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Finnish consumers' expectations on developments and changes in payment habits: survey in connection with the research project "Finnish payment habits 2010"

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Abstract

The Bank of Finland's Finnish Payment Habits 2010 project predicts that Finnish payment habits will face substantial changes. The causes for these changes include: the standardisation and integration of European payment systems, development of payment services-related legislation and regulation at EU level, changes in payment services-related cost factors and pricing, and new opportunities offered by technological advances. The last few years have seen a surge in new payment instruments and services. Increasing reliance on information and communication technology is characteristic to the development of these payment instruments, the vast majority of which have however failed to entice consumers. To increase our understanding of changes in payment patterns, this report analyses consumer needs, tastes and payment habits as new payment systems are adopted.

Research data was collected in September 2005 using a mail-survey covering the central payment methods and addressed to 2,000 randomly-sampled Finnish consumers. According to our findings, security and trustworthiness are the most important characteristics of any new payment instrument. Other essential characteristics are the ability to produce good transaction-related information, compatibility with shopping and payment habits, accessibility, ease of use, time and cost savings, as well as time and place independence. New payment instruments – electronic billing and paying for shopping by mobile phone – are not likely to supersede conventional payment methods by 2010 when judged by the aforementioned characteristics: Trust and cost factors do not separate consumers well-disposed towards electronic bills and mobile payments from those set against these payment methods. A relatively restricted group of differentiating

factors was found. Ease of use is a common differentiating factor for both electronic bills and mobile payments adoption. Additionally, accessibility is a differentiating characteristic in mobile payments adoption.

Key words: payment habits, payment services to consumers, consumer behavior, diffusion of innovations, theory of planned behavior (TPB)

JEL classification numbers: A14, D14, L81,O33

Miten suomalaiset kuluttajat odottavat maksutapojen kehittyvän ja muuttuvan

”Suomalaiset maksutavat 2010” -tutkimushankkeeseen liittyvä kyselytutkimus

Suomen Pankin tutkimus
Keskustelualoitteita 32/2006

Tomi Dahlberg – Anssi Öörni
Rahapolitiikka- ja tutkimusosasto

Tiivistelmä

Suomen Pankin projekti ”Suomalaiset maksutavat 2010” ennakoi suomalaisten maksutottumusten olevan suurten muutosten edessä. Muutosten syitä ovat muun muassa eurooppalaisten maksujärjestelmien integroituminen ja standardoituminen, maksupalveluja koskevan lainsäädännön ja sääntelyn EU-tasoinen kehittäminen, maksupalvelujen kustannustekijöiden ja hinnoittelukäytäntöjen muutokset sekä tekniikan kehityksen tarjoamat uudet mahdollisuudet. Viime vuosina on kehitetty paljon uusia maksuvälineitä ja -palveluita, joille on tunnusomaista tieto- ja viestintätekniikan käyttöön perustuvan automaation lisääntyminen. Harva uusi palvelu on menestynyt. Maksamisen muutoksia koskevan ymmärryksen lisäämiseksi tässä tutkimusraportissa selvitetään kuluttajien tarpeiden, mieltymysten ja tottumusten vaikutusta uusien maksutapojen käyttöönottoon.

Tutkimusaineisto kerättiin syyskuussa 2005 postikyselyllä, jossa käytiin läpi keskeiset maksutavat. Kysely lähetettiin 2000:lle satunnaisotannalla poimitulle suomalaiselle kuluttajalle. Tutkimuksen tulosten mukaan maksuvälineen turvallisuus ja luotettavuus koetaan tärkeimmiksi uuden maksutavan ominaisuuksiksi. Muita tärkeiksi koettuja maksuvälineen ominaisuuksia ovat tiedon saanti maksutapahtumasta, yhteensopivuus ostamis- ja maksutottumuksiin, laajakäyttöisyys, helppokäyttöisyys, ajan tai rahan säästö sekä riippumattomuus ajasta ja paikasta. Uudet maksutavat – sähköinen lasku ja ostosten maksaminen matkapuhelimella – eivät vuoteen 2010 mennessä syrjäytä vakiintuneita maksutapoja arvioituna sen perusteella, mitkä ovat kuluttajille tärkeimpiä ominaisuuksia. Luotettavuus tai hinnoittelu ei erottele tärkeimpien uusien maksutapojen – sähköinen lasku ja matkapuhelimella maksaminen – käyttöön myönteisesti ja kielteisesti suhtautuvia. Suppea joukko tekijöitä erottelee maksutapojaan muuttavat maksutapojaan muut-

tamattomista. Maksutavan helppokäyttöisyys vaikuttaa aikeisiin maksaa sekä sähköisellä laskulla että matkapuhelimella. Yhteensopivuus (laajakäyttöisyys) ja helppokäyttöisyys ovat matkapuhelimella maksamiseen vaikuttavia erottelevia tekijöitä.

Asiasanat: maksutavat, kuluttajille suunnatut maksupalvelut, kuluttajakäyttäytyminen, innovaatioiden diffuusio, theory of planned behavior (TPB)

JEL-luokittelu: A14, D14, L81,O33

Contents

Preface

This research report contains the key findings of a survey by the Helsinki School of Economics and the Bank of Finland on changes in Finnish consumers' payment habits. The survey is part of the Bank of Finland research project 'Finnish Payment Habits 2010+'.

Several factors motivated the survey. In the next few years, the creation of the Single Euro Payments Area (SEPA) will lead to the introduction of common Europe-wide payment instruments and practices. To assess the impacts of SEPA, information is needed on payment habits used by key stakeholders, on changes in payment habits, and on factors affecting these changes. One stakeholder group is consumers. Banks compile statistics on the use of account-based payment instruments. Yet, statistics are not broken down by segments, for example, consumers or consumer groups. As part of its biannual survey on household savings and use of credit, the Finnish Bankers' Association acquires information on households' most often used payment habits for purchases and invoices. Consumers use several payment instruments, and therefore information is needed not only on what is the most commonly used payment habit but also on the overall use of payment habits. The aforementioned statistics and surveys do not forecast changes in the use of payment habits nor do they give reasons for such changes. Further, studies on consumers' intentions regarding payment habits in the period up to 2010 should cover new payment habits even if these are not yet widely used. Information and communication technologies (ICT) enable the development of new, more efficient and inexpensive payment instruments. In addition to efficiency and inexpensiveness, there are other factors that affect the use of payment habits. What are these factors? Which characteristics should new payment instruments have so that consumers will consider using them? Yet, only a portion of consumers will change their payment habits within a given period of time and adopt new payment instruments. Which characteristics are assessed differently by consumers about to change their behaviour and by those that are not?

The purpose of the survey was to produce new information eg on:

- Which payment habits do Finnish consumers use currently and which ones do they intend to use in future? Which characteristics of payment instruments and demographic factors affect the choice of payment habits?
- Is it justified to believe that consumers' intentions to change the use of a particular payment habit will translate into actual changes in behaviour? Which factors explain the changes?
- How important is compatibility with current payment habits?

- How does pricing impact the selection of payment habits?
- What hopes do consumers attach to the development of payment services?

This research report provides clear answers to the above questions and presents research data on several other factors concerning changes in payment habits. The above described purposes of the study suggest the differences between this survey and previous studies. The results of our survey show that the use of all the 11 payment habits studied will change within the next 5 years.

We wish to thank Eerika Keinonen for conducting the qualitative survey that preceded our survey. We utilised her Master's Thesis eg in developing our own questionnaire. Ms Keinonen's thesis contains interesting findings on this topic. During the research project, we received valuable support from several Bank of Finland staff members, particularly from Harry Leinonen, Adviser to the Board of the Bank of Finland. We cannot thank everyone in person, but we wish to express our deepest gratitude to everyone that has supported us. We also wish to thank all of the 978 consumers who responded to our survey. Their responses made this study possible.

Helsinki, 15 May 2006

Tomi Dahlberg Anssi Öörni

1 Introduction to research on changes in consumers' payment habits

Paying is one of the stages in purchasing a product or a service. In addition to purchases paid for immediately at point of sale, consumers also pay based on invoices. Differences in the payments of daily purchases and invoices have created a need for different types of payment instruments and habits. Consumers' needs, as well as eg the interests and actions of central bank, legislators, authorities, banks and merchants, all influence consumer choices of payment habits.

Research on changes in consumers' payment habits should take into consideration that payment instruments and habits are developed to both improve the efficiency of payments and to facilitate the easy purchase of products and services. The costs and efficiency of paying on purchases or invoices, eg lower fees, are often cited by experts on payment instruments and services as the objective of developing these services. Consumers also have other expectations, such as reliability and ease of payment, and they seldom understand the experts' terminology. We will discuss further the motivation for developing payment instruments and habits after we define the key payment concepts used in this research report.

1.1 Payment, payment habit and other key concepts

In recent years, a large number of new payment instruments and services have been developed, and existing instruments and services have been improved in various ways. This development has generated some new concepts of payment. At the same time, the contents of some other concepts have changed or refined. This has resulted in a lack of established concepts with commonly agreed definitions in this area of research. This is understandable because, in research as well as in practice, payment behaviour, instruments, services, technology, standards and other payment-related factors are looked at from numerous perspectives. We feel compelled to define the concepts most commonly used in this research report to improve its readability, and because even these concepts have several commonly used definitions.

We define a payment as a payment transaction and the related process of transferring funds from payer (purchaser, transmitter of funds) to payee (seller, receiver of funds), either directly or via an intermediary. Payments, ie transfers of funds, are carried out with payment instruments. Payment is usually either (1) a compensation for purchase, hire or use of a physical or immaterial good or service

or (2) a financial or other type of fund-transfer between the parties. The active party in the payment transaction can be either transmitter or receiver of funds, intermediary, or a combination of these.

Payment instruments have two commonly used, yet different classifications. Payment instruments can be classified by focusing on the payment process at the moment a product or service is purchased, hired or used. Accordingly, payment occurs either at the time of purchase, hire or use (cash or debit card as examples) or at another point of time (credit card or invoice as examples).[1] From the consumer's perspective payment by credit card or invoice is a two-stage process involving credit. First, the product or service is purchased or used with credit.[2] The accumulated credit or the invoice is paid later at an agreed time.

The second classification describing financial markets and transfer of funds, divides payment instruments into cash and account-based payment instruments. The distinguishing feature of this classification is that an invoice is not considered a payment instrument because funds are not transferred by the invoice. Only payment of the invoice, ie transfer of funds from the payer to the payee constitutes payment and use of a payment instrument.

We define a payment habit as the use of a payment instrument. Payment for a purchase with a debit card and payment of an invoice with an electronic invoice – more precisely, the authorisation of an electronic invoice payment – are examples of payment habits.

In this research report, we view consumers as buyers of daily purchases and as payers of invoices. Although the reason of a payment may be a repayment of a credit granted to the consumer or an investment made by the consumer, we do not make a distinction between such payment transactions and the purchase, hire or use of products and services.

In this research report and the underlying survey, we use the classification of payment instruments which describes financial markets and transfer of funds, because it is consistent with our definition of payment habit. Moreover, banks' statistics and studies by the Finnish Bankers' Association are based on this classification of payment instruments. The consistency of the classifications

[1] The classification is based on payment method (payment instrument category) used by the consumer at the moment of purchase, hire or use. Cash payment and direct debit/transfer (authorisations) are one-stage payment methods. For example, most Finnish debit cards (bank cards) are payment instruments used for direct debit/transfer of funds because a payment authorisation is also an authorisation to transfer funds from payer's account to payee's account. In the case of payment by credit card or invoice, the consumer's payment obligation also arises in connection with a purchase, hire or use. However, the final payment is effected separately via credit card or service invoice.

[2] Payment may take place also prior to purchase, hire or use (pre-payment) or during hire or use. But this does not alter the credit or two-stage nature of payment by invoice.

enable us to partially compare the findings of our survey with the above-mentioned statistics and studies.[3]

Increased use of ICT-based automation characterises developments in payment instruments. 'Traditional' payment instruments, such as coins and banknotes, are nowadays referred to as physical payment instruments. In addition to the physical method and payment instruments we now have electronic and mobile ones. Mobile payment is a special case of electronic payment. In our survey, mobile payment was conceptualised as a payment via a mobile phone, because at the time this was virtually the only available means to consumers to make mobile payments.

Making clear distinctions between physical, electronic and mobile payments is as difficult as defining other payment-related concepts.[4] We define electronic and mobile payment as follows: A payer (in our survey, a consumer) makes a payment single-handedly – except for possible user support – using a terminal (computer, mobile device), smart card and a smart card reader, or by using some other ICT enabled method.[5]

At present, most electronic and mobile payment instruments and habits imitate their physical predecessors or alternatives. For example, paying an invoice via Internet-banking is similar to paying an invoice at a bank branch. So-called contact/contactless ticketing and vending payments and the use of RFID (Radio Frequency Identification) technology in payments are examples of solutions that may lead to the development of payment instruments and habits that are purely electronic or mobile, that is, physical alternatives no longer exist.

Payment habits based on these new types of purely electronic and mobile payment instruments have so far been of minor importance to payment behaviour as a whole, even though purchasing eg Helsinki City Transport single tickets by mobile phone is considered a good success example of a type of mobile payment that quickly attracted large numbers of customers (Mallat et al 2006). Yet, it still has a physical alternative – cash. In the longer term, new types of purely electronic and mobile payment instruments may change payment habits as much

[3] One-to-one comparison is impossible because banks' statistics do not distinguish between consumers and other users of payment instruments. The Finnish Bankers' Association conducts biannual surveys on what is most frequently used payment habit by a consumer to pay daily purchases or invoices. By contrast, in this survey the use of 11 payment habits is studied, by habit and relative to other payment habits.

[4] For example, paying an invoice at a bank branch is considered a physical payment although the payment is effected by a clerk using an information system. By contrast, paying the same invoice using an Internet-banking solution is an electronic payment. Payment of a parking fee by mobile phone is considered a mobile payment even if the fee is transferred to an operator's invoice and the invoice is finally paid at a bank branch. According to the classification of payment instruments applied in this research report, transferring a parking fee to an operator's invoice does not constitute use of payment instrument.

[5] For example, in future a salesperson in a shop could provide user guidance for customer initiated payments. A POS (point of sale) terminal could serve as a smart card reader and a payment transaction processor.

as the still ongoing replacement of cash by debit and credit cards in daily purchases, or the use of Internet-banking to pay an invoice, instead of going to a bank. Our aim was thus to include as many electronic and mobile payment habits as possible to our survey, even if those habits are not yet widely used. For the same reason we left out some of the traditional payment habits such as payment of invoices using telephone-banking service.

1.2 Why do we need to study changes in consumers' payment habits?

As the findings of the survey – discussed later in the report – show, consumers assess that they will only slowly change their payment behaviour, that is, payment habits in purchasing products, using services or paying invoices. Consumers rely on established purchase and payment routines, ie they repeatedly use payment habits they have found to be good. If this is the case, why do we need research on changes in consumers' use of payment habits? And why has there been so much emphasis on the development of new payment instruments and habits in recent years?

(Consumers') adoption of innovations has long been a focus of research, both as a general phenomenon and as regards specific innovations, such as new payment services. In recent years, a large number of new payment instruments and habits have been launched in Finland and in other countries. The majority of these launches have failed. In 2002–2004, we studied consumer and merchant adoption of mobile payment solutions in Finland (eg Mallat and Dahlberg, 2005). During that period, about a dozen mobile payment solutions aimed at consumers were piloted and launched in Finland. At present, none of them are actively offered and most have been discontinued.[6] Failure also marks earlier developments in payment instruments and habits; eg payment via Wap banking services during the early years of the current decade and the Avant card. On the other hand, Visa Electron has succeeded where these solutions have failed. Why do some payment habits succeed in attracting consumer interest while others fail?

For more than a decade, researchers have been trying to define the generic factors that explain the adoption of most or all ICT-based innovations (eg Davis et al, 1989; Venkatesh et al, 2003). Development projects have failed even when these research findings have been made available to the developers of payment services. Even in light of possible difficulties in adapting these research findings,

[6] A similar Europe-wide history of failures can be found by examining a list compiled by Carat in 2002 on over 100 European electronic payment solutions (Carat, 2002). Most of the solutions are no longer available.

this raises the question whether generic ICT adoption and use models are sufficient to describe changes in the adoption and use of payment habits.

Earlier scientific studies have focused almost entirely on the adoption of a specific technology or service, eg mobile payment. Possible reasons for this are the theories and models most often used as the theoretical basis of research and the need to enforce manageability to research projects. For example, using the innovation diffusion theory (Moore and Bensasat, 1991) or the Technology Acceptance Model (TAM) (Davis, 1989) as the theoretical basis readily leads to a focus on the adoption of a specific (ICT) technology or technology-enabled service. Moreover, focusing on a specific technology or service increases the manageability of an empirical study. Parallel study of alternative payment habits, however, gives a more realistic and detailed picture of the factors that affect changes in the use of individual payment habits than does the study of a single payment habit. Increased use of a certain payment habit is always counterbalanced by a decline in the use of other habits, at least in relative terms. In addition, parallel research on changes in the use of several payment habits is likely to produce more diverse and reliable results than research on changes in the use of a single payment habit.

For the above reasons, we need to study changes in consumers' use of payment habits to better understand changes in payment behaviour, and particularly to understand the reasons for these changes. Besides the scientific interest, the findings of such studies are useful for the development of financial markets and new payment instruments and habits. Research is also a means to increase payment instrument and method developers' awareness of consumers' needs and expectations concerning payment habits.

The Bank of Finland's project 'Finnish Payment Methods 2010' expects that major behavioural changes will take place in Finnish payment habits. According to Bank of Finland experts, the expected changes are due eg to the integration and standardisation of European payment systems, EU-level development of payment services legislation and regulation, new opportunities created by technology, and changes in costs and pricing of payment services (Kemppainen et al, 2005). The Single Euro Payments Area (SEPA) is considered to have a major influence on changes (SEPA 2005). As regards influencing and developing SEPA, it is necessary to understand why and how Finnish consumers' – and other parties' – use of payment habits change, and what consumers' attitudes are towards possible future changes.

Banks have for several years issued statistics on the use of payment instruments in Finland. As noted, consumers' use of payment instruments cannot be broken down from these overall statistics. It is thus necessary to study separately changes in consumers' use of payment habits as well as the reasons for these changes.

The Finnish Bankers' Association conducts semi-annual surveys on household savings and use of credit. As a part of the survey, respondents are asked about their most common payment habit of handling purchases and invoices. This survey approach does not provide information on the overall use of payment habits because consumers use several payment habits. For example, payment of invoices via Internet-banking has long been Finnish consumers' most common habit of paying invoices, accounting for 66% of popularity responses in April 2006. Consumers who usually pay invoices via Internet-banking may, however, pay some of their invoices by direct debit or by other payment habits. The Finnish Bankers' Association's survey does not reveal such information. Moreover, it does not forecast changes in the use of payment habits or analyse reasons for changes.

In addition to financial system-level factors such as SEPA, the interests of banks, manufacturers and service providers, and other actors such as merchants have an impact on payment developments. Banks, industry and merchants have powerful interest groups, whose lobbying and other efforts to promote their members' interests affect payment developments. Consumer interests are promoted not only by their own interest groups but also by legislators and authorities – typically as a part of an overall framework – since the consumer is usually considered the weak party. Payment experts, who work with the central bank, legislators and other authorities, as well as with interest groups and other significant actors, know each other and each others' ways of thinking. Close cooperation between these actors that has continued for decades has had a major impact on the creation of the highly advanced payment infrastructure in Finland. Even after Finland's entry into the euro area, national-level payment development efforts continue eg via regulation, standardisation of payment messages, integration of payment systems, and the deployment of information technology. At the same time, a European dimension has entered the promotion of various interests. All this work requires information eg on changes in consumers' use of payment habits.

Banks and other payment service providers develop payment instruments and habits in order to cut their costs, generate fees and other income, to acquire inexpensive float and deposit financing, to intensify their use of capital, and/or to improve their competitiveness in the payment services market. Banks influence their retail customers' choices of payment instruments and habits eg via fees and marketing. Yet, the marketing of payment services often focuses on technical

issues and differs from the consumer's way of thinking.[7] Banks need research data on changes in consumers' use of payment habits to develop their services.

Manufacturers, service providers and merchants are interested in the development of payment instruments partly for the same reasons as banks, i.e. mainly to reduce their payment costs, increase sales, and/or to improve the use of capital. The advices of trade-sector interest groups and the chaining of trade-sector impact significantly merchants' decisions to use payment habits. Some service providers and merchants want to create new channels to sell digital goods and services and/or to enable electronic and mobile commerce. Lack of suitable purchase and payment methods is considered a major barrier to electronic and mobile business. Industry, service-sector and trade need research data on consumers' use of payment habits to provide consumers with payment habits that interest them.

The above aspects affect consumers in several ways, even though an individual consumer can probably name only some of the factors, let alone specify their impact. Figure 1 illustrates the interests in using payment instruments and habits from the viewpoints of different parties. The key interest of the central bank and authorities is to secure efficient and reliable operation of the financial system. Manufacturers, service providers, merchants and banks want to enable customers to purchase and pay for goods and services in as many – from their viewpoint, inexpensive – ways as possible. Payment service providers seek earnings from these services. Consumers want to purchase products and services using payment habits that they consider valuable. The widespread use, pricing and other perceived properties of payment instruments and services, as well as the marketing and media attention of a payment habit having these properties, are proposed to affect consumers' willingness to use a particular payment habit. Consumers' behaviour is ultimately guided by their needs, habits and tastes, as well as by payment habit characteristics that they perceive and assess.

