



# The future of (mobile) payments

## New (online) players competing with banks

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For a number of years the financial sector has been coming under increasing pressure in one of its core business segments: accounts and payments. The rapid developments in technological and web-based applications and products are confronting traditional banks with major challenges. Because of the increasing regulatory obligations as well as cost pressure mounting many banks are at risk of becoming less innovative.

The market for innovative mobile payments is still in a very early stage. Even in the US, which is – next to Japan – clearly the frontrunner, business models are only about 1-2 years old. Thus, the future development is highly uncertain.

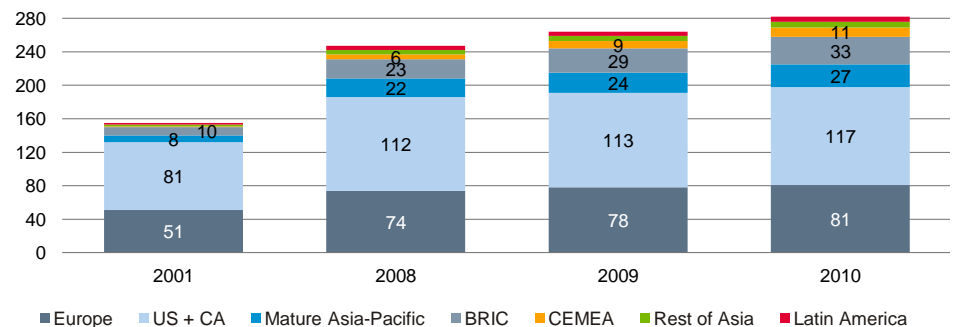
A lot of attention is currently paid to the (walled garden) strategies of new competitors such as Google, Apple or PayPal. They are increasingly putting out their feelers in segments outside of their own territory, e.g. the market for (mobile) payments. Card firms, too, are re-positioning themselves.

The financial sector would be well advised to keep an eye on the big internet firms and card firms. We have developed four scenarios laying out the future of (mobile) financial services in about five years time: In the “early bird” scenario where acceptance of mobile payment services is high and banks act pro-actively, looming destructive competition will take only a moderate form. However, banks are likely to lose market shares if they do not succeed in offering appropriate mobile financial services and decide to make a more passive adjustment to the digital world (“The late arrivals”-scenario).

In any case the traditional financial institutions have several strategic options. As in all phases of fast-moving innovations it might make sense for financial institutions to pursue a multi-technology and multi-channel strategy.

