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### Abstract

Mobile payment services have, thus far, failed to entice consumers. An apparent conclusion is that these services have failed to meet consumers' payment needs. Deeper understanding of consumer adoption motivations is thus needed to be able to develop and launch mobile payment services successfully. For more than a decade researchers have tried to uncover the generic determinants of technology adoption common to most if not all technologies. Even when armed with this knowledge mobile payment services have fallen short of gaining customer bases large enough to sustain them. This suggests that the current academic knowledge is either ignored by practitioners or that the knowledge of consumer adoption is far from clear. Our paper seeks to find out if the generic technology adoption models are sufficient to explain factors consumers consider when they decide whether or not to adopt mobile payment services. In particular, we develop two models in the payment context. One of them models the determinants of the mobile payments services adoption while the other models the determinants of electronic invoicing adoption. The comparison of the model structures suggests that perceived ease of use seems to be the least common denominator for consumer adoption of these information technology based services while the context of technology adoption determines both the non-differentiating and the differentiating determinants of technology adoption.

**Keywords:** Mobile Payment Systems, Electronic Invoicing, Mobile Payment Research, Technology Adoption and Diffusion, Empirical Research

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# Understanding Changes in Consumer Payment Habits - Do Mobile Payments Attract Consumers?

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## Abstract

Mobile payment services have, thus far, failed to entice consumers. An apparent conclusion is that these services have failed to meet consumers' payment needs. Deeper understanding of consumer adoption motivations is thus needed to be able to develop and launch mobile payment services successfully. For more than a decade researchers have tried to uncover the generic determinants of technology adoption common to most if not all technologies. Even when armed with this knowledge mobile payment services have fallen short of gaining customer bases large enough to sustain them. This suggests that the current academic knowledge is either ignored by practitioners or that the knowledge of consumer adoption is far from clear. Our paper seeks to find out if the generic technology adoption models are sufficient to explain factors consumers consider when they decide whether or not to adopt mobile payment services. In particular, we develop two models in the payment context. One of them models the determinants of the mobile payments services adoption while the other models the determinants of electronic invoicing adoption. The comparison of the model structures suggests that perceived ease of use seems to be the least common denominator for consumer adoption of these information technology based services while the context of technology adoption determines both the non-differentiating and the differentiating determinants of technology adoption.

*Keywords:* Mobile payment systems, electronic invoicing, mobile payment research, technology adoption and diffusion, empirical research

## 1. Introduction

Changes in payment habits relate to the developments of goods and services commerce. Central banks, banks, other payment service providers, and merchants have several reasons to promote more effective and efficient payment habits. During the recent years, several new payment services have been introduced and existing services have been improved including their “electrification” and “mobilization”. Consumers need to evaluate these developments and decide whether or not to change their payment habits.

Researchers have investigated the above described consumer evaluations mainly from the perspectives of technology adoption and technology diffusion. A majority of earlier studies have investigated the adoption of a single technology and/or service, such as the adoption of mobile payments (e.g. Chou et al, 2004; Dewan and Chen, 2004), or a single payment instrument/technology (e.g. Plouffe et al, 2001). Yet, the acceptance of a new technology usually means, that the use of one or more previously applied technologies has to decrease relatively or absolutely as the consequence of such acceptance. In typical consumer markets new innovations compete for the attention of consumers against several existing and constantly developed alternatives. This is true also in the payment services market. Changes in consumer payment habits

– e.g. willingness to pay with mobile devices - should be investigated by taking into consideration the impact of relevant alternatives to mobile payments.

Another limitation of many previous studies is that technology adoption has been researched with theoretical constructs designed to describe job performance improvements in organizational contexts. This approach is characteristic for the technology acceptance model (TAM) (Davis 1989; Davis et al, 1989; Venkatesh and Davis, 2000), perceived characteristics of innovations (PCI) model (Moore and Benbasat, 1991), and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al, 2003). Changes in consumer payment habits happen in social market conditions where also convenience and other non-efficiency factors impact consumer evaluations. According to a proverb old habits die slowly.