[7] For example, in our earlier study on mobile payment (Dahlberg et al, 2004) we found, to our surprise, that consumers make a distinction between convenience of payment due to mobility and efficiency of payment (less time or cost). We also found that consumers considered mobility and ease of use more important than efficiency. If marketing focuses on payment efficiency, it does not attract consumers as much as a message underlining the easiness and convenience of payment.

Figure 1. **Payment instruments and involved parties; adaptation of Visa 3D secure model (EMVCo 2000, Visa 2002, ECBS 2003)**

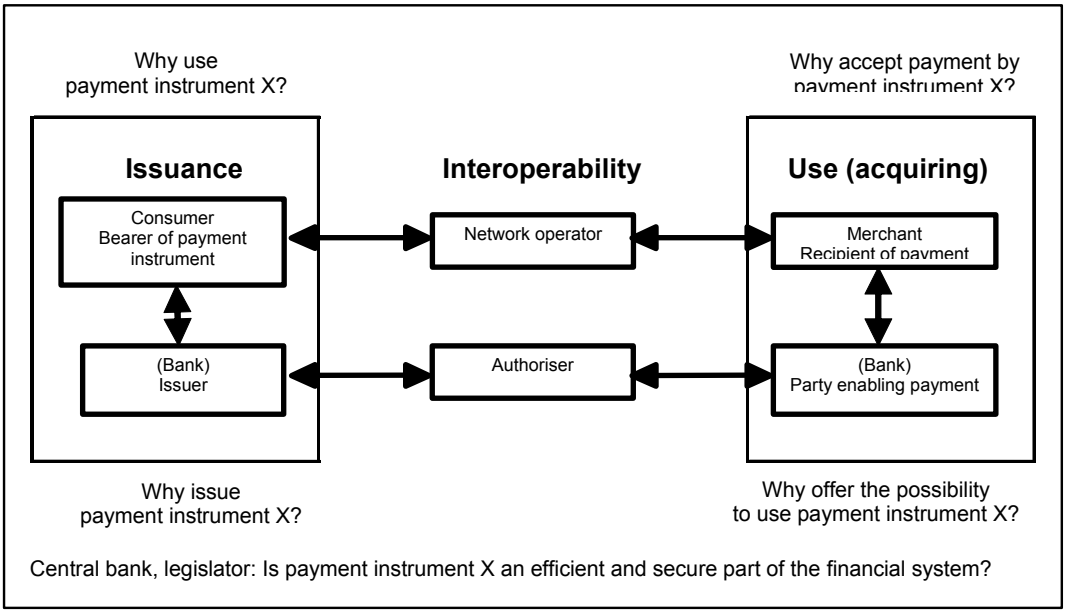


Figure 1 attempts to show that several actors – usually also consumers – have to perceive a payment instrument or habit as valuable to make any changes in the use of payment habits possible.

Payment instruments and habits are developed mainly by experts in information technology and payment services. Meeting of consumer – and other stakeholder – needs is a prerequisite for the adoption of a new payment habit. Some projects utilise user/usability studies, typically concept testing and piloting. The objective is generally to ensure the functioning and ease of use of a new payment instrument and habit before launching the service. Piloting and user studies often produce excessively positive assessments of the likelihood of changes in consumers' behaviour, and particularly of the speed of a change. In piloting, the number of so-called early adopters is usually disproportionate. Even if this fact is made clear in the reporting of results, other significant factors affecting consumers' behaviour may have to be ignored. In a user study, it may, for example, be impossible to describe the number of stores and sales points supporting a new payment habit, the activeness of marketing a new payment habit, or to assess the impact of a new payment habit on the use of other payment habits. Research on the attitudes of an entire consumer population towards payment and on its intentions to use payment habits makes it possible to identify the most probable changes, to understand the interactions between parallel changes, and to describe factors explaining intentions to change the use of payment habits.

1.3 Research questions – what new information does this study produce?

1.3.1 Changes in Finnish consumers' use of payment habits – to 2010

The key research question in this report is **how will Finnish consumers' payment habits change in the next 5 years**.

The Bank of Finland has for several years conducted studies on the development of payment instruments and habits in Finland (eg Jyrkönen and Paunonen, 2003; Jyrkönen, 2004; Iivarinen, 2005; Leinonen, 2000, 2001, 2002 and 2005) using statistics compiled by banks. Although the statistics include all payments transmitted via banks, as well as the amount of cash in circulation, they also provide a rough picture of changes in consumers' payment habits. Of account-based payment habits, the number of transactions by bank issued debit cards, online debit cards, credit cards, direct debit and credit transfers has increased, whereas cheque transactions have decreased. In the period following changeover to the euro, the biggest surprise has been the increase in the amount of currency in circulation, following a downward trend over several years. This development has been explained eg by cross-border payments in euro, migration of issued euro currency to southern Europe and our neighbouring regions, and by the increase in the value of cash held for making small payments. Cash withdrawals via online debit cards and credit cards have also increased. However, the total value and number of ATM cash withdrawals has continuously declined in Finland since the beginning of this century. This study focuses on consumers' views on their own changing use of cash for making daily purchases.

A study by the Finnish Bankers' Association (2006) shows that in the past five years, payment via Internet-banking has become the most often used payment habit for paying invoices. By contrast, payment of invoices at a bank branch, via giro ATM, telebanking, or bank payment service, have all lost popularity as the most often used payment habit for paying invoices. The decline in popularity of direct debit as the most often used payment habit for paying invoices seems to have come to a halt a few years ago. Debit cards have overtaken cash as the most often used payment habit in payments for daily purchases. The popularity of Visa Electron as the most often used payment habit in payments for daily purchases has grown particularly among those under 25 years, whereas credit cards, credit / loyalty cards issued by merchants, and credit accounts, are of marginal importance as the most often used payment habit in payments for daily purchases.

Several Finnish universities and research institutes have also studied consumers' payment behaviour: Helsinki School of Economics (HSE) and LTT-Research Ltd owned by HSE, University of Jyväskylä (eg Mattila, 2001;

Karjaluoto, 2002; Suoranta, 2003), Åbo Akademi University, Tampere University of Technology, University of Oulu, University of Kuopio.[8] These studies have focused especially on the diffusion of banking and payment services based on Internet-banking and mobile phones. The Finnish Communications Regulatory Authority, an agency under the Ministry of Transport and Communications, has commissioned research evaluating the adoption of electronic and mobile payment. These studies show that payment via Internet-banking has firmly established itself as the most important payment habit for paying invoices among Finnish consumers. Consumers also have a mainly positive attitude towards the electronification of payment services and using a mobile phone in paying purchases and invoices, even though very few of them use these payment habits, except for payment via Internet-banking. We discuss the behavioural theories and models utilised in these studies in Section 2.

We applied the above-mentioned statistics and studies as background information for this report. The key research question is tackled by analysing consumers' self-assessments of their current use of 11 payment habits and their intentions to use these payment habits in the next 6 months and 5 years. For these self-assessments we applied the the 7-point Osgood scale, with 'never' and 'frequently' at the ends of the scale. The table below shows an example of the questions presented for each payment habit. The questions, distribution of responses and statistical parameters of the survey data are presented in Annex 8 of the report.

		Never						**Frequently**
a.1	I use banknotes and coins as a means of payment	1	2	3	4	5	6	7
a.2	In the next 6 months I intend to use banknotes and coins as a means of payment	1	2	3	4	5	6	7
a.3	5 years from now I intend to use banknotes and coins as a means of payment	1	2	3	4	5	6	7

We collected the empirical data in October–November 2005 by sending a survey to 2,000 Finnish-speaking consumers, aged 18–65 years, selected by random sampling and living in continental Finland. A person aged 18 is legally competent and persons aged 18–65 years are defined as the working-age population, (even if students or pensioners). The study focused on the 18–65 years age group, because developers of payment instruments and habits were assumed to focus on these consumers. Of the consumers, 978 submitted responses, 948 of which were used

[8] Similar studies have been conducted in other countries. The International Journal of Bank Marketing has probably published the largest amount of articles on this topic.

in analysing the results. The rate of accepted responses (47.4%) is high, considering that the survey included over 100 questions.

We examined the following 11 payment habits:

Payment of daily purchases by
- banknotes and coins
- debit card (bank-issued)
- Visa Electron
- credit card
- using 'web payment buttons' of Internet-banks (Internet purchases)
- mobile phone (travel tickets, parking fees, vending machines, etc)

Payment of invoices
- at a bank branch
- via Internet-banking (service)
- through a direct debit authorisation
- by mobile phone access to Internet-banking (service)
- against electronic invoice

Nowadays consumers rarely use cheques or bank drafts. Their use is probably limited to gift giving, and car and house purchases. As a result, cheque payment was excluded from our survey. A survey by the Finnish Bankers' Association (2005) shows that 1% of consumers considered payment by telebanking service using phone as their most frequently used payment habit for the payment of invoices. Of the consumers, 5% paid invoices most often through a bank's payment service by sending their invoices in an envelope to the bank, and 13% through giro ATMs. We also excluded these payment habits for the following four reasons. Their popularity has declined for quite some time, we did not identify factors that would change this trend, we wanted to study as many 'new' payment habits as possible, and because questionnaire testing and pilot survey showed that the number of questions had to be reduced to prevent respondents from loosing interest. According to our assessment, these exclusions do not affect results regarding the changes in the use of the 11 investigated payment habits.

1.3.2 Other research questions

The material compiled during the survey is also used to answer the following research questions:

1. How do consumers' demographic characteristics as well as Internet and mobile phone skills affect changes in the use of payment habits?

2. What characteristics should a new payment instrument have so as to interest consumers (facilitating factors for technology adoption)?
3. What characteristics should a new payment instrument have so that interest will translate into a growing intention to use it (differentiating factors)?
4. How does compatibility with current purchase behaviour and use of payment habits affect changes in the use of (new) payment habits?
5. How does pricing of payment instruments and services affect changes in the use of payment habits?
6. Are Finnish consumers interested in portability of bank accounts?

In the questionnaire, we requested information eg on the respondents' age, sex and education. We also asked respondents to assess their skill level as Internet and mobile phone users. According to previous studies and general conceptions, the willingness to adopt technical innovations decreases with age. By contrast, previous studies show that higher education and technological skills increase the willingness to use technological innovations (eg Venkatesh et al, 2003).

We used attitudinal statements to compile consumers' views on what characteristics a new payment instrument should have to attract consumers. In previous studies, several features of technologies and services have been found to affect intentions to use a new technology or service – for example a new payment habit – (eg Chang et al, 2005; Kleijnen et al, 2004; Luarn and Lin, 2005; Wu and Wang, 2005). Previous studies show that consumers' positive assessments of the ease of use, independence of location and time, reliability, compatibility,[9] and efficiency/usefulness[10] of a new payment habit should lead to its use if the new habit can be used in a large variety of situations to pay for daily purchases and/or invoices (eg Dahlberg et al, 2004). But which of these factors are facilitating and which differentiating factors for such a behavioural change?

Previous studies show that some Finnish consumers want to preserve a sufficient number of different – read traditional – payment habits, and to keep changes at a minimum. These consumers want to preserve alternatives particularly for electronic and mobile payment habits. So far, alternatives for payment via giro ATM or internet banking services have been demanded because consumers have rarely used other electronic or mobile payment habits. Previous studies show that some consumers are also concerned about their ability to adapt to new payment habits resulting from the use of advanced technologies in financial services.

We have two reasons to study the impact of compatibility. Roger's (1983, 1995) diffusion of innovation theory explains that compatibility is one of the five innovation factors that affects diffusion. In previous studies (eg Plouffe et al,

[9] Compatibility means compatibility of the (new) payment habit with the technology available to consumers, their behaviour and their values.
[10] Efficiency/usefulness refers to low use costs, and savings in cost and time. The diffusion of innovation theory examined in Section 2 identifies also other possible efficiency factors.

2001, Dahlberg et al, 2004) perceived compatibility has been one of the key factors in increasing consumers' intention to use a payment instrument. Secondly, several user studies conducted in connection with the development of payment instruments have forecasted faster changes in the use of payment habits than we have actually seen. A perceived low level of compatibility has been suggested to be one of the factors that have slowed the pace of change. Thus, a better understanding of compatibility increases our knowledge of changes in the use of payment habits.

Research on changes in payment instruments and habits has paid relatively little attention to the impact of pricing. Widespread use of cheques in the US and France is considered a good example of the impact of (restricted) pricing in payments. In these countries, the handling of cheques is free of charge by law; and in France cheque accounts cannot earn interest. Our study on mobile payments showed that consumers strongly oppose payment fees for mobile payment services (that is, paying for payment) (Dahlberg et al, 2002; Mallat and Dahlberg, 2005). The dearth of earlier studies underlines the importance of (survey-based) research on the link between pricing and changes in the use of payment habits.

The creation of a Single Euro Payment Area and increased competition between banks are important objectives for the European Union in the area of payment services development. Further harmonisation of bank account identifications/ numbers and bank account portability from one bank to another (similar to mobile phone number portability), have been proposed as means to increase competition between banks and to improve financial services. For this reason our study assess whether Finnish consumers are interested in bank account portability and further harmonisation of account numbers without making any attempts to evaluate whether bank account portability or harmonisation are necessary, possible, or conductive to competition. Since Finnish consumers have exploited mobile phone number portability extensively, bank account number portability is likely to attract them.

1.4 Summary of key findings of the survey

In Section 2 we describe the theoretical basis of the study. In sections 3, 4 and 5 and the annexes we present the survey and its findings in detail. Due to the abundance of details, we end this section with a summary of the key findings of the survey.

1.4.1 Use of studied payment habits will change in the next 5 years

We studied changes in the use intentions of 11 payment habits as described in subsection 1.3.1. According to consumers' self-assessments, the use of each payment habit will change in the next 6 months as well as in the next 5 years. The following detailed findings give a more precise picture of this survey result:

- Of the 11 payment habits, 9 were self-assessed to increase in use in the next 6 months and 5 years. By contrast, the use of two payment habits – payment for daily purchases by banknotes and coins and payment of invoices at bank branches – was self-assessed to decrease in 6 months and in 5 years. Thus the intention to use either increased or decreased for all the payment habits, in both 6 months and 5 years (Annexes 1 and 2).
- These changes are statistically highly significant (<0.001), except for the statistically significant increases in intention to use a debit card in the next 6 months (0.009), Visa Electron in the next 6 months (0.001), a credit card in the next 6 months (0.020), and the only statistically insignificant change – a decrease in intention to use banknotes and coins in the next 6 months (Annex 2).
- Despite these statistically significant changes, the majority of respondents assessed that their use of payment habits will remain unchanged. Depending on the payment habit, 84–92% of respondents assessed that their payment habit use will remain unchanged in the next 6 months, and 55–86% estimated it to remain unchanged in the next 5 years (Annex 2, subsections 4.2.1 and 4.2.1.3). In later sections of this report we answer to the question whether the changes in consumers' payment habit use intentions should be deemed minor or significant.
- In the next 6 months, the biggest changes (increases) in intention to use a payment habit concern payment of invoices against electronic invoice, and by direct debit; and payment of daily purchases using 'web payment buttons', and by mobile phone. With the exception of direct debit, these payment habits are currently used relatively or very seldom (Annex 2 and subsection 4.2.1.3).
- In the next 5 years, the biggest changes in intention to use a payment habit concern payment of invoices against electronic invoice, by mobile phone access to Internet-banking, and by direct debit; and payment of daily purchases by mobile phone, by 'web payment buttons', and by banknotes and coins. Of these, the intention to use declined only for payment of daily purchases by banknotes and coins (Annex 2 and subsection 4.2.1.3).
- In payment of daily purchases, banknotes and coins were the most frequently used payment habit in relative terms (at the time of the survey), followed by the debit card (bank-issued), which was almost as frequently used. Major changes in relative use of payment habits were not assessed to happen in the

next 6 months. The debit card is assessed to become the most frequently used payment habit (in relative terms) in the next 5 years, due to a decline in relative use of banknotes and coins. The relative use of debit card is, however, assessed to remain unchanged, due to the growing use of Visa Electron, credit card, and electronic and wireless payment habits, which are assessed to exceed in growth that of the debit card (subsection 4.2.1.1).[11]

- In payment of invoices, payment via Internet-banking is clearly the dominant payment habit in relative terms. Relative use of payment habits for payment of invoices is not assessed to undergo major changes in the next 6 months. In the next 5 years, payment of invoices at bank branches is assessed to decrease even further in relative terms. Relative use of Internet-banking will also decrease, due to the growth in payment of invoices against electronic invoice and by mobile phone access to Internet-banking, which are assessed to exceed in growth that of payment via Internet-banking (Subsection 4.2.1.2).

1.4.2 Age, Internet and mobile phone skills affect changes in the use of payment habits

In addition to collecting information on respondents' demographic characteristics, we asked them to assess their Internet and mobile phone skills. We also surveyed how frequency respondents used payment-related services by mobile phone or via the Internet. Our findings include:

- Of the demographic characteristics, age has the greatest impact on changes in the use of payment habits. The intention to change the use of payment habits decreases with age (subsection 4.2.2.1).
- Mobile phone skills increase the intention to make purchases, check on bank account information, and pay invoices from a bank account by mobile phone. By contrast, mobile phone skills do not affect the willingness to receive SMS messages of payments due (subsection 4.1.2.1).
- Internet skills have a highly significant impact on the use of purchasing and payment services available through the Internet (subsection 4.1.2.3).
- Internet and mobile phone skills increase a consumer's intention to use electronic and wireless payment habits (subsections 4.1.2.2 and 4.1.2.4).

[11] In comparing our results to the Bank of Finland statistics and surveys by the Finnish Bankers Association, one should note that there are differences in registering the use of payment habits, as explained above.

1.4.3 New payment instruments need to have several characteristics

We used 27 attitudinal statements to find out which characteristics a new payment habit should have to attract respondents (measured with use intention). We discovered that a new payment habit needs to have a large number of characteristics to attract consumers' interest. We found that eg (subsection 4.3):

- Security and trust are considered the most important characteristics of a new payment habit. Trustworthiness of the payment instrument issuer is part of this security and trust. The average for the responses to these attitudinal statements was over 6 in the 7-point Osgood scale (Annex 8).
- Other characteristics of a payment instrument considered important included availability of information on payment transactions, compatibility with purchase and payment habits, wide applicability, ease of use, cost savings, and independence of time and place. The average for the responses to these attitudinal statements was above 5.5 in the 7-point Osgood scale (Annex 8).

1.4.4 Adoption factors do fall into facilitating and differentiating factors

We determined attitudinal factors from attitudinal statements with statistical multivariate methods. After that, we analysed which variables of the following – attitudinal factors, pricing of payment instruments, respondents' demographic characteristics, and Internet and mobile phone skills – increase the respondents' intention to pay invoices against electronic invoices, and daily purchases by mobile phone. We chose (adoption of) these two payment habits for further analysis because relative changes in intention to use were highest for them. We found eg that (subsections 4.3.1 and 4.3.2 and Annexes 5 and 6):

- Attitudinal factors of a new payment instruments considered most important by the surveyed consumers (for example security and trust) or pricing do not differentiate between respondents who intend to change their use of payment habit and those who intend not to change their use of payment habit as regards payment of invoices against electronic invoice or payment of daily purchases by mobile phone.
- A limited number of variables differentiate between those who intend to change their use of payment habits and those who do not. We found that current use of the payment habit and ease of use are the two common factors, which affect intention to pay invoices against electronic invoices and daily purchases by mobile phone.

- Compatibility (wide applicability) is a differentiating factor for payment of daily purchases by mobile phone, in addition to ease of use and current use of mobile phones in making payments for daily purchases.

What do our findings mean? Security and trust, availability of information on payment transactions, time saved, and money saved as a result of pricing, are all important characteristics of a new payment instrument. Perceived deficiencies eg in the security and trust of a payment instrument make consumers lose interest in using the payment habit based on the payment instrument in question. Consumers intending to change their use of the payment habit and those not intending to change, however, assess these characteristics in the same way, and for that reason these characteristics cannot explain the differences in intention to use the payment habit. Such variables are designated as facilitators of the use of new payment habits. In contrast, ease of use and compatibility (wide applicability) of a payment habit are differentiating variables because consumers intending to change their use of payment habits have a different view of the ease of use and compatibility of payment habits than those not intending to change their use of payment habits.[12] Both of the analysed payment habits are in the early stage of diffusion. Our findings indicate that consumers already using these two payment habits intend to increase their use. It is therefore justified to estimate that the use of these two payment habits will increase if consumers are given enough opportunities to do so.

1.4.5 Effect of compatibility is payment habit-specific

We investigated the link between compatibility and intention to pay daily purchases by mobile phone and payment of invoices against electronic invoice. We discovered eg that compatibility (wide applicability) has an impact on payment of daily purchases by mobile phone, but not on payment of invoices against electronic invoices. Mobile payment has the potential to diffuse rapidly if an abundance of suitable services for mobile payment services are available and if payment with a mobile phone is easy. Those using electronic invoices may, on the other hand, even be willing to learn a completely new way to conduct payments. The effect of compatibility on use of payment habits is thus payment habit-specific (subsection 4.3.2).

[12] This finding has a practical meaning for developers of payment instruments and habits. They must convince consumers that the facilitating characteristics (of adoption) have been implemented, but at the same time focus on the differentiating characteristics (of adoption) in the development, and particularly in the marketing of a new payment instrument.

1.4.6 Favourable pricing attracts consumers

Surveyed consumers show interest to transfer to the use of payment instruments that will reduce their costs. As described above, favourable pricing does, however, not differentiate between consumers intending to change their use of a payment habit and those not. In our study, favourable pricing appears as a facilitating factor for adoption.

