



Maatschappelijk Overleg Betalingsverkeer
National Forum on the Payment System

ANNEX TO THE VISION ON INNOVATIONS IN THE PAYMENT SYSTEM







1. Introduction

Innovations in the payment system are driven by the needs of providers and users, and are made possible by technological advances. Developments in the fields of e-commerce and in mobile phones and their usage can potentially have a particularly marked impact on the payment system, and it is therefore important to look at the benefits and risks of innovations and the factors that ensure their success or failure. Innovations can take several forms, for example completely new inventions, the implementation of new ideas in existing business models, or the adaptation of existing business models. Innovations in the payment system typically do not take the form of completely new inventions, but build on existing infrastructures and methods. In this analysis, new payment methods and innovations are understood as all methods which make it possible to pay in ways other than using traditional means such as cash or cards, or which allow traditional methods to be used in new ways.



2. Impact of innovation on the functioning of the payment system

2.1 Benefits

Innovations can contribute to the smooth functioning of the payment system, for example through enhanced efficiency, improved security or better accessibility. Innovations often bring efficiency benefits by offering cost savings, speedier processes or greater user-friendliness compared with existing payment methods. However, innovations can also be aimed at improving safety, as in the introduction of the EMV chip to replace the magnetic strip, making debit card use much more secure. There are also innovations which improve the accessibility of the payment system, such as ATMs with speech technology to enable them to be used by blind people.

Improvements in one or more of these areas ensure that the payment system meets the needs of society more effectively. This is of particular importance when the societal context is changing, for example if people begin shopping in a different way, or if security threats change. The payment system must continually adapt to changes in society, and this requires innovations.

2.2 Risks

Innovations can offer great benefits, but there are also risks: risks that also affect existing payment methods as well as specific risks associated with innovative payment methods.

New products, especially when they are first launched, can contain security weaknesses that can be exploited by fraudsters. It is not only end users who can be the victims of this: providers can also be impacted by security weaknesses in payment services offered by other parties which make use of their existing systems (e.g. providers of digital wallets (e-wallets) which can be used to make credit card payments). Innovative payment methods also offer new opportunities for malware, phishing, etc. If new payment methods are used (on a large scale) for money laundering and terrorist financing, this can even jeopardise the integrity of the market. This risk mainly attaches to innovations which facilitate a high degree of anonymity when making payments. The reliability of innovative



products and channels is also not always as high as that of existing products and channels. Where a product plays or is intended to play an important role in the payment system, it is particularly problematic if the use of innovative payment methods or payment processing is disrupted. A major breakdown or serious security incident can even undermine the confidence of end users in new technologies in general.

These risks are exacerbated by the fact that it is not always clear with new payment methods who is responsible in the event of incidents such as fraud or breakdown. In addition, users often have insufficient or incorrect information about innovative payment methods, how secure they are and/or the rights and obligations attached to their use. Authorities, too, do not always possess sufficient information about new technologies, processes, etc., especially in the early phase, and existing regulations are not always appropriate for new payment methods.

Finally, market efficiency can suffer due to fragmentation and incompatibility. Innovations often begin on a small scale, and it is not uncommon for innovations offering similar functionalities to be launched on the market simultaneously by different parties.



3. Innovations in the payment system: determining factors

3.1 General features of the payment market

Innovations in the payment system are often hampered by features of the payment market itself. The payment market is a network industry, which means the value of the network for each user rises as the number of users increases. If there are not (yet) enough users, there is little to attract new users to join the network. It is therefore important to achieve a critical mass, for example by giving incentives to early users. This is often easier for established parties with more financial resources than for start-ups.¹ Trust between the different parties is a key element in the acceptance of payment methods.

An added complication here is that many payment products operate in a two-sided market, i.e. one which serves two client groups. In the payment market, these are often consumers and retailers. Although they have different interests, these two client groups also need each other. A new product must be accepted by both groups: consumers will not readily start using a payment method that is hardly accepted anywhere, while conversely few retailers will want to accept a payment method that is hardly used by their customers.² This is often a 'chicken and egg' situation, and which follows which often only becomes clear once an innovation has become more widely accepted. In both Canada and Australia,³ for example, a key reason for the growth in contactless payments was the availability of contactless terminals at retailers. Canada has one of the highest concentrations of contactless card readers (an estimated 80% of all EFTPOS terminals)⁴ in the world, which means there are ample opportunities for consumers to make contactless payments. Here, the supply drove the demand, leading to rapid successes for contactless payment.

¹ CPSS - *Innovations in retail payments* – May 2012

² A survey by the Dutch Retail Trade Platform (2014), for example, showed that responding to the wishes of customers was the most important reason for retailers to introduce a new payment method.

³ Ossolinski, C., T. Lam & D. Emery (2014), *The Changing Way We Pay: Trends in Consumer Payments*, RBA Research Discussion Paper

⁴ <http://www.computerworld.com/article/2911596/mobile-payments/canadian-banks-play-hard-ball-with-apple-pays-moving-north.html>



These characteristics make it difficult for new operators or products to take market share from existing payment methods and providers, and initiatives which fail to do so are often short-lived.⁵ Perhaps unsurprisingly, therefore, successful innovations from the (recent) past, such as PIN-based payments or Internet banking, have come from established providers. In the case of Internet banking, there was the additional benefit that network effects were not an impediment: online transfers could be made to people still using traditional paper-based methods, and vice versa. The first users were thus able to benefit from the convenience immediately, without being constrained by limited scope.