Number of worldwide non-cash transactions rises

By region, bn

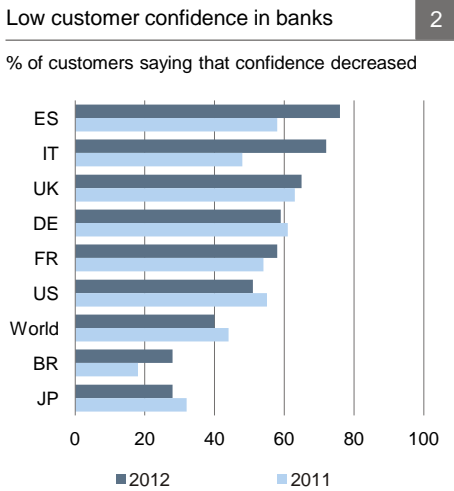


Source: Capgemini Analysis

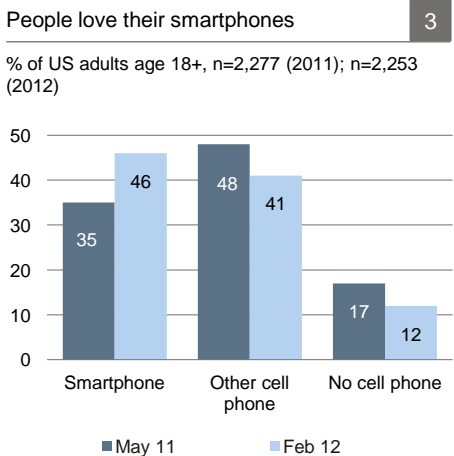


## The future of (mobile) payments

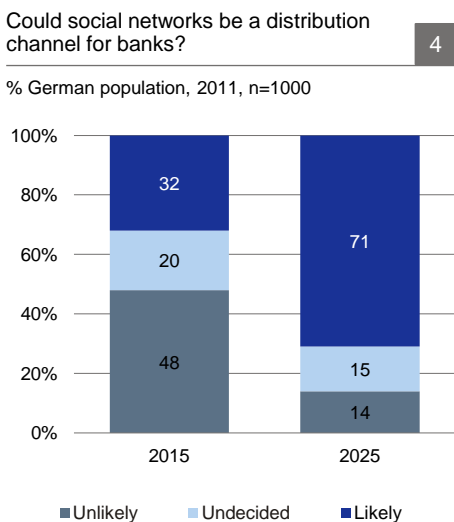
### 1. Introduction



Source: E&Y Global Consumer Banking Survey



Source: Pew Research Center



Sources: A.T. Kearney, FIM

For a number of years the financial sector has been coming under increasing pressure. In addition to national and international regulatory requirements that will become more exacting on account of the continuing global financial and sovereign debt crises, financial institutions are struggling against the evaporation of confidence and growing reputational risks (see chart 2). In addition, the rapid developments in technological and web-based applications and products are confronting traditional banks with major challenges. Because of the increasing administrative and regulatory obligations as well as cost pressure mounting many banks are at risk of becoming less innovative, while the adaptation rate of new web-based technologies continues to rise across a variety of industries. Established banks are being forced to adjust their business strategies to respond to digitally-driven structural change.

Digital mobility with internet-enabled devices is the next logical stage in the evolution of the World Wide Web – smartphones, tablet PCs and e-book readers are taking over the mass markets and will fundamentally change not only the way products are bought and sold but also financial services, especially (mobile) payment systems in the coming years. Mobile devices link up the in-store, online and advertising channels with far-reaching consequences. The option for users to access information on the road, to consume products or services and pay for them electronically also requires a timely response from the financial sector. In particular the market for (mobile) payment solutions is in a state of flux, but the deposit-taking and lending businesses are also faced with (digital) challenges, such as an increasing number of P2P and – to a (up to now) lesser extent – crowdfunding and crowdinvesting platforms. The mobile payment service is seen as a major growth opportunity by established companies in the payments segment as well as by the big digital ecosystems. Will we see a “Google Bank” or an “Apple Bank” perhaps, and how will credit card companies as well as banks as the incumbents act in the battle for market share and customer acceptance?

It cannot be ruled out that potential competitors such as Google, Apple, Amazon or PayPal will expand the existing service offering in order to enter, for example, the market for standardised financial services. Some are currently setting up new business models for mobile payments. Many of these players can point to a relatively loyal regular clientele that runs into the triple-digit millions (all age cohorts represented), are expanding rapidly and increasingly offering web-based financial solutions – also for mobile devices. The new providers of mobile, web-based financial services are doing exceptionally well in integrating changing patterns of consumption and media use – especially of internet-savvy consumers – into their offerings. They thus might represent serious competitors in the (future) market for standardised financial services. Thus banks would be well advised to further adapt digitally-driven structural change in their respective business processes in order to offer mobile financial services that deliver what the consumer wants and are secure and easy to use. Traditional financial institutions' many years of experience in dealing with security and data protection issues mean that specifically in this area they enjoy a competitive advantage which they can leverage in their strategic actions to compete in the mobile payment solution segment.

The rise of mobile and online payments opens up new opportunities, but of course also presents new risks for financial services providers: strategic, but above all cross-level alliances between established internet players, telecommunication companies (telcos) and e.g. credit card companies along the value chain certainly have a promising objective: securing and building on their respective market positions. Those financial services providers who do not modernise their upstream and downstream value chains or subject them to the

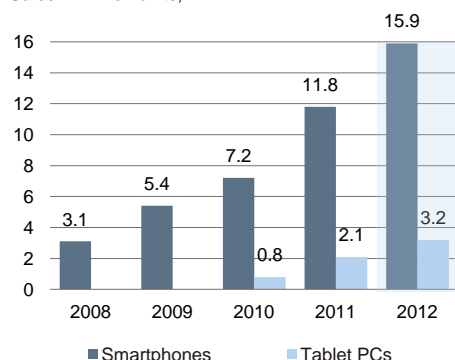


## The future of (mobile) payments

Mobile devices conquer the mass markets

5

Sales in million units, DE



Sources: EITO, IDATE, Bitkom

transformation process required for the digital network architecture could suffer painful losses over the medium term. Thus, pressure is growing on the traditional banking world.