Respondents were of the opinion that cost savings achieved as a result of a more efficient payment habit must translate into lower prices for the consumer. Moreover, they support activities to develop more inexpensive payment habits. On the other hand, consumers do not view favourably merchants' right to transfer to consumers the higher costs of a payment habit, an example of which are the differences in the fees charged by credit card companies. Moreover, consumers do not want payment costs to be shown on a receipt, as is the case with VAT (subsection 4.3.4). Consumers seem to be unaware that payment costs may fall on them eventually similarly to other transaction costs – in the form of product and service prices. The responses indicate that consumers may assume that showing payment costs means that these will be added to the purchase price. Consumers probably experienced that this happened when banks first introduced payment fees for paying invoices and then increased these fees several times.

1.4.7 Finnish consumers interested in bank account portability

About 60% of respondents consider bank account portability a very good or fairly good idea. Moreover, Finnish consumers want to keep the structure of their bank account identification (= bank account number) unchanged if they change their bank to either a Finnish or a foreign bank. Thus they are not interested in further harmonisation of European-level bank account identification, beyond that of the current International Bank Account Number (IBAN) practice (subsection 4.4, Annex 8). Current IBAN practice allows the use of Finnish bank account numbers.

1.4.8 Other findings – alienation worries and desires for better electronic payment instruments

Several other research findings could also be pointed out. For example, only a very small number of consumers was aware of the possibility to pay invoice against electronic invoice, despite the fact that at the time of our survey, OP Bank Group launched their electronic invoice aimed at consumers and marketed it heavily on TV and other media. In our opinion the most important other finding of

the survey is the notable inconsistency between fears of alienation and exclusion from payment services and desires for further development of electronic payment.

According to responses to attitudinal statements and free-form feedback, about a fifth of the respondents are worried about the decreasing amount of cash in circulation and the decreasing number of bank branches, as well as about the - by them perceived – overly dominating role of the Internet, and electronic payment in general, in the development of payment habits. Consumers' fears of alienation and exclusion from payment services is probably even greater for those aged over 65, whom we excluded from our survey for reasons described earlier. In addition, the response rate of those with a lower level of education and income was slightly lower than that of respondents with a higher level of education and income (subsection 5.3).

About 40% of respondents stated that new payment instruments should be developed to facilitate Internet purchases. Moreover, 60% considered it important to develop electronic payment services in such a way that as much transaction data as possible is made available (subsection 4.5). About 15% intended to use PayPal, EBay or other similar international web payment services in the next 5 years (subsection 4.5).

This inconsistency is important for several reasons and on many levels. The fact that all electronic and mobile payment instruments still have a physical alternative makes this issue intriguing for the development of payment habits. What happens if and when physical alternatives are no longer available? This development has already materialised in many banking, money transfer, clearing and settlement systems linked to payment services. There are no longer credible physical alternatives to the deployment of information and communication technologies (ICT) in these systems. Among consumers, the diffusion of the majority of electronic and mobile payment habits has only begun, with the exception of payment of invoices via Internet banking, which has been extensively adopted (in Finland). Since also other electronic and mobile payment habits will become increasingly used, it is necessary to study repeatedly the impact of these developments on (Finnish) consumers to prevent perceived and/or real alienation and exclusion from payment services and to manage the above-described inconsistency.

2 Theoretical basis of the research

The theoretical basis of our research consists of two parts. Methodological literature (Tenopyr, 1977; Nunnally, 1978; Straub, 1989; Hair et al, 1998; Sireci, 1998; Boudreu et al, 2001; Wacker 2004) was used to plan and execute the survey and to conduct the statistical analysis of the survey data. The aim was to ensure maximum conceptual and methodological validity and reliability of the survey and results. Methodological considerations are discussed in more detail in Section 3.

The theories and theoretical constructs of earlier studies were used in planning the content of the study and in assessing the results. This theoretical background was utilised to evaluative compile the results of earlier studies, to determine non-investigated research needs and formulate research questions, in the conceptual development and testing of the questionnaire,[13] and to develop our research model. The aim was to ensure that the findings on changes in use of payment habits are as consistently explainable as possible, instead of resulting from random factors. The purpose of the theoretical background is also to facilitate the evaluation of the significance of the results – as independent results and in comparison to the results of earlier studies – and to show what new information and contributions the study produces.

Consumer behaviour, eg changes in payment habits, is studied in several fields of research, employing various methods and perspectives. Behaviour is explained eg in terms of consumers' personal characteristics, such as differences in cognitive style or values, or with spatial, structural and temporal characteristics of the behavioural situation. In research on the adoption of new technologies and services, factors affecting behaviour are also be studied on the basis of the characteristics of the technology and service in question and consumers' beliefs and attitudes concerning these characteristics.

In this study, we use the latter approach, ie we explain changes in the use of payment habits based on the perceived characteristics of payment habits, consumers' easily-measured personal characteristics, and their Internet and mobile phone skills. This approach does not underestimate the importance of differences in consumers' personal characteristics or the importance of concrete situational factors. The idea is that differences in assessments of payment habit characteristics, easily-measured personal characteristics, and technical skills explain the changes in the adoption and use of payment habits to a sufficient degree . There is thus no need to capture individual consumers' values or hard-to-measure personal characteristics, or to describe the characteristics of the use situations for each specific payment habit.

[13] In terms of methodology, the theoretical basis for the content of the study is linked to conceptual reliability. For more information on this subject, see eg the list of references above.

We first discuss the social-psychology models used in describing behavioural choices: the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980) and the Theory of Planned Behavior (TPB) (Ajzen, 1991). While doing this, we also discuss the most commonly used technology acceptance models derived from these theories, eg the Technology Acceptance Model (TAM) (Davis, 1989; Davis et al, 1989; Venkatesh and Davis, 2000). These models have been used in studies on the acceptance of financial and payment services both in Finland (eg Karjaluoto et al, 2002; Dahlberg et al, 2004; Mattila et al, 2003; Pikkarainen et al, 2004) and in other countries. The indirect method of constructing a TPB questionnaire (Ajzen, 2002; Francis et al, 2004) was one of the methods used to develop our survey questionnaire.

Social-psychology models are general theories based on the notion that concrete behaviour impacting factors must be separately defined for each behaviour / behavioural choice situation. For that reason, we use the diffusion of innovations theory (Rogers, 1995; Moore and Benbasat, 1991) as the second major theoretical background theory. This theory describes the investigated behaviour, that is, the diffusion of innovations – based on the characteristics of innovations – in a social system formed by individuals and their diffusion decisions. A change in the use of a payment habit is a typical innovation diffusion decision. Diffusion theory has been used separately or with social-psychology models to study the adoption of payment instruments (eg Antonides et al, 1999; Plouffe et al, 2001; Dahlberg and Mallat, 2002; Dahlberg et al, 2004).

By using well-known theories that have been tested in numerous studies as the theoretical background for our survey, we aimed to develop a questionnaire that best describes changes in the use of payment habits, is thoroughly tested, and produces reliable and valid measurements. Using these theories and earlier studies based on them we also looked for and assessed potential survey questions from complementary perspectives. This (methodological) approach contributes to the reliability of our results and to the comparability of findings to earlier studies.

The new research idea of our study is to divide the factors affecting changes in the use of payment habits into facilitating and differentiating factors. This idea emerged from interviews on the adoption of mobile payment solutions by consumers (Mallat and Dahlberg 2005) and merchants (Mallat and Tuunainen 2005).

2.1 Behavioural theories based on social psychology

Figure 2 shows the Theory of Planned Behavior (TPB) (Ajzen, 1991), an extension of the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). In comparison to the TPB model, the TRA model

lacks the internal and external constraints of behaviour and factors perceived to control behaviour.

The logic of the TPB model (Figure 2) – adapted for studying changes in consumers' use of payment habits – is as follows: The consumer, having to choose a payment habit to pay for daily purchases or invoices, considers the alternatives.

1. The consumer has beliefs about identified payment habit alternatives, based on education, experience, values, and other factors. Based on these beliefs, the consumer evaluates benefits and drawbacks of these alternatives in paying a purchase or an invoice. As a result of the evaluation, the consumer forms a perception of the best way to make a particular payment. In the TPB model, this is referred to as the 'Attitude towards behaviour (A)'.[14]
2. The consumer's actions are not guided solely by attitudes; anticipated outcomes of the evaluated behaviour are also taken into account as perceived to be done by 'persons' important to the consumer. For example, is there a risk of overdraft (with negative consequences)? Will one receive better treatment at a store by using a certain payment habit? Will there be a queue of angry customers behind if payment takes too long? The consumer adapts these normative beliefs to the payment habit evaluated to be the best, which may cause a switch to another payment habit. In the TPB model, the result of this evaluation is called 'Subjective Norm (SN)'.
3. The consumer may consider eg Visa Electron or mobile phone as the best option for paying a particular payment, based on personal assessment and anticipated normative outcomes of the behaviour. If, however, the merchant does not accept Visa Electron or if the mobile phone battery is dead, the consumer cannot act as deemed best. The consumer's skills or perceived skills can also constrain behaviour. In the TPB model, these internal and external behavioural constraints are 'Perceived Behavioural Control (PCB)'.
4. Attitude, subjective norm, and perceived behavioural control induce the consumer to choose the payment habit the consumer intends to use to pay a particular payment. This is called 'Behavioral Intention (BI)'.
5. The consumer then pays that particular payment with the chosen payment habit, unless something prevents this at the last minute, ie the consumer's 'actual Behaviour (B)' follows behavioural intention.

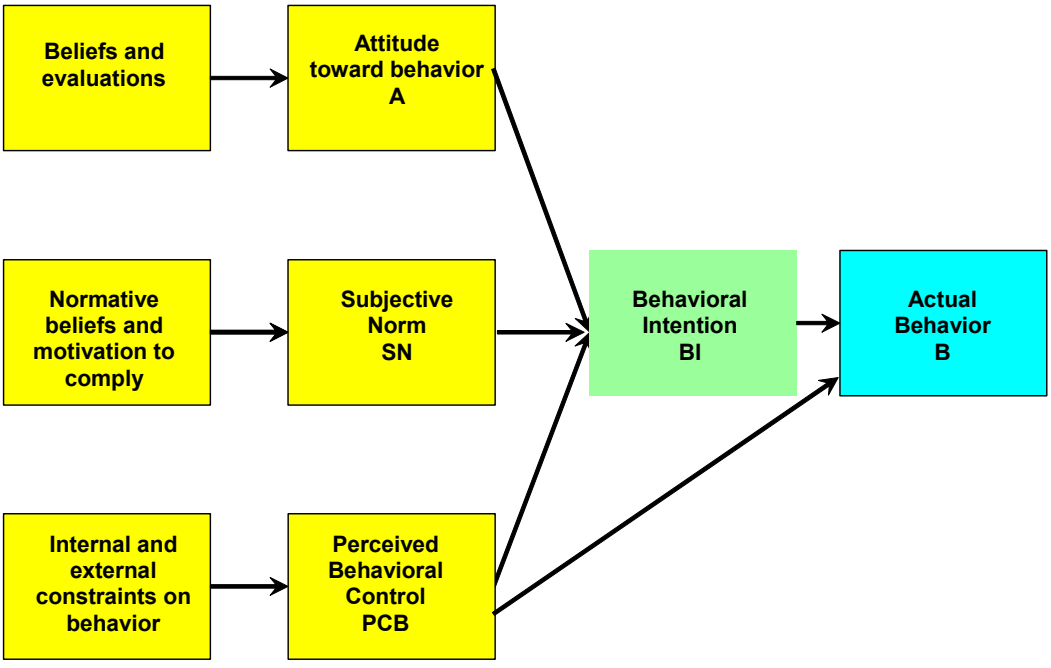
According to the TPB and TRA theories, the situational factors have to be described separately in each behavioural situation. This has been considered a

[14] The attitude is described mathematically as $A = \Sigma b_i \cdot e_i$, in which A denotes attitude, b_i belief I, and e_i its perceived importance (Ajzen, 2002). The subjective norm and perceived behavioural control and the factors affecting them are described analogously.

notable weakness (Davis, 1989; Davis and Morris, 1989) of the theories (claims concerning operationalization limitations). On the other hand, also the generic abstract nature of the theories, ie their disconnection from the behavioural environment, has been criticised (Davies et al, 2001) (claims concerning theoretical limitations).

By applying the TRA model Davis presented the Technology Acceptance Model (TAM). The purpose of TAM is to explain the acceptance of information systems in organisations, and thus TAM is an operationalization of TRA for these behavioural situations. In TAM, perceived usefulness and perceived ease of use affect an individual's intention to use a technology.[15] TAM's ability to explain the acceptance of a technology, such as a payment habit, on the basis of just two factors has made it extremely popular – and controversial. The use of TAM has spread from TAM's original behavioural context eg to research on adoption of Internet, electronic business, and payment instruments. In this process, new factors have been (forced to be) added to the original model to adapt TAM to the studied contexts. For example, in studies on electronic business and payment (eg Gefen et al, 2003; Dahlberg et al, 2004), the factor 'trust' was added.

Figure 2. **Theory of Planned Behavior, TPB (Ajzen, 1991)**



[15] Many versions of the TAM model has been presented. An adapted version of the TPB model (corresponding to the TAM model) – the Decomposed TPB model – has also been developed for research on the adoption of information systems. Venkatesh et al (2003) developed their UTAUT (Unified Theory of Acceptance and Use of Technology) model employing characteristics from eight technology and innovations acceptance and use models. The UTAUT model describes the adoption of technology in organisations with the aim to improve job (professional) performance.

In our study, we use primarily the TPB model as the theoretical basis for explaining socio-psychological behaviour. This is because we reason that choosing a payment habit for purchase and invoice payments is a different behavioural situation than adoption of (IT) technology in an organisation to improve professional performance. The difference is due not merely to the absence of an organisational environment and/or a job performance improvement context. In majority of studies involving TAM, the adoption of a single technology has been studied without evaluating the impact of alternative technologies on the adoption process – alternatives may not even be available. Studies on changes in consumers' use of payment habits must take into account competition between alternative payment habits.

The key assumption of TPB, TRA and TAM is that behavioural intention results in corresponding actual behaviour – a kind of 'self-fulfilling prophecy'. Earlier in this report, we referred to user studies and to a situation common to all of us, in which intention does not lead to its realisation. Which factors may prevent the realisation of behavioural intention eg in the use of a certain payment habit?

According to the TRA and TPB theories, the shorter the time span between intended and actual behaviour is, the higher the probability of their correspondence. If a consumer is asked, while queuing in a store for cashier, which payment instrument the consumer intends to use, the consumer will probably act as stated. The ability of a person to control behaviour and its consequences is another factor. The weaker the ability of one to control factors affecting own behaviour, the greater the gap between intended and actual behaviour may grow. For example, an individual consumer cannot affect what payment habits are accepted in a store or what properties payment habits have. The third factor is changing intentions. For example, a consumer may realise at the last minute that cash will be needed shortly, and so decides to switch to the use of a debit card instead. According to TRA and TPB, the importance of each selection factor also has impacts on behaviour. For example, a small price reduction – eg 10 cents per purchase – for using a new payment habit may be so insignificant to the consumer that he/she may not bother to use it, despite having a positive attitude towards it and even having indicated an adoption intention in a user study.

All the above factors affect the results of our study. In the process of adopting payment habits, 6 months is both a long and a short time and 5 years is a very long time. In 6 months, payment habits are selected several times. Statistics and studies by the Finnish Bankers' Association show, on the other hand, that changes in the use of payment habits are modest in 6-month reference period. The results of our survey must be considered indicative – not predictive – of the direction and extent of changes in the use of payment habits.

2.2 Diffusion of innovations theory

According to the diffusion of innovations theory of Rogers (1995) (first presented in the 1960s), innovation adoption process follows an S-shaped curve, where individual adoption decisions are based on assessment of five general characteristics of an innovation and on adopters' personal characteristics. The general characteristics (factors) of an innovation are *relative advantage, complexity, compatibility, trialability, and observability*. All of these factors are multidimensional. For example, compatibility refers to the degree to which an innovation is compatible with the adopter's values, behaviour, and use of prior innovations. In surveys, each factor must thus be measured by several questions (variables). Moreover, according to diffusion theory, the five general characteristics of innovation must be operationalized for each innovation. For example, complexity (ease of use) of a payment habit could be operationalized as complexity of taking into use and using the payment habit for daily purchase or invoice payments. Then, in a survey, several survey questions (variables) descriptive for the multidimensional complexity of the payment habit must be used.

Diffusion is a social phenomenon. The social environment affects an adopter's perception of an innovation. The adopter also evaluates the consequences of using an innovation in this environment. For example, the opinions or expectations of a salesperson or a receiver of the payment may affect the choice of payment habit. According to diffusion theory, the general factors affecting the adoption of an innovation remain unchanged throughout the adoption process, whereas the interpretation of these factors changes as diffusion progresses from one adopter group to another. The power and significance of the diffusion of innovations theory is illustrated by the fact that the adopter categories of the theory, eg innovators and laggards, as well as the term S-curve, are used even in everyday language.[16]

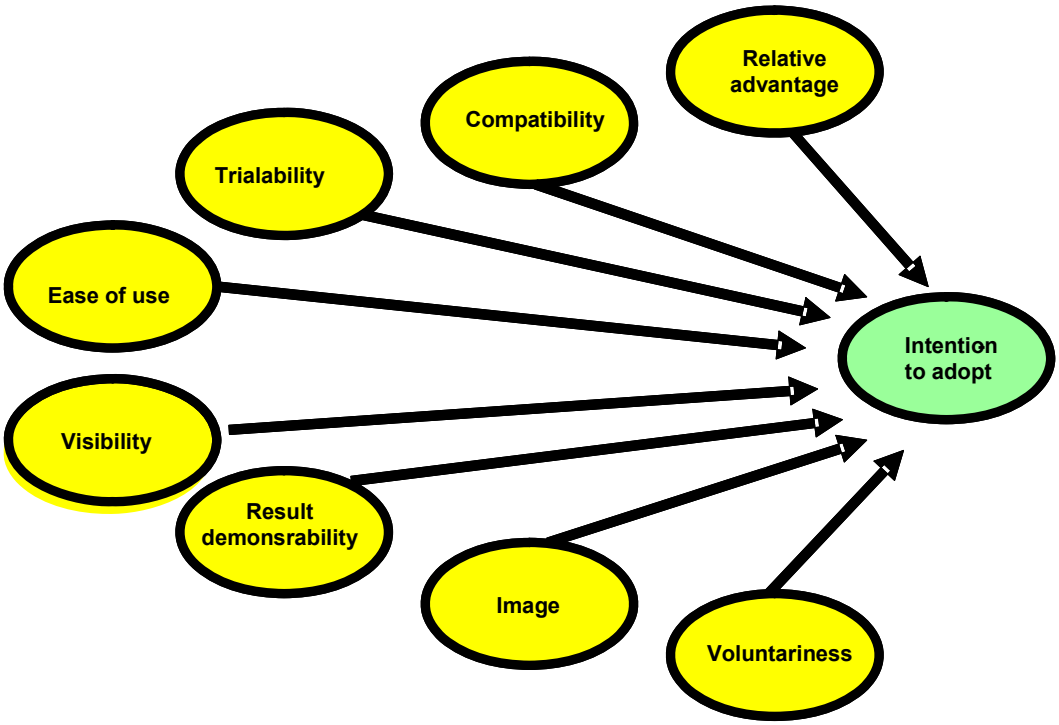
Moore and Benbasat used the diffusion theory to develop a survey tool for measuring the adoption of IT innovations in organisations – Perceived Characteristics of Innovation (PCI) model. In the PCI model (Figure 3), the five general characteristics of innovations taken from the diffusion of innovations theory are extended to include four other factors: *image, visibility, result*

[16] The S curve of Rogers is the cumulative distribution function of the standard normal distribution. Adopter groups are also interpreted in accord with the standard normal distribution. For example, innovators (2.5%) are the first adopters, who deviate from the average of the adopter population by two standard deviations; experimenters or early adopters (ca 14.2%) fall between one and two standard deviations; and the early majority (33.3%) consists of those adopters falling between the average and one standard deviation.

demonstrability, and voluntariness. The PCI model has also been used in other studies, eg on the adoption of payment instruments (Plouffe et al, 2001; Dahlberg et al, 2004).

The reviewed social-psychology and diffusion of innovations theories are quite similar, in explaining changes in behaviour. The theories have been used and tested thoroughly in several fields of research. It is thus understandable that they have also been used, separately and together, as theoretical background in several earlier studies. TRA and TPB provide a generic model of behavioural choice, and the diffusion of innovations theory presents the generic factors that explain the adoption of innovations. The role of a study is to operationalize these general theories for the subject researched and to complement the theories if necessary. This is also the approach of our study. According to the objectives of our study we investigate among other research questions the impact of pricing on changes in the use of payment habits and, motivated by earlier studies, we consider the impact of trust and mobility (independence of time and location), technology skills, and respondents' personal characteristics on the intention to use a payment habit. Pricing, trust, etc. are not covered in the reviewed theories.