3.2 Success factors and barriers

Cooperation

Although competition stimulates providers to innovate, cooperation between different stakeholders is becoming increasingly important in gaining a foothold in this market. This may mean cooperation between banks (see Box 1) or between banks and other parties. Where in the past banks offered their payment services and products to users independently, without intervention by or cooperation with others, various types of providers are today becoming increasingly dependent on each other. Mobile payments are an example, where banks are dependent on a number of parties such as the network provider and telephone manufacturer. In order to achieve faster and broader adoption, it is important that all stakeholders, including older people, smaller retailers, etc., are involved in the development process of a new payment method.

Box 1. iDEAL – Stronger together

There are many examples of successful innovations which show that good cooperation between (market) stakeholders can be a key factor. The success and scale of iDEAL is a good illustration of this.

In 2005 Rabobank, ING and ABN AMRO decided to work together to acquire and launch an online payment system linked to the user's bank account to facilitate online purchases. While cooperation between large banks can sometimes lead to friction (as with the Chipknip prepaid e-purse), in the case of iDEAL it proved to be a master stroke. All consumers with a bank account at one of the three banks could now pay for their purchases online without having to use a credit card. In 2006 the banks transferred ownership of iDEAL to Currence, enabling other banks to sign up to the system as well. Since then, iDEAL has grown rapidly and is now accepted almost universally for online payments in the Netherlands.

There are a number of factors underpinning the success of iDEAL, such as its user-friendliness, security, the familiarity of using one's own bank and the instant payment confirmation. However, the most important factor is that it involves cooperation between all major banks, immediately giving the system a wide reach. Thanks to this collaboration, iDEAL can now be used at all online shops by all customers of Dutch banks, regardless of where they hold their accounts.

⁵ Shopping2020 (December 2013), *How do the Dutch pay in 2020; a report on today's trends and future scenarios*



Added value

If an innovation is to be successful, it must offer clear added value (see Box 2 for an example). In many cases, it is unclear which problem the innovation is intended to solve. As innovations in the payment system rarely replace existing methods completely, but rather complement them, it must be clear what advantages the additional services bring. Providers therefore need to focus attention more on how an innovation meets the needs of users rather than on what the technology makes possible. If an innovation does not offer clear benefits to potential users in terms of speed, convenience or cost savings, for example, users will not invest time or resources in it. For the consumer, speed and convenience are the most important considerations when selecting a payment method. For retailers, cost benefits can also be an important driver in the decision to invest in and accept new payment methods. This is all the more relevant because established payment methods do not involve transaction costs for consumers, making it difficult for providers to recover the costs of new methods from their customers.⁶ Retailers, by contrast, are accustomed to paying a fee for accepting payments, but if an innovative payment method involves high costs for the retailer whilst offering benefits only to the consumer, this will be an obstacle to its adoption.⁷

Box 2. *Chipknip* lacks crucial success factors

Even though it was created to facilitate efficient electronic payment of small amounts at all kinds of payment terminals, the *Chipknip* prepaid e-purse never moved beyond the status of a niche product. Crucial success factors were missing on both the supply and demand side of the market, such as standardisation and added value for users.

Consumers

There has never been a huge demand for an electronic purse. The *Chipknip* simply proved not to be an attractive enough proposition for consumers. There were several reasons for this:

- the inconvenience of having to pre-charge the card (at locations other than the payment terminal)
- insufficient clarity regarding the balance remaining on the card
- insufficient added value compared with other payment methods.

The convenience was found to be highest for paying small amounts for parking, at catering outlets and vending machines. On the other hand, payment with the *Chipknip* was often the only possibility there.

Retailers

The e-purse also offered insufficient added value for retailers, especially compared with PIN-based card payments – not least because from the start, the costs of an e-purse transaction were not much lower than for a PIN-based transaction. And as the *Chipknip* was used mainly for paying small amounts, the costs of accepting these payments had a bigger impact on margins. Moreover, the costs of PIN-based transactions were falling steadily due to the steadily growing use. The time saving at the checkout was also insufficient. All in all, the benefits were not enough to justify the additional investments in hardware, especially for smaller retailers.

⁶ In the case of innovation by banks, raising the account fees is possible, though there is only limited scope for this.

⁷ In a survey by the Dutch Retail Trade Platform, excessively high costs are cited as the main reason for retailers not introducing new payment methods.



