

Erkki Liikanen: Electronic and mobile payments – moving towards a cashless society?

Speech by Mr Erkki Liikanen, Governor of the Bank of Finland, at the European Parliamentary Financial Services Forum, Brussels, 1 April 2008.

The [Slides \(ppt\)](#) can be found on the Bank of Finland's website.

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Introduction

The move to a cashless society has been a topic of discussion for a long time. First, in the 1960s and 1970s plastic debit and credit cards were expected to take the place of cash. And then in the 1980s and 1990s the implementation of chip cards and, e-money was to replace cash.

But still, cash remains popular and its market share has fallen only gradually over the years.

Will we see a major difference next decade? I want to put this question to the panel today.

I start by analysing some statistical trends. Then I shall review the possibilities that the new technology offers and look at some use-cases for mobile payment services. I also want to highlight the need for strong data security and customer identification. Finally I shall wrap up with some comments on the change process and its incentives in payment services.

Statistical developments

Statistical data shows that there has been clear growth in non-cash payments within the EU15 area over the years. The strongest growth has been in card payments, on average 12% annually over the last few years.

The use of payment instruments varies considerably within the EU15. (EU15 figures are used in order to harmonise the chart's information).

In high usage countries such as the Nordic countries (Denmark, Finland and Sweden), the average number of card transactions per person is 130-150 transactions per year. In low usage countries (Austria, Germany, Greece, Italy and Spain) figures are below 40 transactions per inhabitant per year. (The figures for Austria and Germany would be a little higher if card-based direct debit transactions were included.)

Card payments are the most important instrument to replace the use of cash. We can see a correlation between ATM withdrawals and card payments.

When the number of card payments per inhabitant increases to over 70 annual card transactions per person, the number the number of ATM transactions starts to decrease. Several countries below this card usage level still show increasing ATM usage, when customers move from branch teller withdrawals to ATM withdrawals.

There is no accurate statistical data on cash withdrawals at branch level or cash payments at merchants. Anecdotal or survey-based evidence tells that Iceland is the most cashless society measured based on purchase value in shops. Only about 9% of the turnover is paid by cash. In Iceland debit and credit cards are the main payment instruments at points of sale.

A colder climate seems to promote the use of cards and other cashless instruments, as internationally low cash usage are found in Nordic countries ranging from about 28% in Norway, 32% in Finland to about 37% in Sweden.

Surveys in Belgium and Holland report cash purchases ranging between 40-50% of value, while southern countries show levels between 60-80% or even higher. Austria and Germany are also traditionally cash-based countries.

Also the level of electrification in payments varies a lot among the EU15. Most of the cashless account payments have paper-based and electronic versions.

The electrification level is a measure of to what extent paper-based credit transfers and direct debits are replaced by electronic file transfers or Internet e-banking initiation. It also captures to what extent slip-based card payments are modernised to EFTPOS-based, (that's electronic funds transfers at point-of-sale-based) electronic card payments.

Although all countries show increasing numbers of e-payments per inhabitant for the years 2002-2006 and most countries show an increasing level of automation, the actual variations between countries are very large. Holland and Finland seem to be the leading countries, only 3-4% of transactions are initiated by paper formats.

From the statistical data, we can conclude that there is a clear trend towards a cashless and e-payment based society among all EU15 countries. However, progress is quite slow and the use of cash currently seems to be decreasing at only 2-3% a year.

If this trend does not accelerate, the use of cash will remain dominant for many years, especially in the central and southern parts of Europe.

Technology developments

Still, it would appear that we are approaching a turning point in payment practices. Mobile terminals, mobile phones are fast becoming everybody's personal electronic device, and can perform an increasing range of services.

In fact modern smart phones are small PCs with a wide set of input, output and communication features. These even surpass standard PCs in communication capabilities. True, they have somewhat lower processing capacity than standard PCs, due to the need to save on battery power. But this is not a barrier for payment processing as the capacity need there is quite low.

Smart phones today are equipped with emailing, calendar, contact information, camera, music, radio, games, GPSS and maps, dictionary, word processing capacity, spread sheet and presentation processing functionalities, amongst others. The range of mobile phone features and services seem to grow at an increasing speed and versatility. Especially the young generation appears ready to adapt rapidly to new telephone use patterns.

The mobile phone can become the ideal platform for personal payments. One can easily see online account balances and the complete transaction details on the phone's screen.

It also has all the necessary communication capabilities: long-distance communication and complete internet access for e-banking and payment authorisation connection to banks' payment accounts and short distance communication for terminal and phone-to-phone connections

The user interface is familiar to everyone with a colour screen; it has a secure keyboard for PIN and other payment input and it has sufficient processing power including encryption and other security processing. The SIM (Subscriber Identity Module) card used in the GSM mobile phones could be re-used for payment security solutions as it follows the security norms for the chips used in modern payment cards.

The mobile phone could easily store the card data of all personal cards in the same way that it stores connection information for all friends and business partners. It would show the available card alternatives on the screen and, over time, probably learn the preferred one to use in given payment situations.

Card information would be easy to update over the air to the phone. The banks' and credit card companies' data bases would store the necessary back up copies, so in case of a hardware failure or loss of the telephone, all important data could be downloaded to a new phone or SIM card without difficulty.