Figure 3. **Perceived Characteristics of Innovation, PCI (Moore and Benbasat, 1991)**



2.3 Facilitating and differentiating factors of adoption

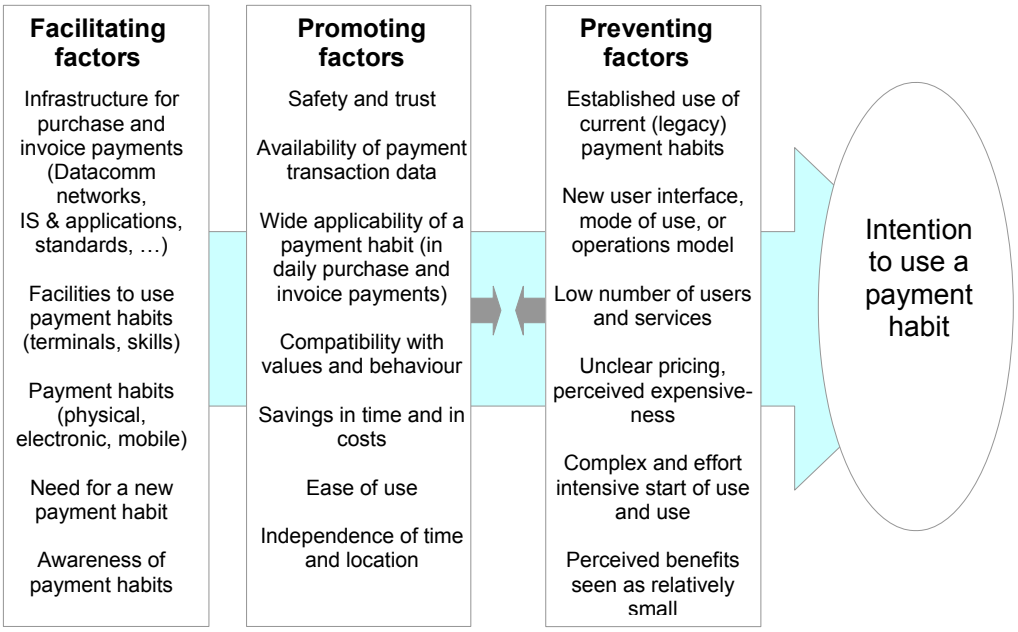
Figure 4 illustrates the interaction of factors that facilitate, promote, or prevent changes in the use of payment habits. The figure is an adaptation of the original by Mallat and Tuunainen (2005) and lists (item-level) factors affecting changes in consumers' intention to use a payment habit.

Figure 4 summarises findings of focus group interviews of consumers conducted in 2001 and 2002 as well as results of several later studies in which we have been involved between 2002–2006 Figure 4 also includes factors discussed in earlier subsections of this report. Figure 4 can thus be considered a summary illustration of factors affecting the adoption of payment habits, based on earlier studies.

Over 60 consumers participated to focus group interviews on mobile payment (Dahlberg and Mallat, 2002; Mallat and Dahlberg, 2005). In the focus group interviews, consumers listed a large number of benefits, deficiencies preventing use, and necessary prerequisites (facilitators) for a new payment habit – mobile payment. These characteristics were often described in terms typical to TPB and innovation of diffusion theories eg reliability of technology, trustworthiness of service provider, cost-effectiveness, efficiency, ease of use, improvement in quality of life, and fit to personal values. The logic of necessary prerequisites (facilitators) interests us especially. Necessary prerequisites were typically described as factors that need to be in place before it is at all meaningful to evaluate use intentions.

By taking this logic further, we came up with the major research idea of our study, we aim to investigate whether factors affecting adoption can be divided into those facilitating and those differentiating behavioural change. Could even results of earlier studies be interpreted from this perspective? For example, according to the TAM model, perceived usefulness and ease of use explain the acceptance of technology. Does this mean that the other characteristics of a technology are not important for the adoption of the technology? According to our research idea also other factors – eg those described in the diffusion of innovations theory – may be important for adoption. Adopters and non-adopters may have similar perceptions of these factors and thus they do not reveal differences in behavioural intention. On the other hand, if adoption takes place, facilitating characteristics cannot prevent adoption and are thus realised in a way that facilitates change.

Figure 4. **Factors facilitating, promoting and preventing the intention to use a payment habit (Mallat and Tuunainen, 2005; adapted and modified)**



3 Execution of the survey

The survey was planned and executed using the research questions, theories and models discussed above, findings of earlier studies, and our research idea of dividing factors affecting intention to use a payment habit into facilitating and differentiating factors. The role of the TPB theory is to include the elements of a behavioural selection process into the survey. In our study, the TPB model is applied to model stages in the adoption of payment habits and interdependencies between stages. Diffusion of innovations theory is used to describe the social context of technology adoption, which in TPB is called the subjective norm.

The theories forming the background of the study were not adapted for measuring consumer behaviour per se but guided instead the development of the research questions and questionnaire. A key objective in developing the questionnaire was to obtain an extensive set of questions that takes into account factors presented in the research literature that affect consumers' decision behaviour in considering whether to start using a new innovation.

Since all theories are generalisations of the phenomenon investigated, they usually have to be complemented to enable the inclusion all key characteristics of

the phenomenon into a study. The theoretical basis of this study was complemented via group and individual interviews and findings of earlier studies.

3.1 Developing the questionnaire

The questionnaire was developed in a multi-phased process. First we identified the theories of human behaviour and innovation diffusion that most likely provide a robust theoretical basis for analysing the phenomenon to be studied. As explained earlier our study builds mainly on the Theory of Planned Behavior and the diffusion of innovations theory. The TPB model integrates beliefs about the outcomes of a behavioural selection with behavioural intention. The desirability of outcomes strengthens the behavioural intention. The diffusion of innovations theory offers to this context a rough set of indicators of factors affecting innovation adoption, ie one kind of operationalization of attitudes and beliefs.

The theories used as the basis for our study capture the generic factors of technology adoption and their interdependencies. The theories must, however, be adapted to the investigated phenomenon. The selection of payment habits may involve idiosyncratic factors, ie factors typical for the use of payment habits which are not included in general diffusion of innovations theories.

We used individual level surveys and interviews to capture factors typical for the use of payment habits. Approximately 40 respondents were asked to answer questions that provide information on characteristics of payment habits that they perceive as important and on the objectives of choosing a payment habit. We designed the individual level interviews according to the methods of constructing a TPB questionnaire, using the indirect measurement method (Francis et al, 2004; Ajzen, 2002). The indirect measurement method of constructing a TPB questionnaire suits well to situations where a TPB questionnaire is constructed for a new application of the TPB model (such as selection of payment habit) because it employs open-ended questions. We have excluded from the example below the empty spaces reserved for the answers. For the entire survey and interview instrument, please see Annex 7 of the report.

> When we buy or consume products or services for which a price is charged, we use payment instruments to pay for them. The payment instruments include for example cash, debit cards and credit cards. The payment instruments may be physical (such as cash or plastic cards), electronic (such as payment via Internet or against an electronic invoice), or mobile (such as payment by mobile phone). The choice of a certain payment instrument and its use constitute a payment habit. The behaviour to be assessed is the selection of payment habits. Please list your thoughts on the questions below.

1 Which characteristics of a payment habit and/or advantages do you believe to have a positive impact on the selection of a payment habit (example: accepted everywhere)?
2 Which characteristics of a payment habit and/or disadvantages do you believe to prevent the selection of a payment habit (example: is unreliable)?

The target groups of the individual level survey and interviews were the students of the Helsinki School of Economics and the Bank of Finland's experts on payment systems. We supplemented the TPB model concepts, on which the questions were based, with questions on the compatibility factor of the diffusion of innovations theory and with questions on the impact of pricing. In constructing the questionnaire, we also utilised the Laddering model and Mean End Chain (MEC) model.[17] The objective was to ensure the contextual descriptiveness of the survey questions of the final survey and to identify factors typical for the use of payment habits, which are not covered by the theories used as the basis for our study. We also tried to anticipate interdependencies between these factors to have preliminary insight in order to support the analysis of the final research data.

The purpose of group interviews was to supplement and fill in gaps in the individual level interviews. Individual level interviews provide information on a person's tastes and needs ('Attitude' in the TPB model). However, consumers act in a social environment in which also other persons' views are often taken into consideration in decision-making ('Subjective Norm' in the TPB model). In group interviews based on the focus group method, the interviewees discussed in such a 'social environment' the factors affecting use, selection and changes in use of payment habits. For the group interviews, six groups of 4–6 persons familiar to each other were formed, and the discussions were facilitated by an interviewer. The discussions were taped, notes were made on them, and finally the discussions were transcribed. The interviews were used mainly to supplement factors and questions based on diffusion of innovations theory. Two new tentative factors appeared: the need for safety and for trust. The group interviews also involved testing of the preliminary survey questionnaire.[18]

Finally, after all above described steps the survey questionnaire was finalised with the help of comments and revisions from a panel of experts at the Bank of Finland and Helsinki School of Economics. The final version of the questionnaire resulted from several rounds of comments by the panel and the Finnish language

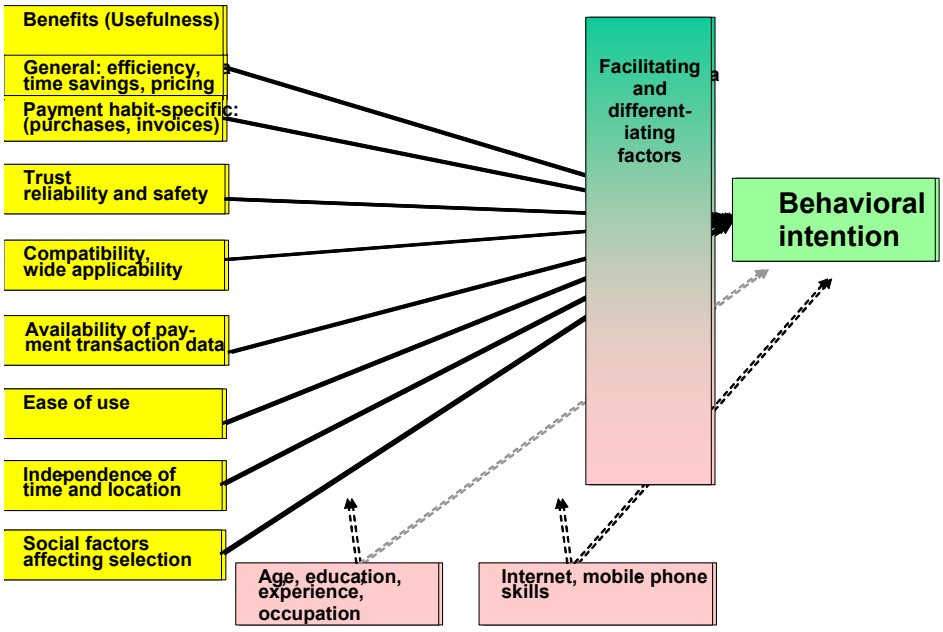
[17] The Laddering and MEC models are more recent theories of social psychology than TRA and TPB. According to the laddering model, factors affecting behavioural intention create a hierarchy of values, with physical values, eg technical safety of a payment habit, at the bottom and intellectual values, eg the need to act reliably, at the top. According to the MEC model, alternatives are evaluated based on the outcome of behaviour and the means to achieve the outcome. Means leading to the desired outcome (Mean) and the outcome (End) form repeating M-E chains (Chain).
[18] A related Master's Thesis and its findings were published in May 2006 by HSE.

reviser. The efficacy of the questionnaire was tested prior the survey by sending it to 50 staff members at the Bank of Finland.

3.2 Research model

The finalisation of the research model which we used for data collection was done only at the last stage of the questionnaire development. The model, shown in Figure 5, incorporates the theoretical basis of the study, results of earlier studies on adoption of payment habits, and feedback obtained in the development process from individual and group interviews and from the panel of experts. It should be noted that, based on the research model (Figure 5), it impossible to define which factors facilitate and which differentiate changes in the use of a payment habit.

Figure 5. **Research model used as the basis of data collection**



3.3 Sample frame and size

Our sample frame consisted of Finnish-speaking inhabitants of continental Finland aged 18–65. The target group of the survey was active adult consumers because they are frequent users of payment instruments and the most interesting group of consumers from the perspective of investigating changes in payment habits. Moreover, developers of payment instruments and habits focus their main attention on these consumers. The province of Åland was excluded from the

sample frame because it is in many ways a separate market area. We did neither create language versions of the questionnaire because the mother tongue of the respondent was not presumed to affect the results. Moreover, translating complex questions could undermine the comparison of responses. The sample framework consisted of the largest language group so as to ensure a high response rate and representativeness among the target group.

According to our calculations, a minimum of 600 observations would be needed for the statistical analysis. We expected a response rate of 30%, and thus we deemed 2,000 to be a sufficient sample size. The sampling itself was random sampling, from the Population Register Centre's population information system.

3.4 Executing the survey

The data were collected with a self-administered mail survey questionnaire because the statistical methods of data analysis required a considerable number of observations. The mail survey produced the required amount of data at a reasonable cost. Nor did the way the survey questions were formulated prevent use of the mail survey.

We produced both a printed and an electronic version of the questionnaire. The printed questionnaire was mailed to the respondents. The cover letter included the address for the electronic version (URL) of the questionnaire. Respondents were also sent user IDs for filling in the electronic questionnaire. User-specific IDs were used to prevent distortion of data, eg multiple responses. Each user ID could thus be used to complete only one questionnaire.

The respondents were motivated with a lottery, in which two EUR 500 travel vouchers and 10 sets of a special Finnish coin series were randomly distributed among those who returned a lottery ticket. Those interested in the draw were asked to write their contact information on the separate lottery ticket and return it together with the questionnaire.

The survey was mailed during the second week of October 2005, and respondents were given a fortnight to return the questionnaire. After the deadline for responses, the questionnaire was sent for a second time to those who had not yet responded. The respondents were identified by means of returned lottery tickets.

3.5 Characteristics of the compiled data

Of the questionnaires, 978 were returned. Of these 70 (7.2%) were completed in electronic form. The rest of the respondents, ie 908 (92.8%) were completed

printed questionnaires. The popularity of the printed questionnaire is in line with earlier experience. Of the returned questionnaires, 2 were empty. In addition, 28 other responses (2.9%) were rejected. Some were rejected due to the abundance of missing information, others due to comments and responses received that caused us to conclude that the respondent had not answered the questions in earnest. The response rate of acceptable responses was 47.4%, ie the survey can be considered a real success evaluated on the basis of the response rate.

The quality of responses was assessed on the basis of the completeness of responses and the extent and quality of comments written in the questionnaires. Many respondents gave free-form comments on their needs concerning payment habits and developments therein. Based on the responses, one can conclude that for many the development of payment habits is an important matter, which in turn at least partly explains the exceptionally high response rate.

4 Results of the survey

The purpose of the research is to identify Finnish consumers' key motives for selecting (using) a payment habit. Main interest is in those consumer preferences (tastes) and characteristics that motivate changes in the use of payment habits.

We analysed two payment habits especially widely – payment of daily purchases by mobile phone and payment of invoices against electronic invoice. Earlier studies and frequent subjective observations suggest that these payment habits have an excellent possibility of becoming widespread, and our survey results support these observations. Moreover, since these payment habits are in the early stage of their life-cycle, research on their adoption and diffusion is well motivated. At the same time, it is necessary to keep in mind that current (legacy) technology affects a large number of consumers' decisions. The benefits of changes in payment habits are not absolute but relative; they reflect the perceived superiority of a payment habit relative to alternative habits. Assessments over the future use of payment habits may thus change with the development of payment habits and other factors.

In reporting our results, we broadly apply the research model presented in Section 3. The purpose of the model was to guide researchers (us) to formulate and present questions that will best cover the factors affecting selection of payment instruments (changes in use of payment habits). The aim is not to prove that the model is on factor level correct or incorrect but to use it to describe the most important factors likely to impact the use of payment habits. To achieve the research objectives of this study, the data were analysed via descriptive statistical methods, statistical multivariate methods, and qualitative methods.

4.1 Background variables

The target group of the survey was Finns aged 18–65, ie consumers estimated to be frequent users of payment instruments. Of all consumers, their preferences (tastes) have the greatest impact on the development of payment instruments. Due to the sample frame of the study, the sample population differs from the whole Finnish population, since children and elderly persons are excluded, but reflects the preferences (tastes) and behaviour of Finnish frequent users of payment instruments.

The ability of the data to describe and predict consumer behaviour is based on its unbiasedness – the fact that respondents' various tastes, needs and ways of selecting payment habits are represented pro rata to their occurrence in the target group and in Finnish society. Random sampling and the high response rate of the survey are important factors in ensuring unbiasedness. The sample frame should, however, be kept in mind when interpreting the results.

Because the response rate of our survey was extremely high, the data can be assumed to be highly representative of the target group and also the Finnish consumer. Still, as a large proportion of the survey's large target group was opted out of the study, and as over half of the sampled respondents did not respond to the survey, the data should be assessed also based on the reported personal characteristics of the respondents, to ensure the representativeness of the survey. Next, we will discuss the key demographic variables of the sample and compare them to corresponding indicators of the whole Finnish population.

4.1.1 Demographic variables

The most important demographic variables explaining the behaviour of a consumer are age, sex, education, income, and occupation. Taken together, they also sum up fairly well a consumer's opportunities and need to adopt new innovations, including payment habits.

Next, we will compare the demographic characteristics of the respondents and the entire Finnish population and report the differences observed. We will also take a stand on how observed differences affect the interpretation of results. A summary of the key demographic variables of the data is given in Section 1 (Background information) of Annex 8.

4.1.1.1 Sex

Women are overrepresented in the survey (544; 57.4%). The sex ratio of Finns corresponding to the sample frame of the survey was in 2005 as follows: 52% female and 48% male. The overrepresentation of women in the data is probably due to two reasons. Women are more conscientious than men about responding to surveys, and women may make the majority of purchases in a household or handle its finances, eg pay invoices. The meaningfulness of a survey, in turn, increases the willingness to participate and respond. Nevertheless, there is a clear difference between the sex ratio of the data and the entire population. This and other differences should be kept in mind when looking at the results.

4.1.1.2 Age

The respondents' age distribution differs from that of the entire population due to the sample frame. The only clear deviation that is not due to the sample frame is the relatively small proportion of young respondents. Particularly those under 20 years were lazy to send in their responses. The age distribution differences can probably be explained by the same factors as the sex ratio differences. Moreover, the young have less experience in payments than the older age groups. In addition, young people are relatively reluctant to respond to surveys.

4.1.1.3 Education

Of the respondents, 53% are graduates of secondary school, whereas in the population over 15 years, the proportion is 37%. As regards other degrees, the situation is as follows (figures for those over 15 years in brackets): of the respondents 13.6% (11.7%) are polytechnic graduates and 16.6% (13.3%) have a university degree. A comparison of education levels of respondents and the entire population over 15 years shows that the respondents' level of education is slightly higher than that of the entire population. This is partly due to the fact that Statistics Finland's statistics cover degrees of those over 15 years, whereas the sample frame consisted of persons over 18 years. The difference is probably partly due to the general reluctance of those with a lower education or senior citizens to take part in surveys. Our survey may also have been considered complicated. The difference may affect results on the relative use of payment habits.

4.1.1.4 Annual income

The respondents' income level differs slightly from that of the entire population. The lower income groups are clearly underrepresented and those of average income are overrepresented. The difference can be explained mainly by the fact that the young as a whole and senior citizens of lower income are underrepresented in the data, due to the sample frame. On the other hand, as regards income level, the data are probably fairly well representative of the population that most frequently uses payment instruments. This difference in income levels impacts probably mostly the results concerning the pricing of payment instruments. The smaller the proportion of those with lower income, probably the smaller is the impact of price on the selection of payment instrument.

4.1.1.5 Occupation

The distribution of respondents' occupations differs considerably from that of the entire Finnish population. Of respondents, 88 (9.3%) are entrepreneurs, 138 (14.6%) are management or senior staff, 154 (16.2%) are office staff, and 321 (33.9%) are workers.

Of respondents, 74% are employed, whereas only 43% of all Finns are employed. The distribution of the non-employed respondents is the following: 77 (8.1%) are students, 103 (10.9%) pensioners, and 61 (6.4%) are classified as 'other' non-employed. The share of students in the data corresponds to the share of students in the entire population (8%). By contrast, the portion of pensioners, as well as other non-employed, is considerably lower for the respondents than for the entire population. The difference is mainly due to the sample frame, which consists of Finns aged 18–65. The responses clearly reflect the views of employed persons as to changes in and development of payment habits.

4.1.2 Experience in using mobile phone and Internet

Experiences in the use of technologies affect a person's willingness and preparedness to adopt new innovations. The more experienced the consumer is, the easier it is to adopt a new technology. Competence in the use of a similar technology, in particular, strengthens the intention to adopt. Payment innovations are increasingly based on the use of information and communication technologies. Currently and in the near future, a key role will be played by mobile telecom technologies and the Internet with related technologies, particularly the World Wide Web (WWW). For that reason, we measured consumers' experience in using mobile phones and the Internet both with general indicators and with their

skills in using payment-related services, and assessed the impact of these factors on the adoption of payment habits (on changes in intention to use payment habits).

Experience can be measured by subjective and 'objective' indicators. A subjective indicator usually measures a respondent's own beliefs about quantity and quality of his/her knowledge and skills. An objective indicator measures experience based on one or more quantitative variables and compares the respondent's experience to that of the entire population (or sample). We measured the respondents' subjective skills in using mobile phone and Internet by asking the respondents to grade their mobile phone and Internet skills, using the traditional Finnish 7-point school grading system with grades from 4 to 10. The positive feature of the indicator is that it is familiar to the majority of respondents, due to its extensive use.

Objective[19] experience and technology use skills were measured with questions on previous use of payment-related services based on Internet or mobile phone technologies, and the frequency of using each of those services.

4.1.2.1 Experience in using mobile phone

The distribution of respondents' assessments on their mobile phone skills was fairly normal, albeit slightly left-skewed. More than a half of the consumers thus self-assessed their mobile phone skills to be above average.

Objective indicators of mobile phone use experience (Table 1) show that respondents use a mobile phone mainly for communication. Of the respondents, 84% use their mobile phone daily for making calls, and about half (49.7%) send or receive (SMS) text messages daily. Payment by mobile phone or the use of mobile banking services is relatively rare. Of all respondents, 19.4% have at least tried purchasing via mobile phone, but only 9.6% report purchasing by mobile phone once or several times a year. Mobile phones are used even less frequently in banking-related services: 9.4% have tried the browsing of their account balance information, and 5.3% reported that they use this service at least once a year. Of all respondents, 3.5% have tried using SMS notification service of payments due, and 1.6% of respondents receive such notifications at least once a year. Payment of invoices by mobile was tried by 5.9% of the respondents, and 2.2% pay invoices by mobile phone at least once a year.