Banks

The *Chipknip* was above all a supply-driven innovation, and banks created a false start by competing on standards and infrastructure. Shortly after the introduction of the *Chipknip* in 1996, Postbank and KPN joined forces to launch the *Chipper* card as an alternative, based on a different smartcard technology which was not interchangeable with the *Chipknip*. The media welcomed the launch, praising the increased competition in the payment system. However, it quickly became apparent that this competition on standards did not foster general acceptance, while the investment costs only increased for all parties. Consequently, the *Chipper* was withdrawn in 2001 and from then on Postbank only issued cards based on the *Chipknip* technology. By then, however, it was too late to promote the mass acceptance of this payment method in the market, a problem exacerbated by the fact that the banks did not wish to see their losses on this project escalate. Even calls in Parliament and from the Ministry of Finance in 2004, urging market operators to launch a joint initiative to promote the use of the e-purse in order to make the payment system more secure, fell on deaf ears. In 2007 it was decided to reposition the *Chipknip* as a niche product for parking, bars and cafes, and vending machines, and to phase out its use in shops.

End-of-lifecycle

Looking back, it is clear that the end of the life-cycle was hastened in a 'natural' way, because as time passed new technologies came to the market which allowed the same or better functionality to be offered with greater user convenience and at lower costs. It also did not help that the e-purse could only be used in a few euro area countries, which meant it had no future in the integrating European payment market.

Clear communication

Many users are open to new payment methods,⁸ but are unfamiliar with their use. An example is mobile payment: users regard this as a user-friendly solution,⁹ but are unsure how to use it themselves. There is an important task here for the providers of the new payment methods. Clear communication is essential so that users are aware of the benefits, safety aspects and method of use.

Business case

An important success factor on the supply side is the existence of a business case, possibly one with a strategic approach. The complexity of existing systems can mean it takes a long time for innovations to become established because of the need for expensive or complicated adaptations to those systems. The resources are often limited and the processing costs high. The investment costs are also a big obstacle to the introduction of innovations, and it is often unclear how the costs will be recouped (in the short term). Scale effects also often mean that the costs per transaction are relatively high when the number of transactions is (still) low.¹⁰ In order to make the investment worthwhile in the longer term, there must be clear opportunities to scale up the innovation: the greater the scale benefits, the more the investment will pay for itself.

⁸ As shown, for example, by a DNB survey in 2013 (among consumers) and a survey by the Dutch Retail Trade Platform in 2014 (among retailers).

⁹ This emerged from a pilot carried out in Leiden.

¹⁰ CPSS - Innovations in retail payments – May 2012



Complexity of infrastructure

Another important supply side factor is the complexity of the infrastructure. In the current situation in the Netherlands and Europe, that infrastructure is made up of many different parties and components, making it difficult for a single provider to bring all parties together and get things done. The problem is exacerbated by the international nature of the (European) payment market, with operators in other countries often being involved in processing Dutch payments, for example.¹¹ To date, innovations can often only be used at national level; cross-border solutions are (still) rare. This can mean that similar solutions developed in different locations are incompatible with each other, leaving the European payment market fragmented. One exception to this are innovations from card companies such as MasterCard and Visa, whose international character means they do create solutions that can be used for cross-border payments. This means, for example, that contactless debit cards issued in the Netherlands can also be used in other countries.

Owing to the complex infrastructure, initiatives are mainly concentrated at the 'front end' of the payment system. That complexity makes innovations at the 'back end' more difficult to implement, though it is precisely in the area of infrastructure that innovations could genuinely improve the payment market. An example would be real-time retail payments: if payments could be made and received in real time, this would change the payment landscape significantly (see also 4.2).

The Ripple network protocol¹² (see Box 3) is an example of an innovation that could contribute to that change by enabling banks to use this infrastructure to facilitate real-time payments.

Box 3. Ripple

Ripple is a decentralised payment system which uses its own virtual currency, also called Ripple (abbreviated to XRP). Interestingly, the XRP is issued centrally but can only be used within the decentralised Ripple network. Ripple uses open source software; there is no central operator which owns or controls the Ripple protocol, and it runs on computers throughout the world, so that everyone can use, develop or expand it.

Users of the system can send and receive payments instantly and at negligible cost in every conceivable currency (dollars, bitcoins, gold, etc.). If the sender knows the recipient directly or indirectly, the transaction can be made directly through a chain of 'trusted' users. If the sender does not know the recipient, either directly or through a third person, he or she uses a 'gateway': a person or company where the user can deposit (virtual) currency in exchange for an IOU. The user's balance then shows the amount deposited. Gateways thus function as a sort of interface between the outside world and the Ripple network.

At the heart of the Ripple network is the 'general ledger': a distributed database containing information on all Ripple accounts which is shared across all servers in the network. Each server can introduce a transaction into the network. The transactions are forwarded to all Ripple servers, which automatically reach a consensus on applying a set of transactions to the ledger. This process takes place every 2-5 seconds, which

¹¹ See also section 5.2.

¹² <https://www.ripple.com>



means Ripple is a good deal faster than Bitcoin and requires less computer capacity. To prevent overloading of the ledger, Ripple discourages transaction spam by deleting what a normal user will regard as a negligible amount of XRP from each transaction.

Banks are showing an increasing interest in the Ripple protocol. Integration of the payment protocol would allow banks to offer their customers the ability to transfer any amount of money in any currency to other institutions that use the protocol, without the need for intermediaries. That would lead to cost savings for banks. At present, one German and two American banks are using the Ripple network, while several other banks are experimenting with it.

