practice and due to a lack of knowledge about Dankort app we can, therefore, see that it is still primarily early adopter who uses it.

In order to answer the first part of our problem formulation, have we conclude that Dankort app's users find that there are too many payment options on the market, we have even experienced up to several people in doubt about which payment app they used. The many mobile payment solutions can potentially prevent Dankort app from spreading and thus, the practice will not be able to go from one formulation to another.

Likewise, we have experienced that the constant development in the payment market can cause the Danish consumer's ability not being 'able to' acquiring the necessary skills to use Dankort app before either Nets or other companies come up with other alternatives.
Moreover, we conclude that many users do not yet know about the features Dankort app provides. Again, if they do, features such as receipts loses some of its benefits, as the feature does not work everywhere.

We have also investigated the challenges Nets has encountered throughout the implementation process. Based on our fieldwork and analysis, we have found some of the elements that we believe have been most evident. Here we have seen the challenges with many different card terminals on the market, which means that users both find it difficult to juggle between different ways of paying, but also where to pay with Dankort app. Moreover, we also found that it is difficult for users to get help or advice from the staff, as there are not so many who know about Dankort app and how it works.

There is also a challenging one the specific technology that Dankort app is built up of, as mentioned many times in this speciality using Dankort app Bluetooth, whereas the contactless Dankort uses NFC, we have found out that there is part of Dankort apps users, there miss the NFC technology as they think it works better. The technical challenges have been a big challenge at the beginning of Dankort app lifetime, but Nets has had a hard time solving this particular problem, as it is out of their hands. A big challenge Nets also deals with is that there are still many Danish consumers who cannot yet see the meaning of using the Dankort app - many believe that their normal Dankort is enough.

However, we have found that one of the solutions to this could be found in another of Nets challenges, namely their competitors. There is no surprise in that Nets and Dankort app is being challenged by the massive competition that is currently being found is on the mobile payment market, and it does not seem like it is lagging just now. Just through the time we have studied and written this thesis, so much has happened in the mobile payment market. During this process, we can see that the Danish consumers are beginning to gain a more excellent knowledge of mobile payment and also see a meaning in using it.

This interest can help open up the interest and thereby enable more Danish consumers to acquire the necessary skills it needs to be able to pay with Dankort app - as well as other mobile payment solutions. It is here where Nets and Dankort app must be able to prove its worth, precisely so that the Danish consumers choose Dankort app rather than their competitors.

Finally, can we conclude that practice theory has been incredibly rewarding for us and this study on mobile payment practices, it has helped us with an understanding of the Danish consumer's payment practices and payment habits. However, we also became aware of some of the practical theory's challenges, which we in this thesis have called grey zones. Based on analysis part 3, can we conclude that practice theory has both its advantages and disadvantages.

The advantage is clearly that practice theory can provide an understanding and insight into practices, it is easy to understand and to convey on, which has been an essential point for us. We have, however, also found some of practical theory disadvantages, among other things it can be a disadvantage that it embraces so broadly, which mean that we have not been able to get all our findings into one of the three practical theoretical elements. Instead, as elaborated on in analysis part 3. we have with the help of constructs from TAM and DOI, been able to explain some of the essential elements that we do not quite think could be explained only with practical, theoretical glasses. TAM and DOI have helped to give us a broader and more in-depth understanding of the practices behind Dankort app. This thesis has, therefore, both contributed with a practice-theoretical analysis, as well as a broader and more detailed perspective with inspiration from TAM and DOI.

11. Further research

In this section, we present some suggestions on how we can further investigate mobile payment. As we have also presented along the way, Dankort app is far from the only payment solution on the Danish market. The Danish consumers have many different payment solutions to choose from, some more popular than others. The development is going fast on this point and we can see that the many payment solutions have already developed a lot just from when we started out this thesis in January 2019 until now. Several of the Dankort app competitors are mentioned in our case, payment solutions like Apple Pay, Google Pay and most accepted MobilePay has separated during our fieldwork. MobilePay has been the front runner for mobile payment in Dankort and one thing found out during our fieldwork was that there are still many consumers who only know about MobilePay when we talk mobile payment. MobilePay has been at the forefront when mobile payments became something consumers demanded. It started with just being a consumer to consumer solution, but over the past few years, MobilePay has also taken in stores and supermarkets and was thus the first to allow Danish consumers to pay with their smartphone.
It had therefore been interesting both concerning this paper, but also for the literature to make a study on MobilePay, which to a large extent has helped to change the Danish consumers' payment habits and practices. It would also have been enriching to make a comparative study on the Dankort app and MobilePay, as we anticipate them to be the two largest payment solutions on the Danish market today.

Another perspective could also be to look more into Internet commerce. According to our informant from Nets, Thomas, the next step is that their users must be able to pay with Dankort app on several Internet sites. After all, it is no secret that Internet shopping is the future, as more Danish consumers are shopping, both food and other things online. It could, therefore, be interesting to investigate to what extent the Danish consumers are willing to choose Dankort app rather than all the other payment options. We can see that MobilePay is thriving on the internet, but there are also other more international opportunities on the market.

In this thesis, we have found that some of the Danish consumers have a national feeling towards Dankort and trusts more on Dankort and Nets than they do on some of the more international solutions. Based on the knowledge we have gained through this thesis; it might be interesting to investigate the national feeling more closely and set a hypothesis about whether it is enough to get the Danish consumers to keep having the Dankort as their preferred means of payment - also on the Internet.

At the end of our writing process, VISA also came out with their own mobile payment solution. It works in the same way, but VISA is, of course, international, which means that you can pay with VISA in all countries, where you can only pay with the Dankort app in Denmark. It is clear that future payment solutions will be on the mobile - or perhaps payment with the body. However, there is no doubt that we are moving further away from cash and maybe the physical payment card as we know it today. As we have described early on in the assignment, most Danish consumers have a VISA-Dankort, which is a card that is both a VISA and a Dankort and, therefore, in fact, VISA's mobile payment solution can become a significant competitor to Dankort app. Therefore, it might be interesting to investigate how Nets and Dankort could maintain their users and what they could do to remain the Danish consumers' preferred means of payment in the future.

Finally, it could also be very exciting and rewarding to gather on our analysis part 3, as well as our discussion in which we discuss how we have contributed to the existing literature. It is therefore exciting to do something that has not been done before, and we believe we can find the right mix of analytical tools then merging practice theory and constructs from TAM and DOI. Here it could be instructive to research further on what the two 'theories' can give to each other and what challenges lie in combining science from two different scientific theoretical directions.

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