[19] Note that even 'objective' indicators are based on the respondents' self-assessments.

Table 1. **Objective experience and skills in mobile phone use (%)**

	Daily	Weekly	Monthly	Annually	Have tried	Never
Calling and speaking	84.0	14.6	0.9	0.1	0.1	0.2
Sending or receiving (SMS) text messages	49.7	36.8	9.2	0.8	1.9	1.6
Purchasing by mobile phone	0.2	0.8	3.7	4.9	9.7	80.6
Browsing of bank account balance information by mobile phone	0.1	0.6	2.8	1.8	4.1	90.6
(SMS) text message notification service of payments due	0.1	0.3	0.7	0.5	1.8	96.5
Payment of invoices from my bank account by mobile phone	0	0.2	0.9	1.4	3.4	94.1

Mobile phone usage is high in Finland in relative terms. Consumers, however, regularly use only a fairly small amount of mobile services. The use of mobile banking services in particular, is minor. This is probably due to extensive use of Internet banking services via personal computers. Computers with Internet still seem to be easier access devices than mobile phones for using banking services. Moreover, the number of fixed-price broadband connections continues to increase. The use of Internet banking services via a computer with fixed-price connection does not increase a consumer's data transfer costs, unlike the use of a mobile phone for the same services. The only relative benefits of mobile banking, as compared to computer based Internet banking, are the smaller size of the mobile phone and independence of location. The fact that a computer can be used only in certain locations causes, however, inconvenience only in exceptional situations. This is probably reflected in the rarity of regular use of mobile banking services.

4.1.2.2 Correlation between subjective and objective mobile phone skills

A consumer's subjective assessment of his/her own skills usually has a larger impact on behaviour than objective skills. Objective skills are believed to filter through the consumer's impressions to his/her values and decisions. The objective skill indicators which impact subjective skills are, however, useful for understanding consumer behaviour, or attempts to affect that behaviour.

We studied the correlation between subjective and objective indicators by means of correlation coefficients (Table 2). Statistically significant correlations reflect similarity of subjective and objective skills. For example, a person who

ranks his/her skills high in using the mobile phone sends many text messages, unlike one who ranks his/her skills low.

Table 2. **Objective mobile phone skills as indicators of subjective mobile phone skills**

	Mobile phone skills		
	[a] *r*	[b] *p*	[c] *N*
Calling and speaking	0.145	**< 0.001**	930
Sending or receiving (SMS) text messages	0.345	**< 0.001**	924
Purchasing by mobile phone	0.225	**< 0.001**	910
Browsing of bank account balance information by mobile phone	0.158	**< 0.001**	909
(SMS) text message notification service of payments due	0.047	0.161	908
Payment of invoices from my bank account by mobile phone	0.110	**0.001**	908

a) The Pearson correlation coefficient measures the degree of covariation of two variables. The higher the correlation coefficient value is, the stronger the covariation. The maximum value is +/-1.
b) Statistical significance of covariation. The P-value is for two-sided hypothesis test, with no assumption of the sign of the correlation coefficient. For example, <0.001 means that the probability of there being a correlation between the variables exceeds 99.999%.
c) N is the number of observations; it varies between 908 and 930, because some respondents left some questions unanswered.

From the results we can infer that a consumer's assessment of his/her abilities is based on actual mobile phone usage. The more frequently and diversely the consumer uses the mobile phone, the more convinced he/she is of his/her skills. Only the use of text message notification service of payments due did not correlate with subjective mobile phone skills.

The results also lead us to conclude that the use of fairly complicated mobile services strengthens the consumer's assessment of his/her mobile phone skills. Using the mobile phone for making calls and for speaking – the basic mobile phone services – is perceived to be so easy that the use of these services does not improve mobile phone skills as much as eg payment of purchases and invoices. Text message notifications of payments due are an exception because their use does not increase the impression of subjective skills. Receiving messages is probably perceived to be so simple or passive a function that it does not increase subjective skills.

4.1.2.3 Impact of mobile phone use experience on mobile payment

We studied, via correlation analysis, the impact of subjective and objective mobile phone use experience on intention to adopt mobile payment. The intention to adopt was calculated as the difference between the score of intended use (in 6 months and 5 years) and the score of current usage. The result of the correlation analysis is clear. Mobile phone use experience does not have a statistically

significant impact on intention to pay purchases or invoices by mobile phone. This finding is probably explained by the fact that consumers perceive mobile phone technology easy to use. Thus experience does not differentiate consumers' intention to use. Intention to adopt mobile payment is instead based on other factors. This observation should, however, not be interpreted to imply that experience in the technology base of a payment habit is not important for adoption intentions. The observation is probably due to the fact that mobile phones no longer have technology status and role but have become part of consumers' everyday life.

4.1.2.4 Experience in using Internet

The distribution of respondents' assessments of their Internet skills is close to normal, though also this distribution is slightly left-skewed. More than half of the participating consumers thus assessed their Internet skills to be above average, which is the same result as for mobile phone skills.

The distribution of responses on the use of Internet is shown in Table 3. The use of basic Internet services is widespread: of all respondents, 82% have at least tried browsing and searching for information on the Internet; and 79% have at least tried to use email. Nearly half (48%) of the respondents reported having made cash-on-delivery orders via the Internet; 36% had paid for orders using Internet-banking access and identification credentials, and 26% by credit card. Internet banking services are used extensively: 74% had browsed their bank account balance and account transactions; 75% had paid invoices via Internet banking.

The correlation between indicators of objective skills – on which respondents' own impressions are based – and subjective skills was examined in the same way as for mobile phone skills (see above). Table 4 shows the correlations between indicators of objective skills and consumers' subjective assessments of their skills. All the correlations between objective and subjective indicators are statistically significant. The table also shows that consumers associate the use of basic Internet functions – searching for information and using email – slightly more closely with Internet skills than the payment of purchases or the use of banking services. However, the use of payment and banking services also has a strong impact on consumers' subjective assessment on their skills. Internet experience is thus a good candidate for a determinant in explaining the adoption of new, increasingly technical payment habits.

Table 3. **Objective Internet experience, by type of service (%)**

	Daily	Weekly	Monthly	Annually	Have tried	Never
Browsing and searching for information	50	23	6	1	2	18
Sending or receiving e-mail	46	19	8	2	4	21
Purchasing via the Internet, payment after the delivery of the purchase	1	1	13	19	15	52
Purchasing and paying via the Internet; real-time payment with banking credentials	<1	1	10	13	12	64
Purchasing and paying via the Internet; real- time payment by supplying credit card information	<1	<1	6	10	9	74
Browsing of bank account balance or account transactions	7	48	16	1	2	26
Payment of invoices from bank account with Internet banking	5	45	22	1	2	25
Use of other Internet banking and investment services	2	9	12	8	13	55

Table 4. **Objective Internet skills as indicators of subjective Internet skills**

	Internet skills		
	R	*P*	*N*
Browsing and searching for information	0.483	< 0.000	789
Sending or receiving e-mail	0.532	< 0.000	788
Purchasing via the Internet, payment after the delivery of the purchase	0.365	< 0.000	783
Purchasing and paying via the Internet; real-time payment with banking credentials	0.376	< 0.000	786
Purchasing and paying via the Internet; real-time payment by supplying credit card information	0.304	< 0,000	784
Browsing of bank account balance or account transactions	0.309	< 0.000	785
Payment of invoices from bank account with Internet banking	0.274	< 0.000	788
Use of other Internet banking and investment services	0.283	< 0.000	788

4.1.2.5 Impact of Internet use experience on adoption of electronic invoice

The impact of Internet use experience on the adoption of electronic invoice (intention to use) was investigated with correlation analysis. The intention to adopt was calculated as the difference between the score of intended use (in 6 months and 5 years) and the score of current use. The result is clear. Both subjective and objective Internet use experience is clearly correlated with the intention to use electronic invoice as Table 5 shows. When this result is compared to the non-existent correlation between mobile phone use experience and intention

to pay by mobile phone, it is easy to detect that consumers have a similar attitude towards electronic invoices as they have towards new technologies in general, ie those experienced in the use of Internet are interested in adopting electronic invoices.

The result is surprising because Finns have used Internet banking services for over a decade already. During this period, the majority of Finns have transformed to pay invoices with computers via Internet banking services from paying them at a bank branch. This is probably a marketing issue for banks. From the point of view of the payee (bill sender), the electronic invoice changes the billing process fundamentally, whereas for the consumer, the electronic invoice is just a new electronic banking service. Using the service, ie confirming or amending an already filled in invoice, is most likely as easy as using other Internet banking services. Banks should learn to tell this to consumers in concrete, instead of technical, terms.

Table 5. **Impact of experience on adoption of electronic invoice**

	Intention to use			
	6 months		5 years	
Experience	R	P	R	P
Browsing and searching for information in the Internet	0.088	*0.012*	0.184	**0.000**
Sending or receiving e-mail	0.129	**0.000**	0.204	**0.000**
Purchasing via the Internet, payment after the delivery of the purchase	0.183	**0.000**	0.153	**0.000**
Purchasing via the Internet, real-time payment with banking credentials	0.187	**0.000**	0.212	**0.000**
Purchasing an paying via the Internet, real-time payment by supplying credit card information	0.134	**0.000**	0.153	**0.000**
Browsing of bank account balance or account transactions	0.131	**0.000**	0.141	**0.000**
Payment of invoices from bank account with Internet banking	0.137	**0.000**	0.132	**0.000**
Use of other Internet banking and investment services	0.161	**0.000**	0.185	**0.000**
Subjective Internet skills	0.158	**0.000**	0.212	**0.000**

4.1.3 Filing receipts

Filing receipts is a key payment-related function. There are different requirements and practices in respect of filing receipts for the different payment instruments and habits. Some payment instruments and habits make the filing of receipts easy. For example, the archiving of electronic invoices it is easy to automate. The need to file receipts and the ease of doing it are thus likely to affect the relative benefits of a payment habit and thereby the adoption of a payment habit.

Respondents were asked how long they keep receipts, using a 6-point scale (never, 1–2 months, 3–6 months, 1 year, 2–5 years, over 5 years). The results shown in Table 6 indicate that the average (median) time for keeping a receipt is 1–2 months; credit transfer receipts and paid invoices are usually kept for a year and account statements for 2–5 years.

The results show a strong correlation between filing periods for all types of receipts. This observation is probably also partly due to differences between occupational groups and to filing requirements that concern certain professions. For example, entrepreneurs keep receipts for cash purchases longer than other occupational groups. Yet, the only statistically significant difference between the occupational groups was that students keep account statements for a shorter period than any other group.

The strongest candidates for the determinants explaining the length of a filing period are a consumer's personal characteristics. These characteristics may be socio-psychological (systematic, diligent, etc.) or habitual.

It seems that the ease of filing receipts could be an attractive feature for certain consumer groups. Identifying these consumers may, however, be difficult if our observation on the determining effect of personal characteristics is correct.

Table 6. **Filing receipts (%)**[a)]

	Never	1–2 months	3–6 months	1–2 years	3–5 years	Over 5 years
Purchases paid in cash	35.5	**31.8**	6.1	12.0	9.0	5.5
Purchases paid by debit card	26.7	**40.8**	8.2	11.4	7.8	5.2
Purchases paid by credit card	27.9	**30.7**	12.5	14.4	9.7	4.9
Credit transfers	16.5	16.0	9.8	**24.6**	22.0	11.2
Bills / paid invoices	9.1	10.5	8.7	**27.6**	30.1	14.1
Bank account statement	8.1	5.0	3.6	22.5	**34.3**	26.4

a) Median class of the classification is in bold.

4.2 Expectations concerning changes in payment habits

The development of new payment instruments and habits pays a lot of attention – or at least should pay a lot of attention – to consumers' expectations and needs. Consumers will ultimately decide themselves which payment habits they use.

Several payment instruments, eg many chip card and mobile payment services that have recently been launched to the payment services market, have remained just experiments. Research evidence shows that consumers are usually interested in these new technologies. This is often also reflected in intention to use. Adoption of a new innovation is, however, usually a fairly slow process – one which does not always even take place.

The gap between consumers' interest and actual behavioural changes is probably partly due to limits of imagination: it is difficult to foresee future payment situations. For example, budgetary and time constraints may prevent a consumer from adopting an innovation, despite having the intention to use the innovation. The further we look into the future, the more uncertain consumers' assessment become, a fact that is also supported by the theories used as basis for our study.

While consumers' assessments about the future should be interpreted with caution, awareness of these assessments is a prerequisite for successful development of payment instruments. Payment habits are becoming increasingly technical. As with other services, the development of payment habits must anticipate consumer behaviour over both the short and somewhat longer term. It is all about developing the capabilities to provide services, ie 'storing' services for future use.

4.2.1 Expectations of changes in payment habits in 6 months and 5 years

The respondents were asked to assess their use of various payment habits currently, in 6 months and in 5 years. Both current use and intention to use in future were measured with the 7-point Osgood scale (never ... frequently). The indicator of payment habit usage is thus based on consumers' perceptions of the frequency of using certain payment habits to pay daily purchases and invoices. The results given by the indicator may deviate slightly from overall statistics due not only to the impact of perception, but also due to responses having the same weight, and due to the target group (consumers aged 18–65) of the survey. For example, the relative use frequencies of payment habits for paying invoices may deviate slightly from realised transaction-based statistics.[20] It is, however, justified to use the same indicator to compare current use and intention to use in future because the objective is to explain changes in the use of payment habits.

The majority of respondents, 84–92%, depending on the payment habit, stated that they will not change their use of payment habits in the next 6 months. Depending on payment habit, 14–45% of the respondents assessed that they will change their use of payment habits in five years (Annex 1 and section 5 of Annex 8). A consumer's behaviour is based mainly on routines and habits. It is not rational to spend time at each recurring transaction considering alternatives. Instead, it is more rational to simply repeat the time-tested behaviour. From the perspective of adoption of new payment habits, the following of established routines and habits exemplifies the slowness of mass, which delays the diffusion

[20] Please note that statistics solely on consumers' payment transactions are not available.

of new payment habits, or innovations in general. Our view on the slowness factor of changes in payment habits in the short term is supported by historical data, as shown by both banks' statistics and studies by the Finnish Bankers' Association.

4.2.2 Developments in payment of daily purchases

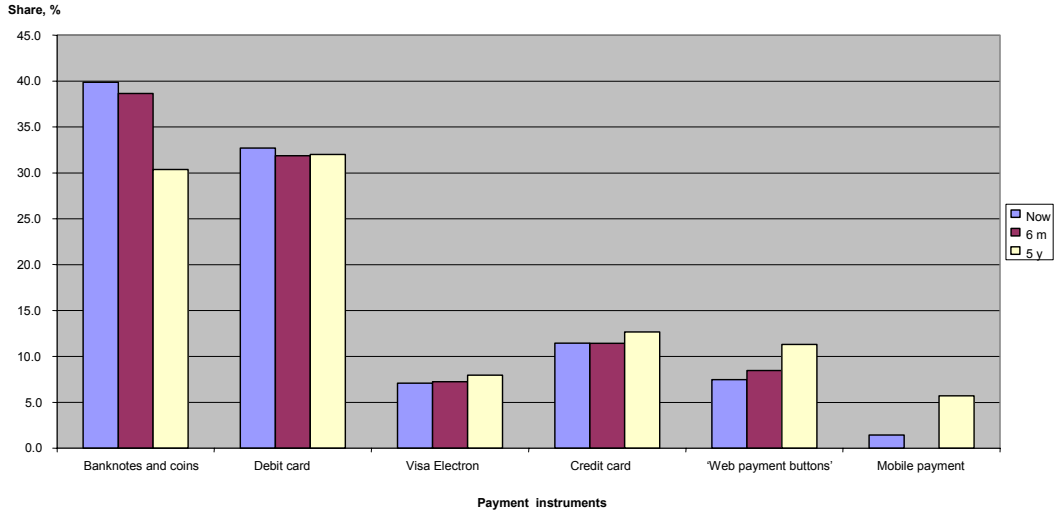
Banknotes and coins are the most commonly used payment habit for paying daily purchases, in relative terms (40% of the cumulative weight of reported payments of purchases), measured with the frequency of payment (Figure 6). Consumers use debit cards nearly as often as cash (33%). The remaining shares of the relative cumulative weights of payment habits are as follows: credit cards (11%), 'web payment buttons' (7.5%), Visa Electron (7%) and mobile payment (1.5%).[21]

In the next 6 months, the situation will not change significantly. The use of banknotes and coins in payment of daily purchases will decline slightly and that of electronic payment habits (mobile payment, 'web payment buttons') will increase. The relative shares of other payment habits will remain broadly unchanged.

In the next 5 years, the debit card seems to become the most frequently used payment habit, in relative terms (32%); however, its relative share in number of transactions will remain unchanged. The change is due to the declining use of cash. Banknotes and coins will nevertheless remain the second most frequently used payment habit (30.5%). The growth in popularity of other payment habits for paying daily purchases exceeds that of the debit card. In 5 years' time, credit card payments are forecast to account for 12.5% of total payment transactions, payments using 'web payment buttons' for 11.5%, Visa Electron for 8%, and mobile payments for 5.5%. For more details, please see Annex 1 (Tables 12 and 13).

[21] As described earlier, our measuring method differs from banks' statistics and that used by the Finnish Bankers' Association. Examining the distribution of the use of payment habits gives a clearly different picture of payment habit usage than studying the most frequently used payment habit. Similarly, perceptions of frequencies for using payment habits and of changes give a different picture of payment habit usage than statistics on realised transactions. This study focuses on identifying changes in the use of payment habits, particularly of new payment habits. The 7-point Osgood scale (albeit ordinal) enables the comparison of changes.

Figure 6. **Developments in the use of payment habits for daily purchases**



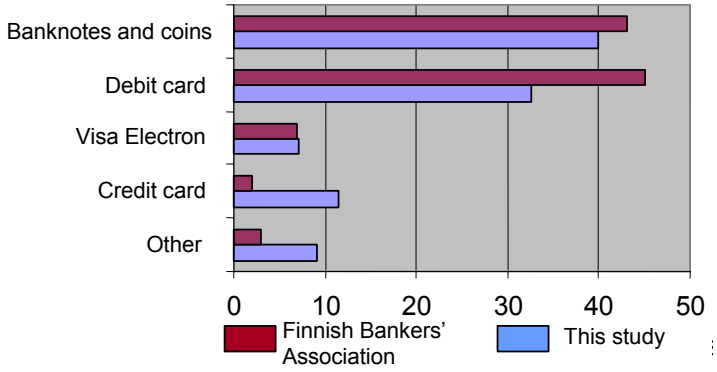
Our survey, which reports on relative use of payment habits, produces a clearly different result than the Finnish Bankers' Association's survey on the most frequently used payment habit. Figure 7 compares the results of our survey and the survey conducted approximately during the same period (February 2006) by the Finnish Bankers' Association (Finnish Bankers' Association, 2006).

In the survey by the Finnish Bankers' Association, the popularity of cash and debit cards as the most frequently used payment habits for paying purchases masks the use of other payment habits. According to that survey, the combined share of these two payment habits is 88%. In our survey, their combined relative share is 72.5%.

Moreover, the survey by the Finnish Bankers' Association assigns too high relative importance to the debit card. Even though their survey shows that the debit card has become the most popular payment habit in Finland for paying daily purchases, the difference versus cash is small. Therefore cash will remain longer as the most frequently used payment habit for paying purchases (in relative terms) than what its declining position among the most frequently used payment habits suggests.

Reporting on the most popular payment habit also masks growth in the use of other payment habits, eg payment by 'web payment buttons'. Our study of the use of payment habits (in relative terms) shows that Finnish consumers use several payment habits for paying daily purchases. Moreover, our study also shows that the number of payment habits used seems to grow in the next 5 years.

Figure 7. **Payment habits for paying daily purchases; by most frequently used (Finnish Bankers' Association) and relative share (this study)**



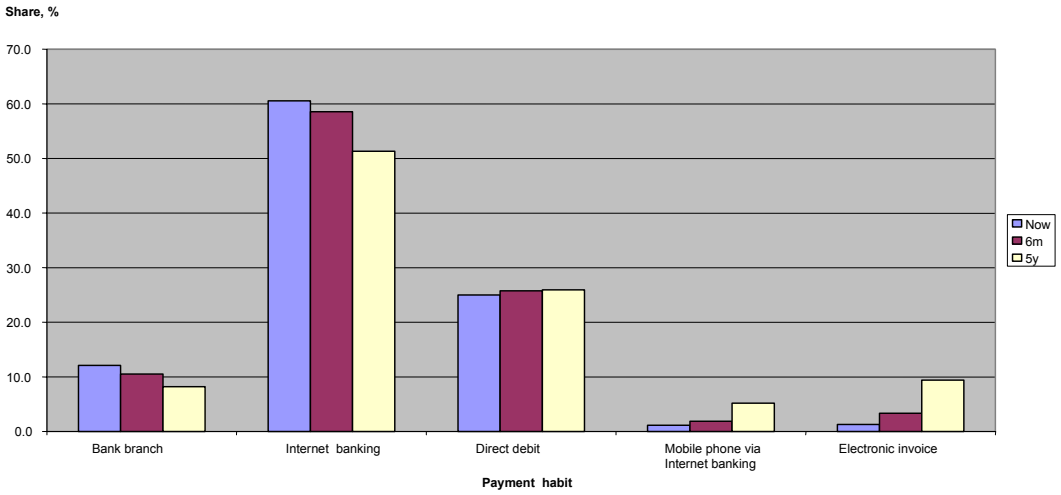
4.2.3 Developments in payment of invoices

Our survey shows that payment via Internet banking services is currently the most frequently used payment habit for paying invoices (60.5% of cumulative weights of payments) and that direct debit (25%) ranks relatively second. Payment of invoices at a bank branch account for 12% (due to the form of the survey, this probably includes also the use of giro ATMs at bank branches). Payment of invoices by mobile phone via Internet banking services and by electronic invoice is currently nearly equally popular (totalling 2.5% of the cumulative weights of payments).