The interest from the banking sector, in particular, in using the Ripple network means its use could grow rapidly in the near future. It is therefore important to monitor this development closely and to be involved in any steps that banks may take.

Market fragmentation

The degree of market fragmentation also plays a role. If the payment market is highly fragmented, it is difficult for providers of innovative payment services to gain substantial market share; conversely, the less fragmented the market, the easier it is for providers to offer their products. A good example is the great success of contactless payment in Canada.¹³ The Canadian payment market is more concentrated and less fragmented than in other developed countries. This means that adoption of new payment methods by the public can be a relatively rapid process because the major banks and other players are addressing a relatively homogeneous market. Given the relatively small number of banks, this should in principle also be possible in the Netherlands. However, the Netherlands is part of the much larger European payment area – see section 5.2.

Combination of factors

A combination of the above factors is often needed to make an innovation a success. For example, if there is good cooperation but the added value of using an innovation is unclear for consumers, it will have little chance of succeeding. Past experience has shown that some factors are more important than others. Good cooperation between the different parties is particularly crucial. The relative importance of the different factors depends on the context or individual case, however; what is important in certain countries or regions may be less relevant in different circumstances. Ad hoc factors, often beyond the control of providers, can also play an important role, both positive and negative. A notable development in this context is the phasing out of the Chipknip prepaid e-purse from 1 January 2015. For many businesses, for example in the hospitality and vending machine sectors, this was a key factor in the decision to introduce contactless payment. The greater availability in turn enables consumers holding a contactless debit card to make (more) use of this function. Path-dependency also plays a role. In Canada, for example, the EMV migration coincided precisely with the transition to EFTPOS terminals which were able to accept contactless payments.¹⁴ In the Netherlands, by contrast, the timings did not coincide and many retailers will probably wait until their existing terminals are due for replacement before they began accepting contactless payments.

¹³ <http://www.mobilepaymentsworld.com/canadian-mobile-payments-case-study-cooperation/>

¹⁴ <http://www.mobilepaymentsworld.com/canadian-mobile-payments-case-study-cooperation/>



4. Towards the payment system of the future

4.1 Drivers of innovation

Innovation in the payment system is often a response to or consequence of broader societal developments. These may be changes in the behaviour of consumers and businesses (thus creating a need for innovation), or technological advances (which make innovations possible).

Consumer needs

A major development that is taking place in the behaviour of consumers and businesses is the growth in online purchasing (via a computer or mobile phone). E-commerce is growing, partly at the expense of physical shopping. This demands payment solutions that are adapted to this environment. The boundaries between physical and online shopping are blurring: orders are placed online and collected (and perhaps paid for) in-store, or an item that is not in stock is ordered online from the shop and delivered to the customer's home. The physical and virtual payment systems are largely separate worlds, but the boundaries between the physical and online environments are expected to blur in the payment system, too. As a result, the distinction between card, mobile and online payments will become less clear-cut.¹⁵

Technological advances

Technological advances make it possible to initiate, process or receive payments in new ways. If this enables providers to make cost savings or to provide new or better services to new or existing customer groups, it will be worthwhile making the investment. New technologies can for example be used to speed up the payment process, or to make it easier or and more secure (e.g. the EMV chip, which has improved the security of PIN-based payments). As regards specific innovations, the mobile phone in particular offers great possibilities in meeting the need for secure payments. Not only are mobile payments quick and convenient, but smartphones also offer new security options, for example based on biometric technology. ING Bank has for example recently introduced a voice-recognition authentication system for its mobile banking customers.¹⁶ Apple Pay uses a fingerprint scanner, and ING also allows customers to log in to the mobile banking app using fingerprint authentication.¹⁷ But biometric applications in the payment system are not restricted to mobile payments: MasterCard is for example developing cards with a built-in fingerprint scanner.¹⁸

4.2 Key aspects

Given the developments in the needs of users and the technological advances, the following three aspects will be of particular importance for innovations in the short term: further digitalisation, mobile applications and increased speed and convenience.

Further digitalisation

Digitalisation leads to more efficient payments and is in line with broader societal developments such as the growth of e-commerce, social networks and online activity in general, and the increasing role played by mobile devices in our daily lives. The digitalisation of the payment system is a trend that has been under way for some time, with developments such as debit cards with PIN accounting for an ever larger share of retail

¹⁵ *Shopping2020* (December 2013), *How do the Dutch pay in 2010; a report on today's trends and future scenarios*

¹⁶ https://www.ing.nl/nieuws/nieuws_en_persberichten/2015/07/ing_maakt_betalen_met_stem_en_vingerafdrukherkenning_mogelijk_in_mobiel_bankieren_app.html

¹⁷ <https://www.ing.nl/particulier/mobiel/campagne/inloggen-met-uw-vingerafdruk/touch-id-raakt-uw-bankzaken/index.html>

¹⁸ <http://newsroom.mastercard.com/press-releases/mastercard-zwipe-announce-launch-worlds-first-biometric-contactless-payment-card-integrated-fingerprint-sensor/>



payments and online banking largely displacing paper-based banking. Nonetheless, major improvements are still possible. For example, e-mandates can simplify and speed up the issuing and registration of direct debit mandates. Issuing electronic mandates should become possible within the Netherlands in 2015, but the European payment market requires cross-border solutions which are currently not available. Something similar applies for e-invoicing; some countries already make wide use of digital invoices that are directly linked to payment systems, but once again this takes place within their national borders. The Dutch variant, FiNBOX, has never really been a success, but could potentially be replaced by a more successful alternative.