To overcome these limitations we conducted a research in which we investigated the changes of 6 payments habits for purchase payments and 5 payment habits for bill/invoice payments. The change of a payment habit was measured as the intention to decrease or increase the use of the payment habit during the next 6 months and during the next 5 years. For data collection a self administered survey was sent to 2000 randomly selected Finnish consumers aged between 18 and 65 years. The response rate of acceptable responses was 47.4 (948 responses).

Statistically significant changes were detected in the use intentions of all 11 payment habits. As expected the use intentions decreased for some habits (use of cash, payments made in bank offices) and increased for other habits. The survey instrument also captured respondents' demographic characteristics as well as their attitudinal evaluations of desirable payment instrument features. The theoretical constructs were taken from established theories, mainly from the theory of planned behavior (TPB), Ajzen and Fishbein (1980) and the diffusion of innovations theory, Rogers (1995). Attitudinal and demographic variables were used to analyze which factors are related to the intention to change (increase) the use of mobile payments and electronic invoices.

Our research offers one additional research design contribution. Consumers may evaluate several characteristics of payment habits similarly independently of whether or not they intend to change their payment habits, e.g., adopt mobile payment services. One of the goals of our research is thus to determine, if it is possible to identify non-differentiating facilitators and differentiators. Facilitators are characteristics which an innovation has to have in order to become able to diffuse and which consumers perceive similarly, whereas differentiators result in differences in the (payment) adoption behavior. This idea proved useful. For example, according to the findings of our study, consumers who intend to change the use of mobile payments or electronic invoices evaluate the importance of trust similarly to those who do not intend to change their behavior. The non-differentiating nature of trust – and some other factors - is important, since trust came out as the single most important factor that payment instruments need to have.

Our paper includes two methodological contributions to adoption research in the context of mobile (payment) services. Firstly, we show how it is possible to move from the adoption research of one innovation to more realistic scenarios where an innovation has to compete against other innovations as well as against legacy services in market environments. Secondly, instead of only discovering the perceived value determinants of an innovation we show how it is possible to examine which of those determinants are decisive for behavioral acceptance and use intentions. The main contribution of our empirical research findings is the identification of facilitators and differentiators for mobile payment and electronic invoice acceptance. With mobile

payments Finnish consumers seem to require compatibility to their current payment habits whereas with electronic invoices compatibility seems to be less important.

## **2. Payment, payment habits, and changes in payment habits**

Payment is defined as the transaction and the related process through which funds are transferred from the payer (buyer, transmitter of funds) to the payee (seller, receiver of funds) directly or via an intermediary. Payment transactions are carried out with payment instruments. A payment transaction is usually the compensation for (1) the purchase or rent of a physical, digital or intellectual product or service, or (2) a financial transaction between the parties.

Payment habit is defined as the use of a payment instrument to commit a payment. Examples of payment habits are the use of a bank's on-line debit card to pay for a purchase, or the use of an electronic invoice to pay an invoice. Consumers have two generic needs for payment instruments and habits; payments for purchases and payments of bills/invoices (credited payments).

During recent years legacy payment services have been improved actively including their electrification and mobilization. Also several new electronic and mobile payments services have been launched. As relatively few payment service launches have succeeded one may ask, why. A generic answer is that changes in payment services and habits are necessary to respond to the developments of goods and services commerce. Some more specific reasons are:

- Central banks promote the effectiveness, efficiency, and reliability of financial markets. Electronic and mobile payments are seen as means to decrease the costs of payment transaction processing and coin and notes circulation, counterfeiting included. In European Union the creation of the harmonized Single European Payment Area (SEPA) is especially important for future development.
- Banks and payment service providers generate revenues from payment transaction float and from payment transaction fees. For them the development of electronic, mobile and other payment habits offer potential to decrease the costs of payment transaction processing and possibility to provide new access channels to their payment and other financial services.
- Merchants have interests to lower the costs of their payment infrastructures and to reduce fraud. Merchants also want to provide alternative purchase channels to their clients. Lack of suitable trusted and easy to use payment instruments is often seen to slow down the development of electronic and mobile commerce.