The next 6 months will not see any major changes. Consumers intend to pay invoices even less frequently at bank branches (10.5%). The relative portion of payment via Internet banking services will also decline slightly but will remain at about 58.5%. The use of direct debit (in relative terms) will increase somewhat (to 26%). Payment of invoices by mobile phone via Internet banking services (2%) and by electronic invoice (3%) seems to be gaining slightly in relative popularity.

In the next 5 years, major changes in the use of payment habits are not expected, unless new payment habits are launched to the payment services market. Consumers intend to pay invoices even less frequently at bank branches and via giro ATMs located at bank branches (8%); the relative portion of payment via Internet banking services will also decline, to 51.5%. Direct debit will remain popular, at 26%. By contrast, the relative portion of electronic payment habits will grow significantly. The relative portion of payment by mobile phone via Internet banking services will increase to 5%, and the use of electronic invoices will increase to 9.5%, as Figure 8 illustrates.

Figure 8. **Developments in payment habits used for paying invoices**

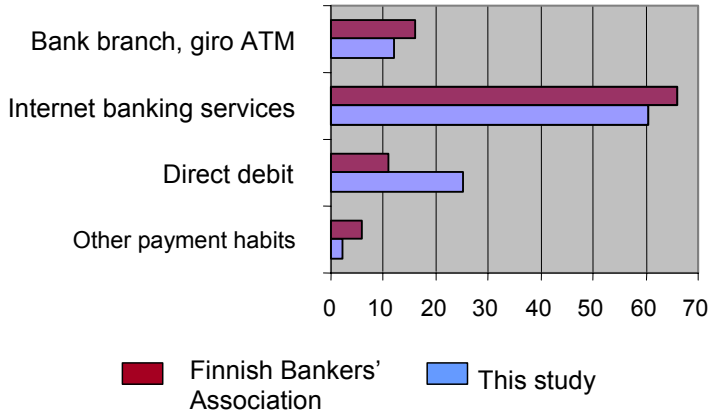


Our survey, which reports and compares the relative use of payment habits, again produces a clearly different result than the survey by the Finnish Bankers' Association on the most frequently used payment habit for paying invoices. Figure 9 compares of the results of our survey and the survey conducted approximately during the same period (February 2006) by the Finnish Bankers' Association (Finnish Bankers' Association, 2006).

Both the studies show that payment via Internet banking services is the most frequently used payment habit for paying invoices. In the survey by the Finnish Bankers' Association, the popularity of payment via Internet banking services, however, masks again the use of other payment habits. The differences in results are most striking as regards the use of direct debit. According to the survey by the Finnish Bankers' Association, 11% of respondents pay invoices most frequently by direct debit. According to our survey, the relative share of direct debit is 25%. The logical conclusion is that consumers pay a large portion of their invoices via Internet banking services, but some invoices are paid by direct debit. It should also be noted that according to the Finnish Bankers' Association, the popularity of direct debit is particularly high among those over 55 years.[22]

[22] In comparing results, differences in sample frames should be taken into account.

Figure 9. **Payment habits for paying invoices; by most frequently used (Finnish Bankers' Association) and relative share (this study)**



Also in this comparison, identifying only the most popular payment habit masks growth in the use of other payment habits, eg the increasing popularity of electronic invoice. A study of the relative portion of payment habits shows that Finnish consumers use several payment habits for paying invoices. Moreover, our study also shows that the number of payment habits used for paying invoices seems set to increase in the next 5 years.

4.2.4 Assessing the magnitude of changes

Changes in consumer behaviour were studied in more detail by conducting paired comparisons between current use of payment habits and intention to use (details in Annex 2). The majority of consumers do not intend to change their behaviour as regards all the payment habits; yet the paired comparisons show that the use of payment habits will change over both the short and longer term. Nearly all the changes are statistically significant.

Consumers intend to slowly reduce the use of banknotes and coins: there is only a minimal difference between current use and intention to use in 6 months. Such comprehensive alternative payment habits do not seem to be available that would make lesser use of cash in the near future a realistic alternative. All changes in the use of payment habits were statistically significant – with the exception of the slightly reduced use of banknotes and coins in six months. The changes nevertheless seem quite small. The use of payment habits for paying invoices will change slightly faster. Customers intend to reduce their payment of invoices at bank branches already in the near future and to significantly increase the use of other payment habits.

While consumers do not intend to change their use of banknotes and coins in the near future, many do intend to reduce their use in the next 5 years. Similarly, consumers intend to cut down on the payment of invoices at a bank branch. Consumers intend to increase most their use of Internet banking services in paying real-time for purchases made via Internet (using 'web payment buttons'), mobile payment, and use of electronic invoices. Direct debit and payment of invoices via mobile phone access to internet banking services will increase in popularity, albeit not as robustly as the three above-mentioned payment habits.

4.2.5 Impact of background variables

A consumer's situation in life has a major impact on his/her consumption behaviour and ways of spending time. These in turn affect the requirements placed on payment habits. Thus, in explaining consumers' choices regarding the adoption and use of payment habits, it is reasonable to examine the impact of background variables that describe a consumer's situation in life.

We identified and determined background variables of significance for our study from literature on consumer behaviour. We decided to measure the following key personal characteristics as background information variables: gender, age, occupation, education, and income. Since the statistical analysis showed that gender does not correlate in any significant way with payment instrument use, or with changes in their use, we exclude detailed reporting on gender.

4.2.5.1 Age

The impact of age on changes in payment behaviour was examined by calculating correlation coefficients between age and intentions to change payment behaviour. Changes in payment behaviour were measured by deducting from intended use in 5 years the current use of the payment habit in question. We noticed that, as a main rule, age decreases the intention to change payment behaviour, that is, correlation coefficients are negative in Table 7. However, the use of banknotes and coins, payment of invoices via Internet banking services, and payment of invoices at bank branches do not correlate (negatively) with age in a statistically significant way. There is also a strong positive correlation between age and the use of Visa Electron. This is probably due to the fact that the target group of Visa Electron is young consumers that intend to increase the use of other payment instruments, when their life situations change with age. Moreover, the current use of Visa Electron is relatively minor in the older age groups, while some of them are interested in using it.

Table 7. **Impact of age on changes in payment behaviour**

Payment habit	Age		
	R	*P*	*N*
Coins and banknotes	-0.009	0.787	972
Debit card issued by a bank	-0.093	**0.004**	960
Visa Electron	0.190	**0.000**	958
Credit card	-0.230	**0.000**	958
'Web payment buttons'	-0.190	**0.000**	972
Payment by mobile phone	-0.158	**0.000**	972
Payment of invoices at a bank branch	-0.053	0.097	972
Payment of invoices via Internet banking services	-0.027	0.404	972
Payment of invoices through direct debit services	-0.167	**0.000**	972
Payment of invoices by mobile phone via Internet banking services	-0.132	**0.000**	972
Payment of invoices against electronic invoices	-0.150	**0.000**	972

4.2.5.2 Occupation

Occupation is a nominal scale variable. Thus the relation between occupation and intention to change the use of payment instruments was analysed with variance analysis (detailed results are in Annex 3). Changes in the use of two payment habits – ie banknotes and coins and payment of invoices at a bank branch – were similar for all the occupations. This result indicates that the majority of consumers in all the occupations intend to reduce the use of these payment habits.

The variance analysis shows that occupation has a fairly small impact on intention to change payment behaviour (as evaluated with the relation of between group and within group differences), albeit many of the differences are statistically significant. Students clearly differ from the other occupational groups. Their financial situation changes fundamentally when they enter working life. The biggest differences between the occupations were found in payment of daily purchases by debit card. Of the various occupational groups, students intended to increase the use of both debit and credit cards the most. Students in turn intend to reduce the use of Visa Electron, whereas in the other groups, the intention to use Visa Electron increases. The intention to use 'web payment buttons' also increases more among students than among other occupations. Students also differ from the other occupational groups in the use of direct debit: they intend to increase its use significantly more than the other occupations.

All the occupational groups intend to reduce further their payment of invoices at a bank branch. In contrast, all occupational groups intend to increase – at nearly same rate – the payment of invoices via Internet banking services. All the groups intend to increase slightly mobile payment of purchases and invoice payment by mobile phone via Internet banking services. Pensioners, however, intend to increase the use of mobile payments and the use mobile phone to pay invoices via

Internet banking services less than those in the other occupations. Moreover, all occupational groups intend to increase the use of electronic payments. The strength of this intention varies slightly across the occupations. Management and senior staff, together with students, form a uniform group that in turn differs in terms of behaviour most from that of the pensioners.

4.2.5.3 Education

We studied, with variance analysis, also the impact of education on intention to change the use of payment habits (detailed results are in Annex 4). The observations on intention to use certain payment habits were similar to those reported above. Consumers at all levels of education intend to reduce the use of banknotes and coins in payment of daily purchases and payment of invoices at a bank branch, while they intend to increase the use of other payment habits.

The variance analysis shows that education has a fairly small impact on intention to change payment behaviour (as evaluated with the relation of between group and within group differences), although some differences between educational levels are statistically significant. The only exception is the group of secondary school students: they intend to increase the use of debit cards and reduce the use of Visa Electron. This observation is probably due to the young age of these students and the fact that the majority of them are still in school. The intentions of secondary school students reflect their expectations on transferring to a phase of life with regular income and consumption.

4.2.5.4 Income level

The impact of income level on intention to change the use of payment habits was analysed with correlation analysis. Income level does not seem to have a significant impact on the intention to reduce the use of banknotes and coins. Instead, a high level of income increases the intention to use Visa Electron, and mobile payments in payment of daily purchases, as well as electronic invoices in payment of invoices. Similarly, a high level of income reduces the intention to use debit card, credit card, ‘web payment buttons’ in payment of daily purchases, as well as Internet banking services and direct debit in payment of invoices. These findings are probably due to the positive correlation of income level and age: the level of income thus reflects the impact of age on payment behaviour. The correlations between income level and changes in use of payment habits are shown in Table 8.

Table 8. **Impact of income level on changes in payment behaviour**

Payment habit	Income level		
	r	*p*	*N*
Coins and banknotes	0.022	0.492	954
Debit card issued by a bank	-0.123	**0.000**	943
Visa Electron	0.115	**0.000**	941
Credit card	-0.103	**0.002**	941
'Web payment buttons'	-0.055	0.092	954
Payment by mobile phone	0.088	**0.006**	954
Payment of invoices at a bank branch	0.031	0.333	954
Payment of invoices via Internet banking services	-0.080	**0.013**	954
Payment of invoices through a direct debit services	-0.076	**0.019**	954
Payment of invoices by mobile phone via Internet banking services	0.044	0.174	954
Payment of invoices against electronic invoices	0.154	**0.000**	954

4.2.6 Some key observations on changes in use of payment habits

Some fairly safe conclusions can be drawn on future changes in the use of payment habits. Barring major changes in the payment environment, the use of cash will decline, along with payment of invoices at a bank branch, while the use of other payment habits will increase. The changes are most pronounced for the younger age groups. The declining use of cash does not, however, threaten the use of cash in payment of daily purchases. In contrast, payment of invoices at a bank branch may become a rarity. Thus the issue of finding an alternative or alternatives to the various forms of paying invoices electronically may also arise. In the next five years, some other forms of electronic and mobile payment will become widespread along with the payment of invoices via Internet banking.

4.3 Characteristics of new payment instruments and changes in use of payment habits

Adopting new payment instruments and habits is at least partly a rational decision which is affected by payment instrument characteristics. Every consumer uses at least one instrument for paying daily purchases and invoices; but many use several. New payment instruments and habits have to compete with established ones. Continued use of established payment instruments is supported by a certain 'friction' in human behaviour, ie a reluctance to change familiar behaviour.

Habitual behaviour is one of the typical characteristics of consumption. A consumer who is satisfied with the current situation does not easily change behaviour, even if a 'better' alternative service becomes available, as long as the

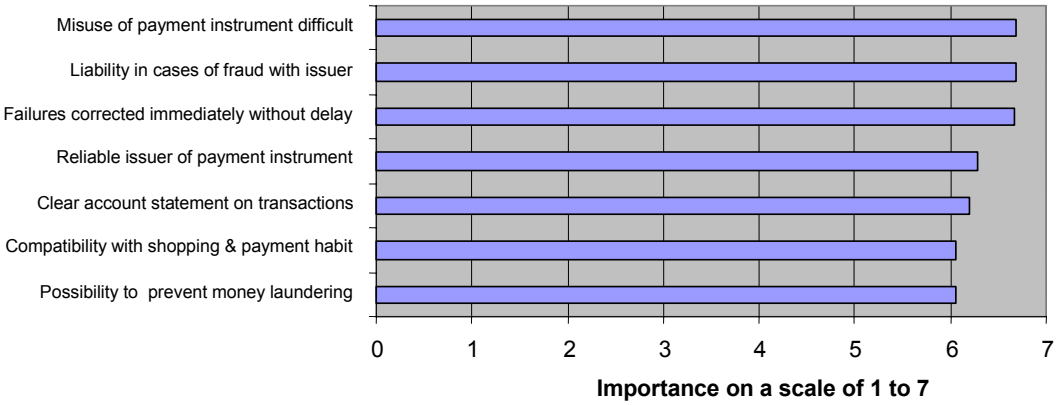
service the consumer is currently using is ‘good enough’. The inconvenience of changing behaviour is often a significant cost to the consumer. Habitual behaviour is also a way to manage risks. Trying a new payment habit may cause a disappointment. Because new payment habits must compete with established ones, a new payment habit must cross a threshold formed by the benefits of habitual behaviour. In other words, a new payment habit has to offer adequate high benefits over those offered by payment habits currently in use in order to become widespread. Determining the characteristics required of payment instruments and the relative importance of these characteristics is a prerequisite for successfully launching a payment instrument and habit to the payment services market.

Payment of daily purchases by mobile phone and invoices against electronic invoice are payment habits that are currently in the early stage of their life-cycles and hence are suitable for studying the adoption of payment habits. Moreover, the intention to increase the use of these two payment habits was highest at the 5-year horizon, as shown by respondents’ assessments (their t-test scores were highest, see Annex 2). We thus decided to analyse the relationship between intention to use these two payment habits and the characteristics of payment instruments.

4.3.1 Importance of characteristics, by variable and factor

In the survey, we used 27 attitudinal statements to examine the characteristics a new payment habit should have in order to attract consumers. We used the 7-point Osgood scale. Annex 8 shows that a new payment instrument must have a large number of characteristics to attract consumers. For seven of the attitudinal statements, the average of responses was above 6. These attitudinal statements and their averages are shown in Figure 10. In contrast, only three attitudinal statements had an average of less than 4.5.

Figure 10. **Most important characteristics of a new payment instrument (attitudinal statements)**



Of the seven attitudinal statements with the highest averages, five are related to reliability and trust, one to compatibility of skills, and one to the special characteristics of payments (bank account statement). From Figure 10 we can infer that reliability and trust is the most important factor required of a new payment habit. But is there a difference between the assessments of those intending and those not intending to change their use of a payment habit as to the reliability and trust of a payment habit? Is reliability and trust a facilitating or differentiating factor?

Next, we examined consumers' intentions to use a payment habit by condensing questions on the importance of different characteristics of a payment habit by means of principal components analysis. We tested several alternative models; the best proved to be one with five principal components. Detailed results are presented in Annex 6. The principal components are: social norm, compatibility to skills, reliability and trust, compatibility (wide applicability), and ease of use. The principal components were later used in regression analysis. As a result of the principal components analysis, some of the attitudinal statements (variables) were excluded (due to their statistical properties).

The impact of the characteristics of payment instruments on the use of a payment habit was examined by constructing a regression model. The dependent variables were the intentions to use mobile payment and electronic invoice in 5 years. In the preliminary model, the explaining (independent) variables were the factors of a payment habit (the regression coefficients of principal components from the principal components analysis), current use of a payment habit, Internet use skill, mobile phone use skill, gender, age, education, income level, and occupation. The final regression models are shown in the two tables of Annex 6 (Tables 17 and 18). From the final regression models we see that current use of a payment habit and ease of use are explaining variables in both models. The

relatively low rate of explanation of the final regression model (R^2) is typical of consumer surveys.

The regression model shows that eg current use of mobile payment, perceived ease of use and compatibility (wide applicability) of mobile payment service increase consumers' intention to pay for daily purchases by mobile phone. Similarly, the current use of electronic invoices, ease of use, and Internet skills increase consumers' intention to use electronic invoices for paying invoices.

Despite its centric role, reliability and trust is not a factor differentiating behaviour but rather a factor facilitating behaviour (as regards mobile payment and electronic invoice). Of the characteristics of a new payment instruments identified as principal components, compatibility to skills and social norm are also facilitating factors.

4.3.2 Importance of compatibility

Compatibility of a payment habit is an explaining, that is, differentiating variable in the model on the adoption of mobile payment. The variable, however, is not included in the model on the adoption of electronic invoices. In payment of invoices against electronic invoices, compatibility is thus not a factor that differentiates adoption. Both consumers intending to use and not intending to use electronic invoice assess that electronic invoice is either compatible or requires the learning of new skills. Since the latter alternative is more probable, consumers intending to use electronic invoices are prepared to learn how to do so. In contrast, one of the prerequisites for widespread use of mobile payments is the possibility to pay for purchases by mobile phone in many locations and for many goods and services.

The more widely mobile phones can be used in payment of purchases, the more useful they are to users. This, however, easily leads to a situation in which consumers are reluctant to learn how to pay by mobile phone, unless enough possibilities for mobile payment are available. Similarly, merchants are reluctant to invest in necessary mobile payment systems because consumers do not use mobile payment sufficiently. One solution to the problem is to include the payment function as a standard function in all mobile phones. This standard function could be based on technology that is also applied in other services, eg BlueTooth or RFID technologies.

4.3.3 Impact of background variables

Occupation has an impact on the intention to adopt both mobile payment and electronic invoice. Management and senior staff have a greater intention to adopt mobile payment than the other occupational groups. Management and senior staff and entrepreneurs are in turn more eager than the other occupational groups to adopt electronic invoice.

Education does impact the adoption of electronic invoice. One possible explanation for this finding is that consumers are not aware of payment costs, with the exception of mobile payment. Mobile phone operators are still considered to charge fairly high prices for using mobile phone services. This may create the impression that the use mobile payment service is also 'rather expensive'.

4.3.4 Importance of pricing

Price is one of the most important factors guiding consumer behaviour. However, price is an important factor only if a consumer is aware of the costs of his/her behaviour and can impact pricing with his/her actions. The cost of payment is usually hidden from the consumer. For example, payment costs are not shown as a separate item on a receipt, as is VAT. The merchant will include the cost of receiving and handling payments in the prices of goods or services. The consumer pays the same price for the product or service, irrespective of the payment instrument. He/she does not have the opportunity or due to lack of information motivation to promote the use of efficient payment instruments. By contrast, the situation more or less favours the users of inefficient payment instruments because the costs of payment often correlate with the benefits achieved by using a payment instrument, eg interest-free payment period.

Table 9 shows the impact of payment costs on consumer behaviour. Consumers are on average willing to use a payment instrument that saves costs. The respondents feel even stronger that the cost savings of a new, more efficient, payment habit should be apparent in the (lower) pricing of payment if the costs caused by the new payment instrument are lower than those of payment instruments used earlier. The respondents were of the opinion that, in contrast, merchants should not charge customers for the higher costs of a payment instrument. For example, merchants should not charge from consumers the higher fees charged by credit card companies, even if these costs are eventually transferred to product prices. The respondents also support measures that improve payment habits and foster competition. These findings may reflect the fairly stern way that banks 'steer' their customers' payment behaviour.

Table 9. **Impact of payment costs on consumer behaviour (N = 926)**

Question	*[a] Md*	*[b] Avg*	*[c] SD*
If I saved 10 cents per payment transaction by using a new payment habit, I would like to start using it	4	4.26	1.82
If I saved 50 cents per payment transaction by using a new payment habit, I would like to start using it	6	5.52	1.65
If I got a 1% discount from my purchases by using a new payment habit, I would like to start using it	5	4.81	1.77
If I got a 2.5% discount from my purchases by using a new payment habit, I would like to start using it	6	5.93	1.40
If I made a payment today, I would use the most advantageous payment habit even if I did not generally use that payment habit (price and quality otherwise unchanged)	6	5.39	1.54
If the cost of production of the new payment habit is lower than that of previous habits, I think that this should be reflected in the (lower) price of the payment service	7	6.13	1.20
Shops incur different costs using different payment habits; it is only fair that the merchant has the right to charge a small fee corresponding to the payment habit used (as in the price differences between plastic bags and paper bags in shops)	4	3.65	1.88
For most credit card payments shops are charged a fee (generally 1.5–5%) that covers eg the cost of credit given to the client etc.; it is only fair that the merchant has the right to add this fee to the prices of the purchase	3	3.24	1.79
In Finland, measures to improve payment services are needed, for instance, to have more competition	5	4.95	1.55
I try to influence the development of more efficient payment habits through my choice of payment habits	5	4.45	1.72
I think that the cost of and/or fees charged for the payment should be shown as separate price items in purchase or payment receipts and bills	6	5.16	1.75
There are sufficient alternatives and competition in Finland to safeguard the availability of reasonably priced payment services	4	4.26	1.52

a) Md denotes median of the variable.
b) Avg denotes average of the variable.
c) SD denotes standard deviation of the variable.