The growth of online shopping and other forms of online interaction mean there is growing demand for digital identification and authentication in order to guarantee the essential trust.¹⁹ A generally accepted online identification method could contribute to the further digitalisation of the payment process, for example using electronic mandates and invoices. It could also increase the convenience and security of e-commerce payments by offering a single, reliable login method for all the different websites.

While the remote payment system is already largely digitalised, and the physical point-of-sale payment system increasingly so, there is no good alternative to cash for payments between consumers situated within the same environment. Although mobile banking apps make it possible to initiate a payment from any location, it is more cumbersome than cash payment and, if the recipient banks at a different bank, they do not receive the payment immediately. Easy-to-use, real-time P2P payment methods could make payments of this kind more efficient.

Mobile applications

Mobile devices (telephones, tablets, etc.) are becoming ever more a part of daily life. The technological possibilities are growing, and with them the expectation that there should be an app for everything. To stay in touch with the needs of consumers and businesses, the payment system must also align with this trend. And it is doing so: between 2010 and 2012 all major Dutch banks introduced mobile banking apps. These apps offer advantages compared with 'traditional' online banking because of their security and convenience. In mid-2012, 20%²⁰ of Dutch citizens used their mobile phones for banking, and in 2014 this had increased only modestly, to 25%.²¹ Research carried out by ING²² among European consumers in 2013 revealed that not having a smartphone is one of the main reasons for not using mobile banking, followed by lack of confidence in the security of mobile banking apps; 11% of respondents stated that mobile banking does not offer them anything that they cannot do in another way already. In Denmark, a country with a similar payment landscape, the percentage of consumers using mobile banking is significantly higher than in the Netherlands. As long ago as 2013, 43% of Danes had a mobile banking app, and almost three-quarters of them made payments using their mobile phones. This suggests that there may be more potential in the Netherlands.²³

A more recent functionality is the mobile variant of iDEAL, which was introduced in 2013 and is now available from most Dutch banks. Mobile iDEAL could potentially play a major role in the payment system: 80% of Dutch citizens have a smartphone,²⁴ and over 70% of

¹⁹ *Shopping2020* (December 2013), *How do the Dutch pay in 2010; a report on today's trends and future scenarios*

²⁰ *Wijzer in Geldzaken*, June 2012

²¹ *DNBulletin*, 21 August 2014

²² https://www.ing.nl/media/ING_nl-koploper-in-mobiel-bankieren_tcm162-71220.pdf

²³ Danish Payments Council (2014), *Report on New Payment Solutions*

²⁴ <http://www.gfk.com/nl/news-and-events/press-room/press-releases/paginas/bijna-alle-jongeren-bezitten-smartphone.aspx>



smartphone owners have used them to make purchasing decisions.²⁵ In 2014, 18% of online purchases were made using a mobile device, and in 29% of cases the payment was made using iDEAL.²⁶ Both mobile banking and mobile iDEAL are responses to the growing use of smartphones, which is partly at the expense of computer-based Internet access. They are therefore partly replacing browser-based Internet banking and iDEAL.

Mobile phones can also be used to make physical payments, though these developments are proceeding less quickly; currently only Rabobank offers a contactless payment facility, for two types of mobile phone. One limiting factor is that by no means all mobile phones contain the necessary NFC chip. As such devices become more common, contactless mobile payments could (partly) replace card payments. There are fewer inhibitors for payment recipients. Retailers who already accept contactless card payments do not have to take any further action in order to be able to accept mobile payments as well. This is an advantage over other forms of mobile point-of-sale payments (such as the use of QR codes). Plans to use mobile phones as public transport smartcards (using a dedicated smartcard app) could promote the adoption of this payment method. Another potential role for mobile phones in point-of-sale payments is the use of mobile terminals (mPOS). These allow card payments to be accepted without the need to invest in a payment terminal. Here, it is the recipient who uses a mobile device. mPOS terminals are offered in the Netherlands by several (often foreign) providers.²⁷ Currently, there is just one mPOS terminal that has been accredited by the Dutch Payments Association and which can therefore be connected to its members' infrastructure. However, members of the Payments Association do not have an exclusive right to offer card acceptance services to retailers. All terminals, whether or not they are connected to the Payments Association infrastructure, must (also) be accredited by the card companies.²⁸

Mobile devices are also ideally suited to P2P payments (see 5.1). Countries such as Sweden and the United Kingdom already have apps which enable consumers to transfer money to each other quickly without having to enter a bank account number. These apps use the list of contacts in the mobile phone, which is linked to the associated account numbers. The adoption of mobile P2P payments has been rapid in Sweden: in December 2013 (one year after introduction) there were already 500,000 users,²⁹ and by May 2015 that had swelled to 2.8 million. In that same month, the total volume of transactions was SEK 3.19 billion (EUR 346 million).³⁰ Adoption appears to be proceeding more slowly in the UK: between April 2014 and the end of April 2015, 2.25 million users registered for mobile P2P payments (6% of the 40 million who had access to the service in that period), and the total volume of P2P transactions over the period as a whole was just over GBP 44 million (EUR 62 million).³¹ Other innovations include payment via Twitter, which has recently become possible in France³² (the underlying payments are made by credit card) or Facebook.