Our paper will develop four scenarios on how the market share of banks might develop in about three to five years' time, with a particular focus on the European market. The paper is structured as follows. The following chapter describes in a nutshell the current status of today's payment and deposit markets. Attention is focused on the trends in payment services, deposits and the payments market in general. We also discuss regulation and potentially easier market entry for alternative payment providers along the value chain. The central point of chapter 3 is the mature World Wide Web (WWW) turning into a serious (user participation) platform for political and above all economic interaction. It addresses the digitally-driven structural change challenging the traditional banking segment. Chapter 4 introduces the most important players that currently shape the business models in (mobile) financial services. Some regional cases will be introduced in chapter 5 focusing on some advanced (mobile) payments markets, i.e. Japan, the US and the UK. Chapter 6 discusses the current strategies of the digital ecosystems which are on everyone's lips. The (technological) innovations and web-based achievements around the internet in recent years have largely been determined by the big internet firms such as Google, Apple or Amazon. They are likely to play an important role in the future payments and mobile financial services markets. Chapter 7 looks into the factors that drive adoption of new technologies by merchants and consumers. It sketches four scenarios of how the (mobile) payments market could develop. They look into the extent of destructive competition and acceptance of new (mobile) financial services for traditional financial institutions and illustrate potential strategic alliances between the players described in chapter 4 and the banking sector. Chapter 8 provides a summary of our conclusions.

## 2. Payments and deposits today – a brief review

Payment services have continuously evolved during the past decade and more substantial transformation of the industry lies ahead. At the same time, the provision of payment services is back in focus for banks as they seek stable sources of income and funding and refocus on retail business. The stability payment services add to banks' business can contribute to long-term business viability and to the soundness of the banking system at large.<sup>1</sup>

Retail payment services contribute to banks' income via several channels. First, fees from payment services or bank account management add to non-interest income. Second, payment services help to attract deposits and thereby add to interest income. Moreover, both channels are positively correlated because accounts and payment services often serve as anchor product and there is cross-selling potential. Payment services additionally contribute to banks' funding through deposits.

Arguably, keeping the deposits may even be more relevant than keeping the payments. Deposits remain a major funding source for European banks. They account for 60% of European banks' funding and households hold 30% of their financial wealth in deposits. The average masks huge differences between countries, though. Euro-area deposits do not account for even one-third of total liabilities in Finland but make up over 70% of the total at Slovenian banks. In Germany, their contribution amounts to almost 57%.<sup>2</sup> In the largest EMU countries the growth of deposits lodged by creditors from the euro area as a whole

<sup>1</sup> Hasan, I., Schmiedel, H. and L. Song (2009). Return to Retail Banking and Payments. ECB Working Paper 1135. ECB, Frankfurt.

<sup>2</sup> Ahlswede, S. and J. Schildbach, (2012). Poised for a Comeback: Bank Deposits. Current Issues. Deutsche Bank Research. Frankfurt am Main.