Several factors impact consumers' evaluations concerning the use of payment habits. Firstly, consumers have become accustomed to the use of multiple payment habits (instruments) in responding to different payment needs. Secondly, payment habits (instruments) become all the time more electronic and mobile. The widespread diffusion of mobile phones, Internet, and information technologies in general speeds up this development. Thirdly, as indicated above central banks, banks, payments service providers, and merchants have interests to influence consumers' payment habits, for example via marketing and pricing. Finally, payment infrastructures and commerce cultures differ between countries. Compatibility to prevailing payment infrastructure and commerce culture is needed.

To understand how payment habits change we organized a research in which 6 payments habits for purchase payments and 5 payment habits for bill/invoice payments were investigated. These 11 payment habits are listed in Table 1.

<i>Payment of Purchases with</i>	<i>Payment of Bills/Invoices (credited payments)</i>
<ul style="list-style-type: none"> <li>• Coins and notes</li> <li>• Bank card (off-line/on-line debit card)</li> <li>• Visa electron</li> <li>• Credit card</li> <li>• Internet bank “buttons” (Internet purchases)</li> <li>• Mobile phone (for example travel tickets, parking fees, vending, ...)</li> </ul>	<ul style="list-style-type: none"> <li>• In a bank’s office (service counter)</li> <li>• In an Internet bank</li> <li>• With a direct transfer (authorization of direct transfer)</li> <li>• With a mobile phone in an Internet bank (mobile access)</li> <li>• With an electronic invoice</li> </ul>

Table 1. Payment habits investigated in this research

Changes in payment habits were measured as intentions to decrease or increase the use of each payment habit during the next 6 months and the next 5 years. An example of survey questions is shown below. Similar questions were asked concerning all the 11 investigated payment habits.

	Never				All the time		
<b>Payments with a mobile phone</b>							
Now I pay for purchases with a mobile phone (for example travel tickets, parking fees, vending,...)	1	2	3	4	5	6	7
During the next six (6) months I intend to pay for purchases with a mobile phone	1	2	3	4	5	6	7
Five (5) years from now I intend to pay for purchases with a mobile phone	1	2	3	4	5	6	7

As the payment infrastructure and commerce culture impact the selection of payment habits, the characteristics of the Finnish consumer payment services market need to be described. The Finnish Bankers Association (e.g. 2004) and The Bank of Finland (e.g. Paunonen and Jyrkönen, 2003; Jyrkönen, 2004) have for years collected statistical information about the use volumes of payment instrument and payment habits. Although this data aggregate the volumes of all payment instrument users, recent statistics indicate, e.g., that the use of bank cards (off-line/on-line) has surpassed the use of cash in consumer payments for purchases and that cheques have been made redundant. Similarly Internet banking payments clearly dominate consumers’ payments for bills/invoices (approximately 65 %) and the proportion of consumer bills/invoices paid in bank office service counters has fallen close to 5 %.

### 3. Research model

Research on technology acceptance and use rests largely on two separate research streams; diffusion of innovation theories (Rogers, 1995; Moore and Benbasat, 1991) and theories on human behaviour, especially the theory of reasoned action (TRA) and



its extension the theory of planned behaviour (TPB) (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980; Ajzen, 1991, 2002). In information systems research, Davis applied TRA and presented the technology acceptance model (TAM) (Davis, 1989; Davis et al 1989). Several extensions to TAM have later been presented (see e.g. Legris et al, 2003) and a unified theory for the acceptance and use of technology (UTAUT) has been proposed (Venkatesh et al, 2003).