4.4 Portability of account number used in payments

The Finnish mobile telephone market experienced a surge in subscription transfers when number portability was introduced in Finland and mobile phone numbers became customer-specific, instead of operator-specific. For some consumers, a (bank) account number, similarly to a mobile telephone number, may be an important piece of information to remember, or an otherwise important piece of information that the consumer is reluctant to change. For example, direct debit agreements are linked to a certain account and it may be considerably inconvenient to inform each invoicing party of a new (bank) account number. Having to change one's account number may thus be a barrier to changing banks even when a competing bank offers more inexpensive and better service. The fact that account numbers are bank-specific is considered in some views a barrier to competition. Introducing the portability of (bank) account numbers has been

suggested as a means to increase competition between banks. We thus requested consumers to give their opinions on the portability of account number. A summary of the survey responses is shown in Table 10.

The possibility of keeping one's account number when changing to another bank achieved fairly strong support. Consumers would like to keep their account number and they at the same time hope that their account number would also in future be based on numeric characters. Respondents opposed strongly the use of one's email address or personal ID number as an account number. A uniform international account numbering system – beyond current IBAN numbers – is not considered necessary even though Finnish consumers would like to keep their current account number if they would change to a bank outside of Finland.

Table 10. **Hopes concerning (bank) account number portability (N = 929)**

Question	*Md*	*Avg*	*SD*
I'd like to keep the present practice of numeric account numbers unchanged	7	5.85	1.55
I'd like to use my personal ID number (social security number) as the account number when making credit transfers	2	2.69	1.99
I'd like to use an e-mail address or other plain text identification as the account number when making credit transfers	2	2.31	1.67
I'd like to keep my present account number if I changed bank within Finland	6	5.23	2.06
I'd like to keep my present account number if I changed bank to a bank outside of Finland	5	4.59	2.25
I find a uniform international account numbering system necessary even if it means that my present account number will be longer or change otherwise	4	3.68	2.01
The possibility to transfer the account number from one bank to another, in the same way as the mobile telephone number, is a good idea	5	4.81	2.17

4.5 Other assessments of the development of payment instruments

We also surveyed other opinions and hopes for the development of payment instruments. Is the transaction time for payments short enough? Is it likely that one will open a bank account in a bank outside of Finland? Is it important to develop new payment instruments? A summary of the responses is shown in Table 11.

The respondents were on average neutral in their assessments on the transaction time for domestic payments. In contrast, the transaction time for cross-border payments was considered too long.

The majority of consumers do not find it likely that they will in the near future open a bank account in a bank outside of Finland or that they will pay Internet purchases using international web payment services. International web payment services nevertheless interested approximately 15% of the respondents.

Development of new payment instrument was not considered very important on average. Nevertheless, some of the consumers considered it important to facilitate Internet purchases and to develop electronic payment instruments. Extending the information accompanying electronic payment transactions – eg warranty information mentioned as an example in the survey questionnaire – was also something that many consumers hoped for. Several free-form comments were also made on the need to develop electronic payment instruments.

Table 11. **Other assessments on payment instrument development (N = 941)**

Question	*Md*	*Avg*	*SD*
The transaction time for regular payments between banks in Finland is 1–2 days. This time will be satisfactory even in the future.	4	4.06	2.08
The transaction time for regular payments to another European country is now up to 6 days, unless otherwise agreed. When payment habits are harmonised, this time will be satisfactory within the Euro area.	3	3.39	1.81
It is likely that within few years I will open a bank account in an Euro area country other than Finland	1	1.89	1.50
It is likely that within a couple of years I will pay Internet purchases much more frequently than I currently do, by using international web payment services (such as eBay/PayPal)	2	2.43	1.67
It is important to me that new payment habits are developed in order to make Internet purchasing easier.	4	3.90	1.97
It is important to me that new payment habits are developed in order to make small payments by mobile phone possible.	3	3.19	1.78
It is important to me that new electronic payment habits are developed in order to make payments from person to person possible.	4	3.99	1.79
It is important to me that electronic billing and payment services are developed so that the information accompanying transactions is as comprehensive as possible (for example warranty information concerning the purchased items).	5	4.95	1.75

5 Evaluation of results and conclusions

In assessing the results of the survey, it should be kept in mind that the respondents differ from the entire Finnish population, due to the choice of sample frame. Despite random sampling within the sample frame, the distribution of respondents' characteristics differs slightly from the sample frame. Such deviations are typical for consumer surveys because active persons or those otherwise considering the survey important are more likely to take part in it. The most surprising deviation was the overrepresentation of women among the respondents. The responses of the two genders however, did not differ. Despite minor deviations, the respondents are fairly representative of the population of working-aged, active consumers who are frequent users of payment instruments.

5.1 Magnitude and speed of changes

The results of this study show that consumers do not expect their payment behaviour to change drastically even if new payment instruments and habits are being launched. The fact that the near future looks stable and unchanged is probably due to the slowness of changes in human behaviour. Our everyday behaviour is largely habitual. Thus we do not consider all the alternatives for recurring actions; instead we repeat the same time-tested and proven behaviour – to avoid the inconvenience of thorough consideration of alternatives.

A change in behaviour is usually triggered by an incident that forces a human to reconsider his/her actions. An example of this type of a situation is an intended tram journey for which one cannot pay in cash because his/her wallet is empty and the nearest ATM is too far away. An advertisement at a tram stop telling him/her how to purchase a single ticket by mobile phone can trigger an intention to adopt a new payment habit.

It should also be noted that it is difficult for consumers to assess the impact technological advances will have on their lives. Consumers' probably lack the knowledge and imagination to perceive all future changes. On the other hand, it is easy to underestimate the magnitude of changes if existing payment habits are sufficient to fulfil one's current needs. As an example, consumers probably knew very little about the Single Euro Payment Area (SEPA) at the time of the survey. Yet, SEPA is likely to impact payment habits used by consumers in the next five years.

Nothing will prevent the majority of consumers from increasing or reducing the use of the 11 payment habits studied. Thus our survey result, according to which 16–45% of respondents assess that their use of payment habits will change in the next five years, depending on the payment habit, means that there is a very high likelihood of changes in payment behaviour. This is because there are no barriers to change and because a change can take place in connection with each new payment transaction. In this respect, our results are consistent with the realised history of studies by the Finnish Bankers' Association.

The theories which we used as a basis for our study – particularly the Theory of Planned Behavior – also suggests that a result pointing to a truly fundamental change would not be reasonable. According to the Theory of Planned Behaviour, a behavioural intention is realised as actual behaviour unless it is prevented by some factor. For example, nothing would prevent consumers today or in 5 years from reducing the use of cash by increasing the use of debit card or mobile phone. For this reason, we consider the possibilities of changes in the use of payment habits found in our survey to be significant even though they seem small at first glance.

5.2 Electronic and mobile payment

The use of electronic invoice already interests well-informed consumers. It evokes more positive expectations than eg payment of purchases by mobile phone. Electronic invoice interests consumers because it is a new service provided through already established and widely used Internet banking services. For the consumer, electronic invoice is a service which is compatible with earlier behaviour and offers more benefits than the traditional payment habits for paying invoices. Electronic invoice enables the storing of invoices and filing of receipts in one place.

Using 'web payment buttons', ie real-time payment of Internet purchases via Internet banking services also seems to be increasing in popularity. This is probably due to the growing popularity of electronic commerce. Despite the fact that Finland has been the forerunner in the use of the Internet, measured by the penetration of Internet connections – and nowadays also broadband connections – among private persons, electronic commerce has not yet become as widespread as in many other countries of the European Union. There is still much unrealised potential for the diffusion of electronic commerce. This, together with the perceived reliability of Internet banking services, is probably also boosting the popularity of real-time payment of daily purchases via Internet banking services.

Even though respondents' assessments suggest that the increasing popularity of various electronic payment habits is statistically 'real', consumers' intentions to change payment behaviour are fairly modest. About half of consumers intend to increase the use of electronic invoices. Changes on the individual consumer level are, however, fairly small, and therefore average assessments also indicate fairly small changes in the use of these payment habits. As discussed earlier, consumers often underestimate the magnitude of an actual change when it has already started but is still at an early stage. Use of a new payment habit perceived to be useful quickly becomes a habit. Consumers' interest is thus probably a more reliable indicator of potential for widespread use of various electronic payment habits than the intended frequency of their use.

Respondents are also interested in mobile payment, as measured by the significance of intention to change behaviour. Mobile payment is not a totally new phenomenon. A majority of consumers purchase and pay for services by mobile phone without being aware, that they are using their mobile phone for mobile payment. Most of these services are related to the use of the mobile phone itself, eg to ring tone and logo purchase. The use of other mobile services, eg directory services, news, weather, and positioning services, is also slowly increasing. Fees for these services are usually charged by the mobile phone operator, as a part of regular invoicing. The consumer thus purchases the services 'on account', ie the selection of a payment habit is not concretely present in consuming these services.

Mobile telecom billing based services excluded, most mobile payment services developed thus far have applied a separate (bank) account to which the account holder transfers funds (initial and top-up transfers) eg by using Internet banking services. Use of such an account is usually facilitated by text messages. The current deficiencies of mobile payment are complexity, slowness of use, and the small number of services available for mobile payment. Mobile payment may nevertheless enter a new era of ferment if the commercial use of short-range radio technology, such as BlueTooth, and Radio Frequency Identification (RFID) becomes more widespread. These technologies simplify and speed up the use of services. Consumers nevertheless can perceive the possible impacts of a new technology only when the applications become available.

5.3 Fear of exclusion and alienation

Respondents had the opportunity to make free-form comments on current payment habits and their development. Most of them commented on the sparse availability of payment habits that they considered important. Consumers were also worried that the use of these payment habits will become even more difficult. The position of cash was of particular concern. The comments underlined that payment by banknotes and coins should be possible also in the future. Consumers should be able to withdraw money and pay invoices not only via Internet banking services but also via, for example, ATMs and bank branches. The respondents were particularly concerned about the possibilities of senior citizens to handle their finances. Similar concerns were raised concerning those citizens lacking computer or Internet skills. Of the respondents, about one-fifth did not have access to the Internet. The comments also emphasised the ease of controlling the use of money when paying by cash:

> 'Not everyone has an Internet connection or is willing to use that form (of payment). Numbers on paper and money in your hand, form together a clear and safe (payment) habit.'

Respondents' comments also emphasised the importance of safety of payment habits and costs of making payments. The fact that payment instruments are becoming increasingly technical is considered a risk. The widely-reported copying of debit card information at ATMs and the prying into user IDs and access codes by sending email messages masked as bank messages, which has taken place in the past few years in Finland and in neighbouring regions, have probably made consumers highly aware of the risks related to payment instruments.

> ‘Payment by cash is the only safe way to pay; however, some banks charge you for withdrawing cash (at ATMs), and I’m too lazy to use cashier service at a bank branch. I often use my debit card; I nevertheless fear using it, as well as Internet banking services, because of fraud and swindling.’

Compatibility and wide applicability of payment instruments also sparked comments. For example, consumers hoped that merchants would harmonise the payment instruments and habits that they provide.

> ‘It would be important to have a payment instrument and habit that would be accepted everywhere.’

The need for compatibility is understandable based on models of human behaviour, because adhering to established habits is a means to minimise the inconvenience and risks of making a choice – in a way it is one of the prerequisites for easy living. In practice, this observation is however, quite surprising because in Finland, an advanced payment services infrastructure enables the provision of several parallel payment habits. The majority of consumers have a positive attitude towards the development of payment habits. Their intentions to change their use of payment habits at any particular moment are however fairly modest.

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Annex 1

Changes in payment habits

Table 12. **Intention to change the use of payment habit in 6 months**

	Will not change behaviour		*Will change behaviour*			
	frequency	*%*	*frequency*	*%*	*average*	*standard deviation*
Coins and banknotes	858	88	118	12	0.0	0.603
Debit card issued by a bank	864	89	112	11	0.0	0.668
Visa Electron	875	90	101	10	0.0	0.721
Credit card	845	87	131	13	0.0	0.612
'Web payment buttons'	820	84	156	16	0.2	0.735
Payment by mobile phone	835	86	141	14	0.1	0.563
Payment of invoices at a bank branch	887	91	89	9	-0.1	0.549
Payment of invoices via Internet banking services	913	94	63	6	0.1	0.757
Payment of invoices through direct debit services	844	86	132	14	0.1	0.622
Payment of invoices by mobile phone via Internet banking services	902	92	74	8	0.1	0.468
Payment of invoices against electronic invoices	833	85	143	15	0.2	0.615

Table 13. **Intention to change use of payment habit in 5 years**

	Will not change behaviour		*Will change behaviour*			
	frequency	*%*	*frequency*	*%*	*average*	*standard deviation*
Coins and banknotes	538	55	438	45	0.0	0.603
Debit card issued by a bank	695	71	281	29	0.0	0.668
Visa Electron	708	73	268	27	0.0	0.721
Credit card	701	72	275	28	0.0	0.612
'Web payment buttons'	603	62	373	38	0.2	0.735
Payment by mobile phone	588	60	388	40	0.1	0.563
Payment of invoices at a bank branch	841	86	135	14	-0.1	0.549
Payment of invoices via Internet banking services	824	84	152	16	0.1	0.757
Payment of invoices through direct debit services	733	75	243	25	0.1	0.622
Payment of invoices by mobile phone via Internet banking services	704	72	272	28	0.1	0.468
Payment of invoices against electronic invoices	556	57	420	43	0.2	0.615

Annex 2

Paired comparison of current use of payment habits and intention to use

	Paired Sample Statistics				Paired Differences				
	Avg	*N*	*SD*	*SE*	*Avg*	*SD*	*SE*	*t*	*p (2-sided)*
Coins and banknotes									
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**
Debit card issued by a bank									
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**
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**
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**
'Web payment 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 by 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**
Payment of invoices at a bank branch									
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**
Payment of invoices via Internet banking services									
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**
Payment of invoices through direct debit services									
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**
Payment of invoices by mobile phone via Internet banking services									
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**

	Paired Sample Statistics				Paired Differences				
	Avg	*N*	*SD*	*SE*	*Avg*	*SD*	*SE*	*t*	*p (2-sided)*
Payment of invoices against electronic invoices									
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**

Annex 3

Impact of occupation on the intention to change the use of payment habit

Table 14. **Impact of occupation on the intention to change the use of payment habit (variance analysis)**

		Sum of sq	*Degrees of freedom*	*Avg sq*	*F*	*p*
Banknotes and coins	Intergroup	10.493	6	1.749	1.325	0.243
	Intragroup	1267.375	960	1.320		
	Total	1277.868	966			
Debit card issued by a bank	Intergroup	61.383	6	10.230	6.623	**0.000**
	Intragroup	1464.276	948	1.545		
	Total	1525.659	954			
Visa Electron	Intergroup	65.259	6	10.876	5.505	**0.000**
	Intragroup	1869.044	946	1.976		
	Total	1934.302	952			
Credit card	Intergroup	77.562	6	12.927	9.500	**0.000**
	Intragroup	1287.315	946	1.361		
	Total	1364.877	952			
'Web payment buttons'	Intergroup	45.690	6	7.615	5.213	**0.000**
	Intragroup	1402.415	960	1.461		
	Total	1448.105	966			
Payment by mobile phone	Intergroup	74.552	6	12.425	9.184	**0.000**
	Intragroup	1298.842	960	1.353		
	Total	1373.394	966			
Payment of invoices at a bank branch	Intergroup	0.703	6	0.117	0.202	0.976
	Intragroup	556.652	960	0.580		
	Total	557.355	966			
Payment of invoices via Internet banking services	Intergroup	9.594	6	1.599	1.284	0.262
	Intragroup	1195.570	960	1.245		
	Total	1205.164	966			
Payment of invoices through direct debit services	Intergroup	35.393	6	5.899	5.870	**0.000**
	Intragroup	964.764	960	1.005		
	Total	1000.157	966			
Payment of invoices by mobile phone via Internet banking services	Intergroup	22.769	6	3.795	3.465	**0.002**
	Intragroup	1051.367	960	1.095		
	Total	1074.137	966			
Payment of invoices against electronic invoices	Intergroup	118.801	6	19.800	10.780	**0.000**
	Intragroup	1763.255	960	1.837		
	Total	1882.056	966			

Annex 4

Impact of education on intention to change the use of payment habits

Table 15. **Impact of education on intention to change the use of payment habits (variance analysis)**

		Sum of sq	*Degrees of freedom*	*Avg sq*	*F*	*p*
Banknotes and coins	Intergroup	2.670	4	0.668	0.505	0.732
	Intragroup	1280.263	968	1.323		
	Total	1282.933	972			
Debit card issued by a bank	Intergroup	20.399	4	5.100	3.052	*0.016*
	Intragroup	1597.212	956	1.671		
	Total	1617.611	960			
Visa Electron	Intergroup	24.862	4	6.215	3.093	*0.015*
	Intragroup	1917.265	954	2.010		
	Cumulative	1942.127	958			
Credit card	Intergroup	17.125	4	4.281	3.028	*0.017*
	Intragroup	1348.758	954	1.414		
	Total	1365.883	958			
'Web payment buttons'	Intergroup	31.854	4	7.964	5.429	**0.000**
	Intragroup	1419.922	968	1.467		
	Total	1451.776	972			
Payment by mobile phone	Intergroup	53.815	4	13.454	9.817	**0.000**
	Intragroup	1326.529	968	1.370		
	Total	1380.343	972			
Payment of invoices at a bank branch	Intergroup	3.234	4	0.809	1.301	0.268
	Intragroup	601.397	968	0.621		
	Total	604.631	972			
Payment of invoices via Internet banking services	Intergroup	5.353	4	1.338	1.040	0.385
	Intragroup	1245.473	968	1.287		
	Total	1250.826	972			
Payment of invoices through direct debit services	Intergroup	28.323	4	7.081	6.657	**0.000**
	Intragroup	1029.648	968	1.064		
	Total	1057.971	972			
Payment of invoices by mobile phone via Internet banking services	Intergroup	28.187	4	7.047	6.474	**0.000**
	Intragroup	1053.618	968	1.088		
	Total	1081.805	972			
Payment of invoices against electronic invoices	Intergroup	96.316	4	24.079	12.809	**0.000**
	Intragroup	1819.725	968	1.880		
	Total	1916.041	972			

Annex 5

Characteristics affecting the adoption of a payment habit

Table 16. **Rotated (VARIMAX) component matrix**

Question/variable	*Principal component*				
	Social norm	Compatibility of skills	Reliability and trust	Compatibility (wide applicability)	Ease of use
7.1	-.002	.181	.153	**.823**	.127
7.2	.062	.134	.134	**.826**	.218
7.3	.063	.181	.158	**.832**	.235
7.4	.180	.105	.237	**.705**	.288
7.6	.109	-.035	.038	.174	**.783**
7.7	-.030	.045	.143	.182	**.794**
7.8	.181	.185	.126	.261	**.680**
7.10	.086	.411	.191	.243	**.493**
7.11	.294	.395	**.442**	.188	.121
7.12	.057	.080	**.790**	.198	.163
7.13	.138	.274	**.662**	.233	.127
7.14	.091	.269	**.861**	.110	.098
7.15	.116	.252	**.841**	.106	.071
7.18	**.638**	.196	.177	.155	.009
7.19	**.863**	.138	.127	-.022	.042
7.20	**.837**	.201	.145	.034	.028
7.21	.354	**.669**	.262	.097	-.005
7.22	.098	**.779**	.305	.220	.072
7.23	.255	**.754**	.118	.146	.044
7.24	.210	**.755**	.234	.100	.104
7.25	.158	**.491**	.146	.129	.400
7.26	**.719**	.264	.069	.090	.098
7.27	**.691**	.056	-.045	.028	.163

Annex 6

Factors affecting the adoption of payment by mobile phone and electronic invoice

Table 17. **Factors affecting the adoption of mobile payment**

Variable	*Non-standardised coefficients*		*Standardised coefficients*	*t*	*Significance*
	B	*St. Error*	*β*		
(Coefficient)	4.356	0.407		10.708	0.000
Current use of mobile payment	0.766	0.051	0.453	14.910	0.000
Education (comprehensive school)	-1.169	0.458	-0.080	-2.552	0.011
Ease of use	0.533	0.167	0.099	3.192	0.001
Compatibility (wide applicability)	0.479	0.166	0.088	2.892	0.004
Occupation (management/senior staff)	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 estimate	4.514				

Table 18. **Factors affecting the adoption of electronic invoice**

Variable	*Non-standardised coefficients*		*Standardised coefficients*	*t*	*Significance*
	B	*St. Error*	*β*		
(Coefficient)	2.264	1.601		1.414	0.158
Current use of electronic invoice	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
Occupation (management/senior staff)	2.563	0.694	0.125	3.694	0.000
Occupation (entrepreneur)	2.613	0.854	0.101	3.059	0.002
R2	0.200				
Adjusted R2	0.195				0.000
F test	37.667				
Standard error of estimate	6.899				

Annex 7

Survey used to develop the questionnaire used in this survey.

The Theory of Planned Behavior (TPB) model concepts have been supplemented with questions on the pricing and compatibility factors and factors of the Mean End Chain (MEC) and Laddering models.

When we buy or consume products or services for which a price is charged, we use payment instruments to pay for them. The payment instruments include for example cash, debit cards and credit cards. The payment instruments may be physical (such as cash or plastic cards), electronic (such as payment via Internet or against an electronic invoice), or mobile (such as payment by mobile phone). The choice of a certain payment instrument and its use constitute a payment habit. The behaviour to be assessed is the selection of payment habits. Please list your thoughts on the questions below.

1. Which characteristics of a payment habit and/or advantages do you believe to have a positive impact on the selection of a payment habit (example: accepted everywhere)?