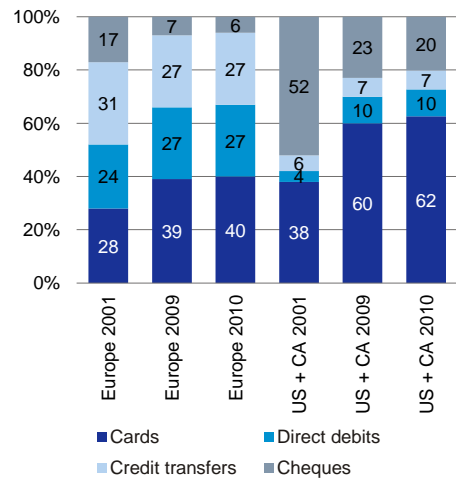


## The future of (mobile) payments

Mix of payment instruments

6

%, by region

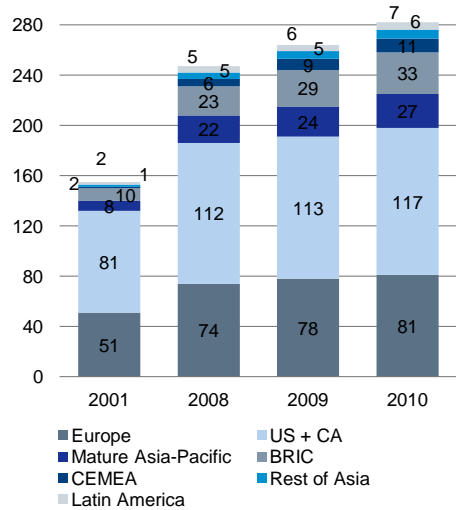


Source: Capgemini Analysis

Number of worldwide non-cash transactions

7

By region, bn



Source: Capgemini Analysis

has been very uneven. While deposits grew modestly in Germany (2.7% p.a.) from 2003 until 2012, their annual growth was much more robust in Spain (10.9%) and Italy (8.2%). Notably, growth was much stronger prior to October 2008 and has flattened since. The importance of deposits for bank funding in Europe has gently declined over the past decade, but this trend is likely to be reversed because decreased risk tolerance and more stringent liquidity requirements (Basel III) make financing through deposits more important.<sup>3</sup>

While payment services provide a way to attract deposits, managing transactions efficiently matters for two reasons. In European markets the number of transactions per deposit account is stagnating or growing only moderately and banks are facing strong cost pressure. In emerging markets, the strong increases in the number of transactions offer potential for economies of scale from investment in payment infrastructure and innovation that power efficient processing. In addition, lower household penetration for deposit accounts is an area offering catch-up potential and opportunities for a quick market breakthrough for innovative payment technologies that, in mature markets, would struggle to make inroads against efficient incumbent technologies.

Payments markets show strong national differences due to income levels, customer preferences and regulatory conditions (see chart 6). They developed differently historically and, as network industries, they are subject to strong legacy effects. Worldwide, the number of payment transactions has been growing on average by 6.7%<sup>4</sup> p.a. during the past 5 years and there is a strong trend to move away from cash: cashless transactions saw an average increase of 7.1% p.a. between 2001 and 2008 (see chart 7).<sup>5</sup> Most recent values for 2010 remain at this level of growth with the total volume of cashless transactions reaching 283 bn. Growth held relatively firm throughout the crisis and despite economic turmoil even the European market saw modest increases in the past two years (+4.9%).<sup>6</sup> While growth has been particularly strong in emerging markets, the US and Europe still account for a combined share of almost 70% in the number of non-cash transactions. Nevertheless, there remains significant potential for cash reduction in the EU and the US with more than 80% of transactions still conducted in cash. To capture efficiency gains, governments continue to foster the use of cashless via regulation and use, e.g. e-procurement. At the same time, changes in consumption habits, e.g. use of e-commerce, further stimulate migration to cashless payments.

The second major trend is the rise of cards. Cards are prevalent in the US and Canada where they account for 60.8% and 72.7% of the total number of cashless transactions (see chart 6).<sup>7</sup> As for Europe, the share of cards in non-cash transactions reached 40% in 2010 compared to only 28% at the start of the decade.<sup>8</sup> Yet growth is again strongest in emerging markets, e.g. cards' share in the number of transactions surged from 14% to 38% in 2010 in the BRIC countries. Average values per transaction picked up again last year too – globally as well as in many European countries. While card use is still broadening, there is considerable regulatory pressure on card fees (see next chapter). Both e- and m-payments continue to surge (see charts 8 and 9), with the latter showing even faster growth rates and reflecting the spread of mobile devices.

<sup>3</sup> Ibid.

<sup>4</sup> BIS, (2012). Statistics on Payment, Clearing and Settlement Systems in CPSS countries. Bank of International Settlements, Basel. Average value for 2006-2011 based on global sample of 22 countries.

<sup>5</sup> Efma/Capgemini, World Payments Report 2012.

<sup>6</sup> Efma/Capgemini (2012) estimate +4.9% growth of cashless transactions for 2010. Latest ECB figures yield 4.6% growth yoy for 2011.

<sup>7</sup> BIS, (2012), Innovations in Retail Payments. Bank of International Settlements, Basel. Values for 2010, includes credit and debit cards.

<sup>8</sup> Efma/Capgemini, (2012). World Payments Report. Efma, Paris.