Diffusion of innovations theory by Rogers (1995) determines five innovation characteristics that affect technology adoption; relative advantage, complexity, compatibility, trialability, and observability. Similarly, TAM proposes that perceived ease of use and perceived usefulness impact the acceptance and use of information systems technology in organizations. From diffusion and TAM theories Moore and Benbasat (1991) designed a specific measurement instrument for IS adoption research named perceived characteristics of innovation (PCI). PCI enhances the innovation characteristics with the constructs of image, visibility, result demonstrability and voluntariness. Also trust has received much attention in prior research as an adoption determinant (e.g. Jarvenpaa et al 2000; McKnight et al, 2002; Gefen et al, 2003).

According to the theory of planned behavior, human action is guided by three kinds of considerations: behavioral beliefs, normative beliefs and control beliefs (Ajzen, 1991, 2002). Behavioral beliefs are beliefs about the likely outcomes of a behavior (e.g. the use of mobile payment services) and the evaluations of these outcomes. As an aggregate behavioral beliefs produce a favorable or an unfavorable attitude toward the behavior. Normative beliefs are beliefs about the normative expectations of others (e.g. consumer's perceptions about his/her bank's wishes regarding the use of mobile payment services) and motivation to comply with these expectations. As an aggregate normative beliefs create perceived social pressure or subjective norm. Control beliefs are beliefs about the presence of factors that facilitate or impede (e.g. poor mobile device use skills) the performance of the behavior and perceived power of these factors. As an aggregate control beliefs produce perceived behavioral control. In combination, attitude toward behavior, subjective norm, and perceived control results in the formation of a behavioral intention (e.g. to increase the use of mobile payment services). Given sufficient amount of actual control over the behavior, humans are expected to carry out their intentions when the opportunity arises. According to the TPB belief constructs have to be determined for each evaluated behavior. A common approach in adoption research is to start from the factors described in diffusion, TAM, and other relevant theories, and to combine and verify them with experts' opinions.

We followed this approach and developed the research model shown in Figure 1. Note, however, that we use the research model of Figure 1 to describe potential evaluative factors that may impact changes in consumers' payment habits. The following considerations further specify our use of the research model:

- Instead of the adoption intention of a single innovation we capture the changes in the use intentions of 11 different payment habits.
- In particular, we investigate and compare beliefs and demographic factors which impact the changes in the use intentions of mobile payments and electronic invoicing. It is possible that different factors impact the changes in the use intentions of these two payment habits.
- We investigate and compare which of the beliefs and demographic factors are facilitating necessities and which are decisive differentiators for intentions to change the use of mobile payments and electronic invoicing.

## 4. Survey Methodology

The empirical part of the research consisted of three phases. We augmented the research model with individual and focus group interviews. We developed the final survey questionnaire with an expert panel and tested it with a pre-study. Finally, we collected data with a self administered mail survey sent to 2000 randomly selected Finnish consumers aged between 18 and 65 years. The aim of the mail survey was to collect a sufficiently large data for statistical analyses.

### 4.1 Survey Instrument Development

We developed the survey instrument through a multi-step process. We first identified relevant theories on diffusion/acceptance of innovation and human behavior, mainly TPB. Diffusion/acceptance theories provide measurable determinants for the evaluation of payment habits, whereas TBP provides a model in which evaluation based beliefs are linked to intentions to use payment habits.