The rise of smartphones is also helping to drive the emergence of new payment methods, both point-of-sale and remote. In itself, this is not a new phenomenon: traditional payment products, such as credit cards and (in the past) cheques, also have both point-of-sale and online applications. Newer developments in this area include e-wallets, which facilitate

25 *Shopping2020* (December 2013), *How do the Dutch pay in 2010; a report on today's trends and future scenarios*

26 <https://www.thuiswinkel.org/bedrijven/nieuws/2739/ideal-betalingen-via-smartphone-winnen-aan-populariteit>

27 <http://www.checkout.nl/trends-en-ontwikkelingen/mpos-introductie>

28 <http://www.betalvereniging.nl/werkterreinen/pinnen-en-betalautomaten/certificering-betalautomaten>

29 <http://www.paymentscardsandmobile.com/swish-mobile-payments-amazing-success>

30 <https://www.getswish.se/>, version 30 June 2015

31 <http://www.paym.co.uk/sites/default/files/embedded-files/>

Mobile%20payment%20adopters%20driving%20%E2%80%98sharing%20economy%E2%80%99%20trends.pdf

32 <http://www.s-money.fr/twitter/>



card payments over the Internet or by smartphone. It is not necessary to transfer money to these wallets in advance; the consumer simply has to store the details of his or her payment card in the wallet. They can then pay at the checkout simply by placing their mobile phone in the proximity of the payment terminal. E-wallet providers see them as a way of increasing the speed and convenience of the payment experience for consumers. They also offer benefits for physical and online retailers, who are faced with fewer customers who fail to complete their purchase because of the complicated payment procedures. The use of e-wallets in combination with self-scanning using a mobile phone could also render the checkout (with the associated queues) superfluous in physical shops. Customer loyalty cards could also be stored in the wallet, obviating the need for a physical wallet. E-wallets thus potentially offer many benefits, but are currently little used. Although there are lots of providers, no winner has yet emerged in the battle for consumers and retailers.³³ This could change if more banks begin offering e-wallets (Rabobank has recently launched its own e-wallet³⁴ and ING will follow in the summer of 2015³⁵).

Faster and more convenient

Speed and convenience are important factors for consumers in choosing a payment method, and innovations in these areas could lead to substantial improvements. For example, the results of a pilot in Leiden in 2013 showed that contactless payments are significantly faster than the main alternatives, cash and PIN-based card payments. On average, payments were around 5-6 seconds faster.³⁶ Contactless payment is only just beginning in the Netherlands, but the figures show that adoption by both retailers (no fewer than 70,000 contactless payment terminals in early April 2015, a sixth of the total) and users (more than 9.5 million contactless debit cards, a third of the total) is growing rapidly. Almost 8.3 million transactions were performed in 2014, 5.3 million of them in the final three months of the year. In March 2015, the number of contactless payments was just over 4.4 million.³⁷ Judging from countries with a similar payment landscape to the Netherlands, we can expect the use of contactless payments to increase rapidly. In Australia, where contactless payments were virtually unknown in 2010, 22% of point-of-sale card payments in 2013 were made using contactless cards. This increase appears to have taken place mainly at the expense of cash (so that contactless payment also contributes to further digitalisation; see 5.1), though contactless payments have also partly replaced traditional card payments for medium-value payments. Research by the Australian central bank shows that the rapid adoption of contactless technology can be explained by the speed it offers.³⁸ Mobile payments can be even faster than contactless card payments,³⁹ and also offer further benefits in terms of convenience, for example by linking customer loyalty cards and therefore rendering a physical wallet superfluous (see 5.2).

Speed is not just important for physical payments, but also for virtual payments, and that is true both for consumers and for retailers wishing to avoid customers aborting purchases because of a slow payment process. 'One-click' payment initiatives respond to this need

³³ Shopping2020 (December 2013), *How do the Dutch pay in 2020; a report on today's trends and future scenarios*

³⁴ https://www.rabobank.com/nl/press/search/2015/rabowallet_live.html

³⁵ https://www.ing.nl/nieuws/nieuws_en_persberichten/2015/06/ing_maakt_mobiel_betalen_in_de_winkel_mogelijk.html

³⁶ In the Leiden pilot, the speed of cash payments was 18 seconds, debit card payments 17 seconds and contactless debit card payments 12 seconds – see http://collis.fb.mi.addemar.com/files/a_collis/data/File/Mobile_Payments_Summit_Presentations/UL-Payment-Summit---Mobiel-Betalen-Nederland.pdf. Earlier investigation showed that, in contrast to the results of the pilot, cash payment (16 seconds) was faster than PIN-based card payment (21 seconds) – http://www.efficientbetalen.nl/websites/efficientbetalen/docs/Rapport_monitor_C10363_Eindrap_def.pdf.