The phone could also contain or access all the payment details of an account in the same way as the email details can today be accessed using a smart phone.

Mobile phones can also introduce more convenience to the payment process. The phone could automatically interact with payment terminals using near-field communication capabilities (RFID, Radio Frequency Identification communication).

The point-of-sale terminal would transfer the payment information to the phone and the payer would just need to check the payment info and accept it by pushing the OK button. For larger payments the payer would be asked to confirm with a PIN number.

It seems also likely that phones will be equipped with some form of biological recognition capacity. A mobile phone can function both as a sending and receiving terminal and thereby as a platform for person-to-person payments, which is seldom possible with traditional card services.

Mobile phones can also carry ticket and boarding card information making it a good device for all kind of transportation and event ticketing. The RFID interface could be used for automatic gate controls.

There are many reasons to believe that the “chicken-and-egg” situation faced by all new payment innovations will be overcome by mobile payments and we will see a new convenient payment practice emerging.

Requirement for strong data security and customer identification

Of course we need to emphasise the need for improved security and customer identification in electronic payments. The current PC and Internet environment contain well-known risks in the form of viruses and spyware. The Trojan horse type of malware can seize control of a PC and act as a “man-in-the-middle” by reading and changing keyboard input, altering screen views and file content. At worst it can change sent transactions and thereby make fake transactions in the user's name.

Because the security solutions inside a mobile phone are more robust than in standard PCs, mobile phones could become an important part in secure e-banking and other remote service requiring strong customer identification and data security.

There are an increasing number of service providers, who want to provide network-based e-interfaces for their services. Most of these, however, require secure customer identification and authentication. This is the case with taxation authorities, insurance companies, social security and registration offices on top of financial services companies.

This question will require a general and common solution in order to be convenient and efficient for all parties. A different solution for each service provider would be costly and require customers to carry different identification devices and passwords for each service provider.

Internet globalisation will require a standardised solution working cross-border in order to avoid a “jungle” of non-interoperable national solutions. We need a network of interoperable secure ID service providers in the same way as we have interoperable GSM service providers using a common standardised SIM platform.

Could the mobile phone become a general identification device? It already contains the SIM card developed to identify the subscriber for phone account purposes. The use of this

module could be expanded into a general authentication and identification device resulting in synergy benefits.

There are also other technical solutions, but they would require an additional security processor either within the phone or separately. A key question is what institution could provide the identification service? Would it be a TELECOM operator, a bank, a special e-identification authority? Could the development be based on cooperation between all stakeholders? In any case, cooperation will be essential for the implementation of a common solution.

In Turkey, TELECOM operators, banks, authorities and a private e-identity service-providing company have agreed upon a common SIM-based identification solution.

Turkcell, a leading telecom operator is the business manager and E-Güven is the secure certification authority, which is used by all e-service providers for e-identification of their customers. Turkish customers can use their mobile phone for secure connections to online banking, government services etc.

Development incentives and disincentives

How could one speed up change in this payment area? Generally, competition in the market place pushes market participants to increase their productivity. If the incumbents are not able to change, they are pushed out of the market.

Customers and service providers and customers need as cost-efficient solutions as possible. The most competitive solutions are soon replicated across the sectors.

In some cases the contribution of the authorities is needed. Otherwise the public sector is not able to reap the productivity benefits of ICT and digitalisation. Examples of this can be found in the areas of e-health, e-government, e-learning and e-transport. But here too, there are also forces which try to maintain the current status quo, due to legacy interests.

The structure of the payment industry contains many barriers to change in the form of monopolistic processing networks, coordination requirements among competitors and regulatory limitations on service provision.

Implementation of new payment services will require cooperation among the sending and receiving banks as well as within the interbank networks and clearing centres. This is needed for any new feature to become available to end-users.

As I said earlier, competition is the main driver for productivity growth. In the area of payments there are, however, non-transparent pricing conventions, and for that reason, end-users experience very little visible price or cost benefits from among the payment alternatives. Cheques, cash and card payments seem as efficient to the average consumer, when the costs are cross-subsidised.

Merchants do not generally surcharge payment instrument costs separately, but include a general payment mark-up their prices on goods and services. Banks often price payment costs via merchants to the end-users or they are hidden via float, value days or interest margins.

The lack of visible transaction costs and efficiency-based pricing means that the proper price signals don't reach the end-users and thereby impede an efficient choice of payment instrument.

So if we want to speed up development in payment services, we need to increase competition in the market and reduce the disincentives.

Based on our past Finnish experiences in major payment innovations, I predict that the implementation and penetration of mobile payments among the general public will take its time following the introduction of a general and user-friendly mobile payment solution.

Our payment habits are deeply rooted. Merchants need time to adapt their systems. Banks want to be assured that the business model of the new payment instrument is a sufficiently rewarding opportunity for them.

Here too we face the traditional chicken-and-egg situation. Still, I am convinced that recent developments in ICT in general and in mobile technology in particular have provided a solid platform for building a new generation of payment technology.

My forecast is that the convenience and efficiency of mobile payments will have general appeal among advanced users of mobile phones.