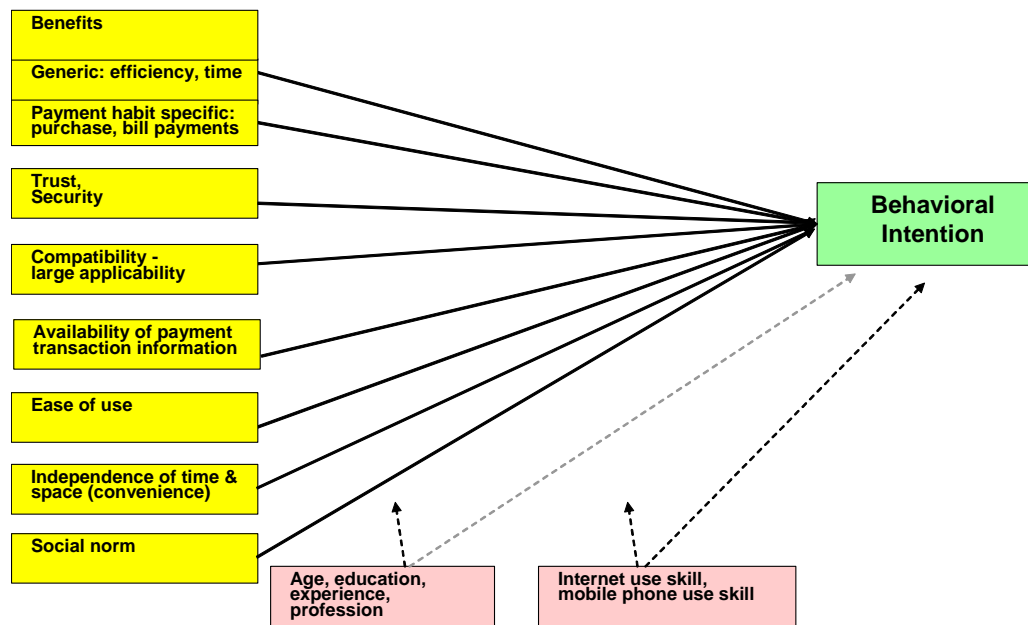


Figure 1. Research Model

In individual interviews university students and central bank employees were asked to answer to questions based on the indirect measures of TPB (Francis et al, 2004; Ajzen 2002). An example of interview questions regarding subjective norm is shown below.

Are there any individuals, groups, or enterprises (for example banks) who try to impact you so that you would use certain payment habits?

Are there any individuals, groups, or enterprises (for example merchants) who try to impact you so that you would avoid the use of certain payment habits?

With the help of MBA master thesis student we also organized six focus group interviews in which groups of 4 to 6 individuals discussed what payment habits they use currently and what factors impact their use of payment habits in the future. Discussions were recorded and transcribed into text. The purpose of both the



individual and the focus group interviews was to test and augment our research model, to identify items missing from established diffusion/acceptance theories, and to gain preliminary understanding about factors that impact the changes of payment habits.

The final version of the survey questionnaire was developed from several comment rounds of an expert panel consisting of university and central bank researchers as well as central bank payment systems experts. Prior to its use, the survey questionnaire was tested by administering a pilot survey among central bank's employees.

## 5. Survey and Survey Characteristics

Survey respondents were sent a printed questionnaire with a prepaid response envelope. The mailed letter included also the address and the personal keyword to an electronic version of the questionnaire. Thus respondents could answer to the questionnaire via mail or electronically. Respondents were motivated with a lottery, in which two 500 euro travel vouchers and 10 sets of a special Finnish coin selection were drawn among those who returned a separate lottery ticket or lottery request.

The survey was mailed to respondents during the second week of October in 2005, and a second round during the first week of November in 2005. Cumulatively 978 responses were returned and of these 948 qualified for statistical analysis. Thus the response rate of acceptable responses was 47.4 %, which we deem high. The quality of responses was determined with the completeness of responses and with feedback provided to open questions. Based on voluminous feedback we conclude that the development of payment habits interest many Finnish consumers.

## 6. Results

### 6.1 Demographics

The demographic characteristics of respondents are shown in table 2. The survey was administered to consumers who are expected to impact consumer habits most. Consumers below 18 years are legally under aged and consumers above 65 years are retired.

		Frequency	%-share
Gender	Female	559	57,3
	Male	406	41,6
	Cumulatively	965	98,9
Missing Data		11	1,1
Cumulatively		976	100
Age	18 - 19 years	2	0,2
	20 - 29 years	156	16,0
	30 - 39 years	196	20,1
	40 - 49 years	228	23,4
	50 - 59 years	279	28,6
	60 - 65 years	111	11,4
	Cumulatively	972	99,6
Missing data		4	0,4
Cumulatively		976	100