³⁷ <http://www.betalvereniging.nl/nieuws/pinnen-ja-graag-nu-ook-steeds-vaker-contactloos/>, <http://www.betalvereniging.nl/nieuws/sterke-groei-elektronisch-betalen-nederland-2014/>. <http://www.betalvereniging.nl/nieuws/contactloos-betalen-handig-bij-visuele-beperking>

³⁸ Ossolinski, C., T. Lam & D. Emery (2014), *The Changing Way We Pay: Trends in Consumer Payments*, RBA Research Discussion Paper

³⁹ A difference of 2 seconds in the Leiden pilot.



for speed. However, security is a key condition. The electronic identification functionality referred to earlier can help here by offering a user-friendly and reliable login method, following which all logged-in customers can pay with just one mouse click. To limit the risks, a maximum amount could be set for these payments.

One development that can enhance convenience, in particular (though also speed), is the use of biometrics. Compared with other authorisation methods, such as PIN numbers, passwords and tokens, biometrics can make things simple for the user, who does not have to remember codes or keep additional devices close at hand (depending on the precise application).

While the gains when making physical or virtual payments often amount to no more than a few seconds per payment, there is significant scope for speeding up the processing of payments. Although the time between issuing a payment instruction and the recipient being credited has been reduced from several days to a maximum of one business day, the speed of online processes means there is a growing need for real-time processing of payments. In the Netherlands, this topic has been under discussion for some time in the MOB, and Dutch banks have expressed the ambition of achieving this by 2019. In other countries, both within and outside Europe, methods for faster processing of payments are already in place. The topic of instant payments is now also high on the ECB agenda. European attention for this topic is very important, given the use of European payment products and the central role of the TARGET2 system in the interbank settlement of payments. DNB is therefore working within the Eurosystem to expand the operating hours of TARGET2. The Eurosystem is also working on the development of a vision on payments in 2020. Part of this is the facilitation of real-time processing of payments.



5. Broader issues

5.1 Old and new providers

New market operators as well as established payment services providers make use of technological developments to operate on the payment market. Traditionally, payment services were provided by banks, and this is reflected in the fact that most payment services are linked to a bank account. Today, innovations often come from new, (more) innovative providers, such as small IT companies which serve a niche in the payment market. These increasingly important operators offer both payment services and technical services. On the one hand, technical advances make this possible for them, while on the other hand new solutions require the cooperation of these providers. The access to bank accounts as provided for in the Second Payment Services Directive (PSD2) will make it easier for entities other than banks to offer payment services, by regulating access to current accounts by parties which offer services for initiating payments and obtaining account information.



Businesses from other sectors are also starting to move into offering payment services. They include large technology companies, such as Twitter and Facebook as referred to earlier, as well as Apple with its Apple Pay (see Box 4) and Google, which offers the 'Google Wallet' and announced the launch of Android Pay in May 2015. The motivations of these providers can vary. One aim may for example be to collect data and information which can then be used to offer advertisements to customers. A key question here is to what extent this is acceptable from the perspective of privacy. Research on consumer expectations in this area could help answer this question.

Box 4. Apple Pay – a development which brings together several trends

Apple Pay is a payment service offered by Apple on the iPhone 6 and Apple Watch. It is currently available in the United States and the United Kingdom. NFC functionality means Apple Pay can be used to make contactless payments at certain terminals. Apple Pay uses the same technology for this as contactless debit cards. To make a payment, the user's credit or debit card details (and in the future possibly PayPal) are accessed from the Passbook app, which functions as an e-wallet.

How the system works

Apple Pay can be used for both point-of-sale and online payments. For physical point-of-sale payments, the iPhone is held in front of the NFC payment terminal; it is not necessary to open an app. The payment card that is currently set as the default is used to make the payment, which is then authorised using Touch ID (the user places their finger on the sensor) or a password. The phone vibrates and sounds a tone to confirm that the transaction has been successful. On the Watch, a PIN has to be entered to authorise the payment application. Payments can then be made by double-tapping on a button and holding the Watch close to the terminal. This works as long as the Watch is in contact with the user's skin; if the user takes the Watch off, the PIN must be entered again when it is put back on before a payment can be made. As well as this point-of-sale application, Apple Pay can also be selected as the payment method when making a purchase in an app on the iPhone. This in-app functionality also works on the latest iPads, but not on the Apple Watch. Apple claims that the payment information is secure. No information is stored on Apple's servers, and only the most recent purchases are stored in the Passbook app. Apple Pay makes the payment using a different, device-specific number, so that vendors have no access to the actual cards.