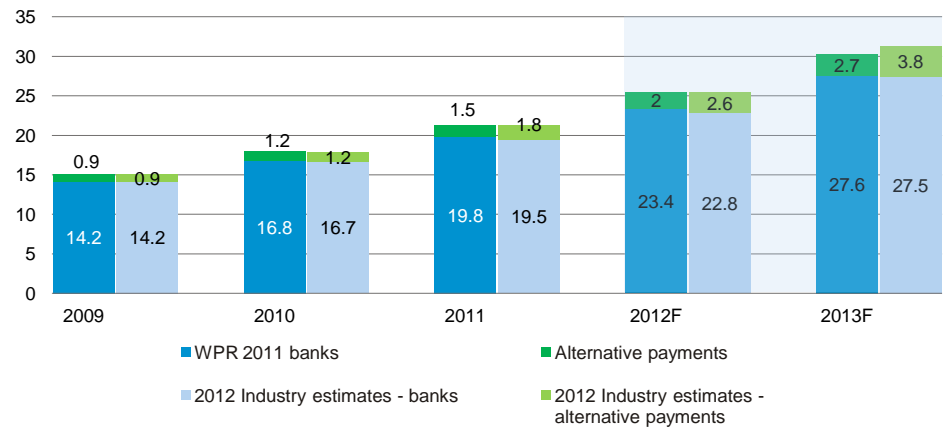


The future of (mobile) payments

Number of global e-payment transactions

8

2009-2013F, bn



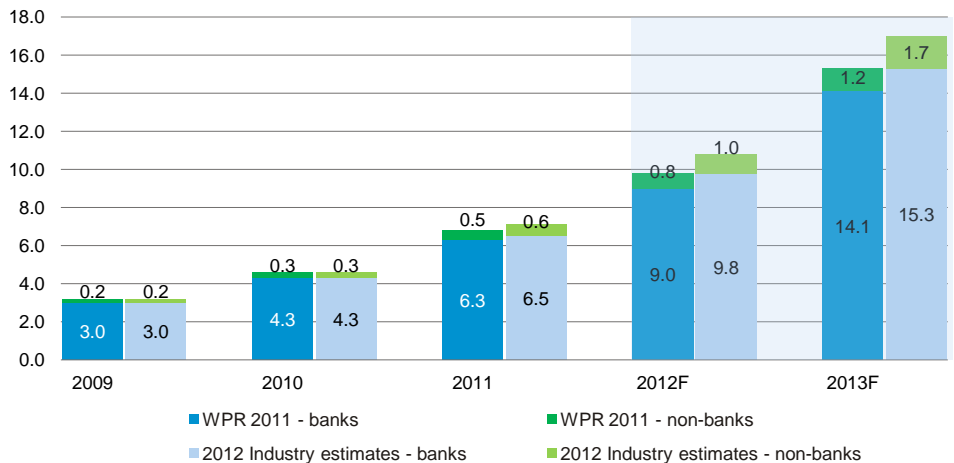
Source: Capgemini Analysis

Payments still primarily flow through the banking system, e.g. of the 90.6 bn payment transactions conducted in the EU in 2011, 51% took the form of traditional credit transfers or direct debits and card payments accounted for about another 41%. However, regulatory pressure to promote competition in the payments market through lower entry barriers for new players and technological change are bound to put pressure on banks' market share. In the area of mobile payments for example, where strong growth is projected, non-banks handled about 6% of transactions in 2010 and their share is expected to rise to almost 8% in 2013.<sup>9</sup> Similarly, payment solutions for low transaction volumes, which still provide significant potential for cash reduction, are one domain where banks look likely to be challenged.

Number of global m-payment transactions

9

2009 - 2013F, bn



Source: Capgemini Analysis

<sup>9</sup> Efma/Capgemini (2012). World Payments Report. Efma, Paris. Industry estimates would suggest a share of almost 10% for non-banks in 2013. Sources for industry estimates presented in the World Payments Report 2012 include Advance Payments Report 2011, Edgar, Dunn & Company, Visa, MasterCard, eBay and American Express Annual Reports 2010, 2011. Note, however, that data collection and accounting for e- and m-payments are less standardised than for other payment transactions and projections may therefore be subject to additional uncertainty.



## The future of (mobile) payments

Bank licence: Who can provide banking and (e-)payment services in the EU?