Table 2. Demographic characteristics of the respondents

Profession	Entrepreneur	92	9,4
	Upper clerical	139	14,2
	Lower clerical	155	15,9
	Worker	329	33,7
	Student	80	8,2
	Retired	110	11,3
	Other	62	6,4
	Cumulatively	967	99,1
Missing data		9	0,9
Cumulatively		976	100
Education	Elementary, high-school	169	17,3
	College	85	8,7
	Professional second grade	430	44,1
	Professional university	129	13,2
	University	160	16,4
	Cumulatively	973	99,7
Missing data		3	0,3
Cumulatively		976	100
Annual Revenues	Less than 10 000 euros	144	14,8
	10 001 - 20 000 euros	222	22,7
	20 001 - 30 000 euros	312	32,0
	30 001 - 40 000 euros	163	16,7
	Over 40 000 euros	113	11,6
Cumulatively		954	97,7
Missing data		22	2,3
Cumulatively		976	100

Table 2. (continued)

Based on previous research (e.g. Venkatesh et al, 2003), the most important demographic characteristics which have been detected to explain consumer behavior are gender, age, education, income level, and profession. These characteristics also cumulate relatively well consumers' abilities and needs to adopt new innovations, payment habits included.

In addition to the basic demographic characteristics, shown in Table 2, we also asked respondents to evaluate their mobile phone and Internet skills on a seven step scale (from 4 to 10). This subjective scale is the same as used in Finnish elementary and secondary schools to grade study performance and was therefore familiar to respondents. The average score for mobile phone skills was 7.52 and 7.62 for Internet skills. Of respondents 84 % use their mobile phone daily and 82 % has at least tried Internet.

## 6.2 Changes in payment habits

A clear majority of respondents indicated that within a period of six months they intend not the change their payment habits. The proportion of non-change varied between 84 and 92 % by payment habit. Within a period of five years 14 to 45 % of respondents indicated intentions to change payment habits. Changes were thus detected in all payment habits, although their magnitudes differed. The direction of absolute changes was the same between indicated changes in 6 months and in 5 years. The absolute use of cash for purchase payments and the use of bank's offices to pay bills seem to decrease further during both periods and the absolute use of all other payment habits seem to increase as Table 3 indicates.

To determine the significance of these changes we conducted a paired differences analysis between the current use of payment habits and future intentions. All paired differences are statistically significant or very significant with the exception of the change within 6 months in the use of cash (coins and notes) to pay for purchases. Also these results are shown in Table 3.

At the moment of the research, cash was the most used payment habit to pay for purchases among the six investigated payment habits followed by on-line bank cards, credit cards, Internet bank buttons, Visa Electron, and mobile payments. Note that that our measure captures only the volume of transactions not their monetary value. Changes within 6 months are relatively small, whereas in five years bank cards (off- and on-line) seem to become the most used payment habit. The use of credit cards and mobile phones seems to grow relatively fastest.

In the payment of bills/invoices Internet bank dominates clearly and seems to keep its dominant position also in the future. However other electronic and mobile payment habits grow faster than the payment of bills/invoices in an Internet bank.

Of the demographic characteristics age and income level are systematically and statistically significantly related to changes in payment habits. Lower age is correlated ( $p=0.000$ ) to the intention to increase the use of mobile phones to pay for purchases, and to the intention to pay bills with electronic invoices. Higher income is positively correlated with mobile phone payment habit ( $p=0.006$ ) and with electronic invoice payment habit ( $p=0.000$ ).