Business model

In order to be able to offer this service, Apple works in partnership with card companies and banks. Consumers and retailers do not pay any fees to Apple. Although nothing has been stated officially, it is assumed that issuing banks will pass on a proportion of the interbank fees to Apple.⁴⁰ The fact that these fees are lower in Europe than in the US, and that regulation is likely to bring them down further in the coming years, could be an obstacle to the further roll-out of Apple Pay in Europe.⁴¹ A number of major retailers in the US are blocking Apple Pay because they use their own mobile payment app, CurrentC.⁴²

⁴⁰ <http://www.bloomberg.com/news/2014-09-10/apple-said-to-reap-fees-from-banks-in-new-payment-system.html>

⁴¹ <http://www.pymnts.com/in-depth/2014/apple-pays-european-biz-model-needs-a-reboot>

⁴² <http://www.totalpayments.org/2014/11/24/apple-pay-shut-retailers>



Significance for the Netherlands

Holders of a credit card that is suitable for use with Apple Pay can use an iPhone 6 to make payments outside the US or the UK at NFC-enabled terminals. The technology is ready for the global roll-out of the Apple payment platform, but Apple has still to sign contracts with banks and credit card providers to enable the technology to be used in other countries.

Dutch banks have expressed an interest in Apple Pay. ABN AMRO, ING and Rabobank would all like to enter into talks with Apple to explore the possibilities. If they are able to reach agreement with Apple and credit cards other than those issued in the US or the UK are able to be used, Apple Pay could be offered in the Netherlands. No official release date for Apple Pay in the Netherlands has been announced.

Trends

Many different aspects of current trends in the payment system come together in Apple Pay: the blurring distinction between physical and remote payments, biometrics as a means of authentication and contactless payment using a mobile phone.

5.2 Internationalisation

The Dutch payment system does not stand in isolation, but is part of the Single Euro Payments Area. A single market offers more opportunities for scaling of innovations, but innovations on a European scale do not happen by themselves. The European payment infrastructure is complex and the needs of users differ. To continue meeting the needs of users in Europe, more cooperation will be needed, as well as a recognition that differences in infrastructure and payment habits mean that discussions and initiatives will often arise at national level. Although European solutions are ultimately preferable, it may be in the interests of both Dutch providers and users to begin on a national scale. At the same time, however, the aim should be to grow Dutch solutions to a European scale or to align with comparable initiatives in other countries in order to foster interoperability at European level.

Another aspect of internationalisation is the growing importance of international operators, such as the major card companies. In several countries, including the Netherlands, national card brands have been replaced by international cards issued by Visa and MasterCard. These operators are also actively engaged in innovation, with both introducing solutions for contactless technology and e-wallets, for example. International operators, including card companies and technology companies that are becoming active on the payment market, could compete with Dutch (or European) banks with their innovations, thus prompting those banks to innovate as well. Another possibility is that banks will collaborate with other operators to offer innovative payment methods efficiently which meet the needs of their customers. Collaboration with card companies is already commonplace, and Apple has also elected to position itself more as a partner than a competitor of banks (see Box 4).

5.3 The impact of regulation

Authorities can play an important role by regulating to eliminate impediments in the payment market. In the United Kingdom, for example, a special Payment Systems Regulator has been set up with the key task of stimulating innovation (see Box 5). On the other hand, too much regulation can stifle the initiative to innovate, and it is also important to allow the market to do its work. For example, if regulation puts too much



pressure on providers' profits, they will rapidly lose interest in investing in innovative methods. In seeking to stimulate innovation in the payment market, it is important to create an innovation-friendly regulatory climate. There is strong demand from the market for bodies which set technical standards that are able to resolve coordination problems and guarantee neutrality. Authorities could play a key role in the creation of general standards and guidelines, though it is also important that regulation keeps pace with new developments. Take the example of the blurring of boundaries between different payment methods: if a payment is made using a card which is stored in an e-wallet on a smartphone, for example, that payment can be classified as both a card payment and a mobile payment (and possibly even as an online payment as well).

Box 5. UK Payment Systems Regulator

The Payment Systems Regulator (PSR) was set up in the United Kingdom in April 2014. This body has three purposes: to promote competition in the market for payment systems and services, to promote innovation and to ensure that payment systems are operated and developed in the interests of users. To achieve these objectives, the PSR has the power to direct actions, impose requirements regarding system rules and access to payment systems, amend existing agreements and take action against anti-competitive practices. The British government decided to create the PSR because it felt the existing governance structure meant the needs of users were being neglected and that project delivery was not sufficiently effective, due to the consensus-based decision-making model and the strong position of the biggest banks.



6. Conclusion

Innovations can increase the efficiency of the payment system, for example through greater speed, greater convenience or cost savings. These are important factors for consumers and businesses, i.e. the users of payment systems, innovative or otherwise. Partly because of the structure of the payment market, however, it is difficult for innovations to become established, and it is therefore important to stimulate the success factors for innovations as much as possible: cooperation between stakeholders, meeting the needs of users, good communication and an innovation-friendly regulatory climate. In addition, to ensure a properly functioning European payment market which delivers meaningful benefits of scale, cooperation is needed at European level in order to realise innovations on a European scale. At the same time, the risks that innovation can also bring must be borne in mind at all times.







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