2. Which characteristics of a payment habit and/or disadvantages do you believe to prevent the selection of a payment habit (example: is unreliable)?

3. Which pricing factors do you believe to have a positive impact on the selection of a payment habit (example: a 2% discount)?

4. Which pricing factors do you believe to have a negative impact on the selection of a payment habit (example: unclear pricing)?

5. Which consequences of using a payment habit do you believe to have a positive impact on the selection of a payment habit (example: possibility to pay anonymously)?

6. Which consequences of using a payment habit do you believe to prevent the selection of a payment habit (example: payment transaction data gets easily into wrong hands)?

7. Which values or valuations do you believe to have a positive impact on the selection of a payment habit (example: urban way of life)?

8. Which values or valuations do you believe to have a negative impact on the selection of a payment habit (example: unethical action)?

9. Are there persons, groups, companies or other parties that try to impact you so that you would select a certain payment habit (example: banks)?

10. Are there persons, groups, companies or other parties that try to impact you so that you would avoid the selection of a certain payment habit (example: stores)?

11. Which circumstances, skills and technology-related factors have a positive impact on the selection of a payment habit (example: experience in using mobile phones)?

12. Which circumstances, skills and technology-related factors prevent the selection of a payment habit (example: no access to Internet)?

13. Which compatibility factors (= possibility to continue or extend current behaviour, life style, value-related actions with minor or no changes) of new payment habits have a positive impact on the selection of a payment habit (example: enabling of payment by mobile phone)?

14. Which factors of incompatibility of new payment habits have a negative impact on the selection of a payment habit (example: registering as user of a new payment habit with need to learn new skills)?

15. In your opinion, are there any other factors that have an impact on the selection of a payment habit?

We used the indirect measurement method. The first two questions measure attitude and related underlying beliefs, as described by the TPB model. Questions 3 and 4 measure pricing factors and related beliefs. Questions 5 and 6 measure the objectives (that is ends) of behaviour (MEC model), and questions 7 and 8 measure the values affecting behaviour (Laddering model). Questions 9 and 10 measure social norm and normative beliefs affecting social norm (TPB model), and questions 11 and 12 measure factors that control behaviour and the internal and external constraints of behaviour affecting the control factors (TPB model). Questions 13 and 14 measure the compatibility factors.

Annex 8

The frequencies, relative frequencies, medians (Md), averages (Avg), and standard deviations (SD) of responses to the questions in the questionnaire

1. Background information

		Frequency	% share
Gender	Female	559	57.3
	Male	406	41.6
	Total	965	98.9
NA		11	1.1
Total		976	100
Age	18–19	2	0.2
	20–29	156	16.0
	30–39	196	20.1
	40–49	228	23.4
	50–59	279	28.6
	60–65	111	11.4
	Total	972	99.6
NA		4	0.4
Total		976	100
Occupation	Entrepreneur	92	9.4
	Management/senior staff	139	14.2
	Office staff	155	15.9
	Worker	329	33.7
	Student	80	8.2
	Pensioner	110	11.3
	Other [a)]	62	6.4
	Total	967	99.1
NA		9	0.9
Total		976	100
Education	Comprehensive / primary / middle school	169	17.3
	Secondary school graduate	85	8.7
	Vocational education	430	44.1
	Polytechnic education	129	13.2
	University level	160	16.4
	Total	973	99.7
NA		3	0.3
Total		976	100

		Frequency	% share
Annual income	Below 10,000	144	14.8
	10,001–20,000	222	22.7
	20,001–30,000	312	32.0
	30,001–40,000	163	16.7
	Over 40,000	113	11.6
	Total	954	97.7
NA		22	2.3
Total		976	100

a) In the category 'Other' the most common "occupations" were those outside working life, ie unemployed (25) and housewives (8).

2. Use of mobile phone

2.1 Use of basic mobile phone services, purchases, payment and handling of financing matters

	1 (Daily)	2 (Weekly)	3 (Monthly)	4 (Annually)	5 (Have tried)	6 (Never)	Md	Avg	SD
Calling and speaking	83.9	14.7	1.0	0.1	0.1	0.2	1	1.18	0.48
Sending or receiving (SMS) text messages	49.8	36.5	9.2	0.9	1.9	1.7	2	1.74	1.00
Purchases by mobile phone (for example tickets, parking, goods from vending machines)	0.2	0.9	3.6	5.1	9.1	81.1	6	5.65	0.83
Browsing of bank account balance information by mobile phone	0.1	0.7	2.9	1.9	3.9	90.5	6	5.80	0.69
(SMS) notification service of payments due	0.1	0.3	0.8	0.5	1.9	96.4	6	5.93	0.43
Payment of invoices from my bank account by mobile phone	0.0	0.2	1.0	1.4	3.2	94.2	6	5.90	0.45

2.2 Mobile phone skills

Own assessment (grade)									
4	5	6	7	8	9	10	Md	Avg	SD
2.87	4.00	10.86	26.13	29.30	16.39	4.71	8	7.52	1.32

3 Use of the Internet

3.1 Use of basic Internet services, purchases, payment and handling of financing matters

	1 (Daily)	2 (Weekly)	3 (Monthly)	4 (Annually)	5 (Have tried)	6 (Never)	Md	Avg	SD
Browsing and searching for information in the Internet	59.9	27.9	7.7	0.6	2.3	1.5	1	1.62	1.00
Sending or receiving e-mail	55.0	23.4	10.1	1.8	4.3	5.3	1	1.93	1.40
Purchasing via the Internet. payment after the delivery of the purchase	0.7	1.2	15.4	22.5	18.6	41.6	5	4.82	1.21
Purchasing via the Internet, real-time payment with, banking credentials (using 'web payment buttons')	0.4	1.4	12.1	15.5	14.1	56.6	6	5.11	1.17
Purchasing and paying via the Internet, real-time payment by supplying credit card information	0.4	0.5	6.8	12.6	10.8	68.9	6	5.40	1.02
Browsing of bank account balance or account transactions	8.8	57.7	19.5	0.6	2.6	10.8	2	2.63	1.37
Payment of invoices from bank account with Internet banking	6.3	54.3	26.5	1.0	2.2	9.7	2	2.68	1.29
Use of other Internet banking and investment services	2.7	11.1	14.9	9.5	15.4	46.4	5	4.63	1.57

3.2 Internet skills

Own assessment (grade))									
4	5	6	7	8	9	10	Md	Avg	SD
1.95	4.30	9.12	17.83	26.84	15.88	5.12	8	7.62	1.36

3.3 Where do you use the Internet?

Location	*%*
At home	70.2
At work	9.1
At school or place of study	47.7
Elsewhere (such as library)	10.8

	Never	1–2 months	3–6 months	1 year	2–5 years	Over 5 years	Avg	Md	SD
Purchases paid in cash	35.5	31.8	6.1	12.0	9.0	5.5	2.44	2	1.55
Purchases paid by a bank debit card	26.7	40.8	8.2	11.4	7.8	5.2	2.48	2	1.45
Purchases paid by a credit card	27.9	30.7	12.5	14.4	9.7	4.9	2.62	2	1.50
Credit transfer payments	16.5	16.0	9.8	24.6	22.0	11.2	3.53	4	1.63
Bills I paid invoices	9.1	10.5	8.7	27.6	30.1	14.1	4.01	4	1.48
Bank account statement	8.1	5.0	3.6	22.5	34.3	26.4	4.49	5	1.46

5. Use of payment habits now and in the future

	I use a payment habit									
	Never						Very often			
	1	2	3	4	5	6	7	Avg	Md	SD
Banknotes and coins										
Now	0.2	8.3	15.4	13.0	14.8	14.3	34.0	5.13	5	1.74
6m	0.2	8.5	15.0	13.3	15.4	14.3	33.3	5.11	5	1.73
5y	1.9	16.0	16.4	15.7	15.6	12.3	22.2	4.53	5	1.83
Debit card issued by a bank										
Now	16.5	4.4	5.9	8.8	11.8	19.0	33.6	4.87	6	2.21
6m	14.6	4.8	5.4	9.4	12.9	20.6	32.2	4.92	6	2.14
5y	10.3	3.5	4.9	10.1	11.6	24.1	35.5	5.24	6	1.97
Visa Electron										
Now	72.2	5.9	4.4	3.9	4.2	2.6	6.7	1.97	1	1.84
6m	69.4	6.0	5.5	5.4	4.3	3.1	6.4	2.04	1	1.85
5y	59.5	8.9	7.5	8.6	5.7	3.6	6.3	2.28	1	1.90
Credit card										
Now	43.6	16.0	11.9	10.0	8.7	5.3	4.5	2.58	2	1.84
6m	41.3	16.7	12.7	10.1	8.8	5.7	4.7	2.64	2	1.85
5y	32.4	16.8	13.9	14.1	10.7	6.4	5.8	2.96	3	1.88
'Web payment buttons'										
Now	62.2	11.1	7.2	5.8	5.3	3.4	5.0	2.11	1	1.79
6m	54.1	13.6	10.0	7.5	5.9	3.5	5.4	2.30	1	1.82
5y	40.7	12.0	13.5	12.3	8.3	5.7	7.5	2.83	2	1.97
Payment by mobile phone										
Now	87.0	8.2	2.8	1.0	0.2	0.3	0.4	1.22	1	0.71
6m	79.0	12.1	4.8	2.7	0.6	0.3	0.3	1.36	1	0.85
5y	56.6	15.5	13.5	8.8	3.4	1.1	1.2	1.95	1	1.35
Payment of invoices at a bank branch										
Now	71.1	16.5	3.1	2.0	0.9	1.1	5.3	1.70	1	1.52
6m	74.1	14.3	2.7	2.1	0.9	0.9	4.9	1.64	1	1.48
5y	74.8	14.2	3.7	1.5	0.9	0.9	4.0	1.58	1	1.38
Payment of invoices via Internet banking services										
Now	22.2	1.1	1.8	2.2	4.3	10.0	58.4	5.29	7	2.47
6m	19.0	2.3	1.9	2.5	4.6	10.3	59.4	5.39	7	2.38
5y	14.0	2.4	3.4	3.5	4.2	11.7	60.8	5.60	7	2.20
Payment of invoices through direct debit services										
Now	45.2	10.6	7.9	7.3	8.1	7.9	12.9	2.98	2	2.26
6m	40.3	12.2	8.8	8.3	8.5	8.6	13.3	3.12	2	2.25
5y	31.2	11.0	10.9	12.3	9.9	10.1	14.6	3.47	3	2.21
Payment of invoices by mobile phone via Internet banking services										
Now	95.5	2.0	0.9	0.5	0.4	0.2	0.4	1.11	1	0.60
6m	90.6	5.1	2.3	0.8	0.5	0.3	0.3	1.18	1	0.68
5y	71.3	12.5	8.3	4.3	2.0	1.1	0.5	1.58	1	1.13
Payment of invoices against electronic invoices										
Now	93.9	3.5	1.2	0.4	0.7	0.2	0.1	1.12	1	0.56
6m	81.4	10.2	4.7	2.6	0.5	0.2	0.2	1.32	1	0.80
5y	54.6	15.0	13.2	10.0	3.3	2.0	1.9	2.06	1	1.47

6 The following statements concern the bank account number and its portability

	Completely disagree						Completely agree			
	1	2	3	4	5	6	7	Avg	Md	SD
I'd like to keep the present practice of numeric account numbers unchanged	2.3	2.3	3.7	13.1	9.0	17.5	52.0	5.85	7	1.55
I'd like to use my personal ID number (social security number) as the account number when making credit transfers	44.1	15.2	9.2	11.6	6.5	5.4	8.0	2.69	2	1.99
I'd like to use an e-mail address or other plain text identification as the account number when making credit transfers	47.5	18.3	11.7	11.0	5.3	2.1	4.1	2.31	2	1.67
I'd like to keep my present account number if I changed bank within Finland	9.4	6.0	4.2	15.4	8.2	11.9	45.0	5.23	6	2.06
I'd like to keep my present account number if I changed bank to a bank outside of Finland	15.5	9.4	5.5	19.1	5.8	9.6	35.0	4.59	5	2.25
I find a uniform international account numbering system necessary even if it means that my present account number will be longer or change otherwise	20.9	12.4	12.4	22.1	9.7	9.4	13.1	3.68	4	2.01
The possibility to transfer the account number from one bank to another, in the same way as the mobile telephone number, is a good idea	14.1	6.0	7.3	14.1	9.5	14.2	34.8	4.81	5	2.17

7 The following statements concern the characteristics of payment instruments and payment behaviour. 'I am interested in using a new payment habit if I am able to ...'

	Of minor importance						Very important			
	1	2	3	4	5	6	7	Avg	Md	SD
pay for as many different products and services as possible in as many places as possible	6.3	4.0	4.8	9.8	12.4	22.6	40.2	5.47	6	1.81
pay around the clock without unnecessary service downtimes	4.8	3.5	3.9	8.9	11.4	23.6	43.8	5.65	6	1.70
pay anywhere I go (without needing to do things such as withdrawing/transferring money using ATMs)	3.2	3.3	2.6	7.9	10.6	24.8	47.5	5.84	6	1.56
save time, by avoiding queues at banks, shops or service points	3.4	2.3	3.5	5.3	11.4	21.6	52.4	5.94	7	1.55
get a bank account statement with clear and precise information on payments made	1.8	1.5	2.5	4.6	9.8	20.4	59.5	6.19	7	1.32
give up using separate printed invoices and switch to electronic invoices where all information contained in the invoice would automatically accompany the payment	13.6	7.4	14.6	19.5	17.5	13.6	13.8	4.16	4	1.90
keep detailed information concerning payments in an electronic database that I can browse at any time	10.3	5.1	8.8	12.6	14.2	22.1	27.0	4.90	5	1.98
register as a user of the new payment instrument using a very simple procedure and without a separate need to visit a service point	8.8	5.2	8.2	15.6	14.7	22.1	25.4	4.90	5	1.90
link the new payment instrument to the bank account I normally use	4.4	2.7	4.2	10.3	13.2	26.3	39.0	5.60	6	1.64
start using the payment instrument easily (without the necessity of studying written instructions or attending special training)	5.0	4.0	4.8	9.3	14.6	24.6	37.7	5.49	6	1.72
get guidance in the use of the payment instrument, whenever needed	2.4	2.3	4.1	7.6	12.8	22.1	48.8	5.88	6	1.49
ensure that misuse of the payment instrument is very difficult (more difficult than at present)	1.7	0.5	0.4	1.6	2.4	8.0	85.5	6.68	7	1.00
have the new payment instrument provided by a trustworthy party, such as my bank	2.0	1.0	0.7	4.6	8.5	21.5	61.7	6.28	7	1.24
ensure that in case of failure or fraud the payment instrument issuer will correct the situation without delay (more efficiently than at present)	1.0	0.1	0.6	1.7	3.8	11.4	81.5	6.67	7	0.90
ensure that in case of fraud the payment instrument issuer will cover all economic consequences of the fraud (better than at present)	1.0	0.3	0.5	1.7	2.9	11.7	81.8	6.68	7	0.90

	Of minor importance						Very important			
	1	2	3	4	5	6	7	Avg	Md	SD
at my own discretion pay without being identified (as is possible when paying in cash unless the recipient recognizes me or unless I reveal my name)	12.1	7.8	7.8	18.9	16.5	13.7	23.2	4.54	5	2.00
make sure that unidentified payment transactions can – where necessary – be identified in order to prevent money laundering or to solve a crime	1.9	1.6	2.8	7.6	12.0	18.4	55.8	6.05	7	1.40
avoid awkward situations (for instance by not causing queues to build up behind me when making payments)	4.5	4.7	5.7	15.3	15.2	19.0	35.6	5.31	6	1.74
feel that I follow the advice, recommendations or wishes expressed by people who are important to me, concerning the use of the new payment instrument	11.5	10.3	11.0	20.6	17.4	13.4	15.9	4.26	4	1.91
feel that I follow the advice, recommendations or wishes expressed by parties trusted by me, concerning the use of the new payment instrument (parties such as banks, shops, interest groups or organisations, employer etc.)	9.2	8.8	8.5	19.2	18.8	17.0	18.6	4.55	5	1.87
feel that my present skills are sufficient for the use of the new payment instrument	2.7	2.8	4.0	9.8	15.9	24.8	40.1	5.68	6	1.53
feel that the use of the new payment instrument will suit my way of shopping and making payments	2.5	0.8	1.6	5.9	13.2	25.4	50.5	6.05	7	1.33
feel that the use of the new payment instrument will suit my lifestyle	4.4	2.6	2.7	9.8	13.7	24.7	42.2	5.69	6	1.61
feel that the new payment instrument adequately replaces the corresponding payment instrument I have previously used (without requiring almost anything of me)	2.6	2.6	2.2	9.2	16.0	28.0	39.5	5.75	6	1.46
use the new payment instrument with my present devices, such as my mobile phone or my computer terminal, without the need to make new acquisitions	5.0	4.0	4.2	8.9	13.0	22.5	42.5	5.58	6	1.73
by using the new payment instrument show that I am a valued clients of my bank, shopkeeper (or equivalent) with all relevant benefits	11.6	8.6	7.0	13.3	15.5	15.8	28.1	4.73	5	2.06
by using the new payment instrument show that I belong to a group I find important, such as supporters of a certain sports club, lifestyle (or equivalent)	27.9	16.7	12.5	18.2	10.9	5.7	8.1	3.18	3	1.94

8 The following statements concern the cost of payment and competition between payment services. The costs of payment habits differ as do the fees charged for the use of them. Please circle for each statement the alternative that best describes your opinion.

	Completely disagree						Completely agree			
	1	2	3	4	5	6	7	Avg	Md	SD
If I saved 10 cents per payment transaction by using a new payment habit, I would like to start using it	10.2	8.5	12.1	24.8	17.6	12.0	14.8	4.26	4	1.82
If I saved 50 cents per payment transaction by using a new payment habit, I would like to start using it	4.0	2.8	5.4	11.9	16.1	21.0	38.9	5.52	6	1.65
If I got a 1% discount from my purchases by using a new payment habit, I would like to start using it	6.8	4.9	9.7	19.6	19.2	17.9	21.9	4.81	5	1.77
If I got a 2.5% discount from my purchases by using a new payment habit, I would like to start using it	1.7	2.4	3.1	7.1	13.5	24.6	47.7	5.93	6	1.40
If I made a payment today, I would use the most advantageous payment habit even if I did not generally use that payment habit (price and quality otherwise unchanged)	2.7	2.8	5.7	14.6	20.2	23.8	30.2	5.39	6	1.54
If the cost of production of the new payment habit is lower than that of previous habits, I think that this should be reflected in the (lower) price of the payment service	0.9	1.0	1.5	6.9	12.1	25.1	52.4	6.13	7	1.20
Shops incur different costs using different payment habits; it is only fair that the merchant has the right to charge a small fee corresponding to the payment habit used (as in the price differences between plastic bags and paper bags in shops)	19.1	12.7	13.8	18.7	17.3	10.7	7.6	3.65	4	1.88
For most credit card payments shops are charged a fee (generally 1.5–5%) that covers eg the cost of credit given to the client etc.; it is only fair that the merchant has the right to add this fee to the prices of the purchase	24.6	14.6	15.3	19.9	13.6	7.7	4.3	3.24	3	1.79
In Finland, measures to improve payment services are needed, for instance, to have more competition	2.8	4.0	8.5	24.3	21.7	18.0	20.6	4.95	5	1.55
I try to influence the development of more efficient payment habits through my choice of payment habits	7.1	8.3	10.7	23.6	21.3	15.1	14.0	4.45	5	1.72
I think that the cost of and/or fees charged for the payment should be shown as separate price items when making in purchase or payment receipts and bills	4.9	4.9	7.5	15.4	15.8	22.6	28.9	5.16	6	1.74
There are sufficient alternatives and competition in Finland to safeguard the availability of reasonably priced payment services	5.4	7.1	15.4	29.0	22.8	12.1	8.2	4.26	4	1.52

9 The following statements concern payment within the European Union and the development of new payment instruments and habits. Please circle for each statement the alternative that best describes your opinion.

	Completely disagree						Completely agree			
	1	2	3	4	5	6	7	Avg	Md	SD
The transaction time for regular payments between banks in Finland is 1–2 days. This time will be satisfactory even in the future	14.5	16.4	12.3	9.9	15.8	14.4	16.8	4.06	4	2.08
The transaction time for regular payments to another European country is now up to 6 days, unless otherwise agreed. When payment habits are harmonised, this time will be satisfactory within the Euro area.	15.9	22.8	18.2	15.9	12.0	7.1	8.0	3.39	3	1.81
It is likely that within few years I will open a bank account in an Euro area country other than Finland	61.1	18.5	6.0	6.5	2.9	2.1	2.9	1.89	1	1.50
It is likely that within a couple of years I will pay Internet purchases much more frequently than I currently do, by using international web payment services (such as eBay/PayPal)	42.8	21.1	9.8	11.5	8.3	4.1	2.4	2.43	2	1.67
It is important to me that new payment habits are developed in order to make Internet purchasing easier.	17.5	11.3	12.9	17.1	16.6	12.6	12.0	3.90	4	1.97
It is important to me that new payment habits are developed in order to make small payments by mobile phone possible.	23.1	17.7	17.3	18.7	10.1	8.2	4.9	3.19	3	1.78
It is important to me that new electronic payment habits are developed in order to make payments from person to person possible.	12.4	10.6	14.2	23.6	16.8	13.2	9.3	3.99	4	1.79
It is important to me that electronic billing and payment services are developed so that the information accompanying transactions is as comprehensive as possible (for example warranty information concerning the purchased items)	6.4	4.3	8.7	17.1	19.2	20.8	23.5	4.95	5	1.75

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