	Paired Samples Statistics				Paired Differences				
	Aver.	N	St. dev	St. Err	Aver.	St. dev	St. Err	t	p (2-sided)
Payment of purchases with coins and notes									
Now	5,143	849	1,734	0,060					
6m	5,125	849	1,735	0,060	0,018	0,430	0,015	-1,197	0,231
5y	4,530	849	1,836	0,063	0,612	1,014	0,035	-17,604	< 0,000
Payment of purchases with on-line bank card									
Now	4,859	849	2,217	0,076					
6m	4,901	849	2,154	0,074	-0,042	0,474	0,016	2,607	0,009
5y	5,225	849	1,972	0,068	-0,366	1,138	0,039	9,375	< 0,001
Payment of purchases with Visa Electron									
Now	1,906	849	1,786	0,061					
6m	1,973	849	1,796	0,062	-0,067	0,608	0,021	3,219	0,001
5y	2,211	849	1,841	0,063	-0,305	1,379	0,047	6,447	< 0,001
Payment of purchases with a credit card									
Now	2,543	849	1,813	0,062					
6m	2,590	849	1,819	0,062	-0,047	0,587	0,020	2,339	0,020
5y	2,919	849	1,849	0,063	-0,376	1,176	0,040	9,308	< 0,001
Payment of purchases with Internet bank "buttons"									
Now	2,134	849	1,788	0,061					
6m	2,317	849	1,822	0,063	-0,183	0,693	0,024	7,681	< 0,001
5y	2,857	849	1,974	0,068	-0,723	1,194	0,041	17,656	< 0,001
Payment of purchases with a mobile phone									
Now	1,223	849	0,708	0,024					
6m	1,371	849	0,862	0,030	-0,148	0,557	0,019	7,760	< 0,001
5y	1,976	849	1,364	0,047	-0,754	1,199	0,041	18,316	< 0,001

Table 3. Paired difference comparisons of payment habit changes

<b>Payment of bills in a bank's office</b>									
Now	1,628	849	1,411	0,048					
6m	1,572	849	1,371	0,047	0,055	0,453	0,016	-3,557	< 0,001
5y	1,534	849	1,303	0,045	0,094	0,665	0,023	-4,132	< 0,001
<b>Payment of bills in an Internet bank</b>									
Now	5,380	849	2,427	0,083					
6m	5,494	849	2,332	0,080	-0,113	0,660	0,023	4,994	< 0,001
5y	5,661	849	2,161	0,074	-0,280	1,046	0,036	7,811	< 0,001
<b>Payment of bills with direct transfer authorization</b>									
Now	2,955	849	2,236	0,077					
6m	3,087	849	2,232	0,077	-0,132	0,511	0,018	7,526	< 0,001
5y	3,448	849	2,192	0,075	-0,492	1,177	0,040	12,191	< 0,001
<b>Payment of bills with a mobile phone in an Internet bank</b>									
Now	1,110	849	0,609	0,021					
6m	1,183	849	0,689	0,024	-0,073	0,442	0,015	4,817	< 0,001
5y	1,608	849	1,147	0,039	-0,498	1,064	0,037	13,642	< 0,001
<b>Payment of bills with an electronic invoice</b>									
Now	1,121	849	0,581	0,020					
6m	1,327	849	0,800	0,027	-0,206	0,596	0,020	10,082	< 0,001
5y	2,093	849	1,495	0,051	-0,972	1,424	0,049	19,885	< 0,001

Table 3. (continued)

### 6.3 Mobile payment and electronic invoice acceptance

The survey instrument included 27 attitudinal items descriptive to payment instruments. Respondents were asked to evaluate the importance of each item for the acceptance of a new potential payment instrument with a seven step Osgood scale. These 27 items were condensed into the following five factors with a principal component analysis; social norm, compatibility based on skills, trustworthiness, compatibility (large applicability) and ease of use.

We built two regression models, which were used to explain the use intentions of mobile payments and electronic invoices within a period of 5 years. The initial explaining variables of the models were the five factors found in the principal component analysis, current use of the payment habit, Internet skill, mobile phone skill, gender, age, education, income level, and profession. The outcomes of the regression models are shown in Tables 4 and 5. It is possible to detect from the final regression models that the common factors in both models are current use to the payment habit, and ease of use. These two payment habits also seem to attract upper clerical professionals.

Variables	Non-standardized coefficients		Standardized coefficients	T	Significance
	B	St. Error	$\beta$		
(Coefficient)	4,356	0,407		10,708	0,000
Mobile payment habit used currently	0,766	0,051	0,453	14,910	0,000
Education (elementary)	-1,169	0,458	-0,080	-2,552	0,011
Ease of use	0,533	0,167	0,099	3,192	0,001
Compatibility (large applicability)	0,479	0,166	0,088	2,892	0,004
Profession (upper clerical)	1,263	0,444	0,088	2,845	0,005
$R^2$	0,256				
Adjusted $R^2$	0,251				
F-test	55,825				0,000
Standard error of the Estimate	4,514				

Table 4. Factors that impact the acceptance of mobile payments

Variables	Non-standardized coefficients		Standardized coefficients	T	Significance
	B	St. error	$\beta$		
(Coefficient)	2,264	1,601		1,414	0,158
Electronic invoice habit used Currently	0,577	0,061	0,309	9,463	0,000
Ease of use	1,646	0,275	0,201	5,980	0,000
Internet skills	0,748	0,199	0,128	3,755	0,000
Profession (upper clerical)	2,563	0,694	0,125	3,694	0,000
Profession (entrepreneur)	2,613	0,854	0,101	3,059	0,002
$R^2$	0,200				
Adjusted $R^2$	0,195				0,000
F-test	37,667				
Standard error of estimate	6,899				

Table 5. Factors that impact the acceptance of electronic invoices

Based on the findings shown in tables 4 and 5, it is also possible to conclude that consumers demand more compatibility (habitual and large applicability) from mobile payments than from electronic invoices.

The results of regression analysis have the expected interesting feature. Of five attitudinal factors only one and two respectively differentiate respondents' use intentions of mobile payments and electronic invoicing. Does this mean that the other factors are not significant? No, this finding means that the evaluations of those respondents who intend to change their behaviour and those who intend not to change their behaviour are similar. Thus the factors that impact the acceptance of (mobile payment) innovations can be divided into facilitators and into differentiators. Facilitators are factors that need to be met in order for an innovation to become able to be accepted, whereas differentiators are factors that lead to actual changes in (payment) habits between individuals.

## 7. Conclusion

This paper has examined how Finnish consumers intend to change their payment habits. Statistical information collected by the Finnish Bankers Association and Bank of Finland were used as background material. The findings of this research are in line with the developments described in those statistics. Our research deepens the analysis on factors that impact the change in payment habits. We found that consumers regard five specific beliefs important for new payment instruments: social norm, compatibility based on skills, trustworthiness, compatibility (large applicability) and ease of use. Compared to many previous diffusion and acceptance studies – TAM especially - the role of compatibility and trust come out strongly.

Our study included several new payment habits which are currently used relatively little. Mobile payments and consumer electronic invoices are among such new payment habits. In the analysis of use intentions we discovered that factors impacting the use intentions of these payment habits fall into facilitating (e.g. trust) and differentiating factors (e.g. ease of use). We also discovered that current use of these technologies, age, and profession are differentiating factors. These findings extend and deepen the findings to previous studies.

The approach applied in our study facilitated a research in a more realistic scenario as compared to the adoption of a single technology in isolation. We propose that this kind of approach should be applied also in future studies.

The major limitations of our study are that it is not longitudinal, and that it describes changes in payment habits only in one country. We were also forced to limit the amount of investigated payment habits, for example, payments made through banks' call centers had to be excluded to make room for new payment habits. These issues can be covered in future studies.

Six months and five years are rather long periods, and consumers are mainly passively involved in the development of new payment instruments and habits. Therefore consumer evaluations and intentions expressed in this kind of studies can be very volatile, as consumers' actual control on behavior is limited. Caution is therefore recommended in interpreting the results of this study. In the light of past history, changes in payment habits are most likely larger in five years than indicated by the responses of this study.

Our study has at least two important implications for practitioners. The developers of payment services are likely to achieve more customers if they are able to separate facilitating and differentiating factors, and use that information in marketing. They also need to pay more attention to what happens to other services and technologies if their service becomes adopted, that is, at the expense of what services does a new service diffuse. Our study shows how it is possible to find answers to these considerations.

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