10

Banks require authorisation by supervisory authorities in order to carry out their business. In the European Union, this is granted by supervisory authorities where the head office of the respective bank is located, e.g. by the BaFin in Germany or the Financial Services Authority in the UK. While national rules set out the details for the application process, getting a licence typically requires sufficient capital, a business plan, information on ownership and proof of professional management. Banks that have obtained a licence in one EU member state can offer their services in other EU countries with a "European passport" unless supervisory authorities of the host state raise objections.

The Payment Service Directive sets out the legal framework for offering payment services in the European Union – for banks as well as other payment service providers, e.g. retailers, businesses operating money-transfer systems, e-money institutions or telcos. Similarly to banks, payment service providers need to be authorised by national supervisory authorities and can offer their service based on a common passport across the EU.

Finally, the E-Money Directive provides the rules for institutions issuing electronic money and providing payment services. Businesses licensed as e-money institutions are allowed to offer respective payment services but they are not permitted to take deposits.

For more information, please see Official Journal for EU regulations and national supervisory authorities.

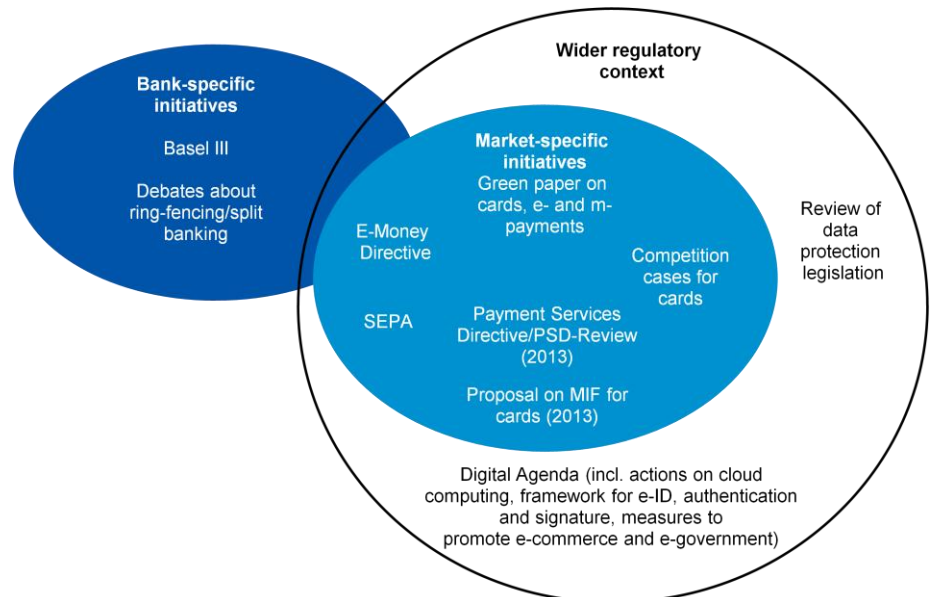
### Regulation: Stimulating competition is the objective

Efficient and safe payment systems matter for the smooth functioning of commerce, financial intermediation and ultimately economic growth. Markets for payment services exhibit economies of scale and various types of externalities and thereby pose challenges to regulators. Four main motives drive regulation for payments: efficiency, safety, innovation and access. Differences in market conditions and existing payment infrastructure determine local priorities. While financial inclusion motives play a stronger role in emerging markets, in Europe and the US consumer protection and efficiency concerns are paramount. Notably, there is a common global tendency to promote competition and transparency in payments markets, often through facilitating entry for alternative payment service providers (PSPs), and banks therefore face increasing pressure on their share of transactions vis-à-vis alternative providers.

For Europe, the European Commission's Green Paper on Cards, Internet and Mobile Payments<sup>10</sup> (published in January 2012) illustrates this pattern. The European Commission wants to facilitate market access and entry for alternative payment providers by, inter alia, harmonising or reducing multilateral interchange fees (MIFs), separating card schemes and card payment processing, access to settlement systems, co-badging, access for non-banks to account information, e.g. on availability of funds, and measures to regulate PSP dealings with retailers. The European Commission also wants to stimulate cross-border payments and innovation through greater standardisation of payment technologies and interoperability via a legal framework for card payments (especially debit cards) as well as e- and m-payments, thereby also advancing the single market and the digital agenda. Banks' payments operations may also be affected by current regulatory initiatives (e.g. the UK's Vickers Commission) to ring-fence payment operations from other parts of the bank. Current discussions on the requirement of banks to plan for their own demise as well as the debate on split-banking systems point in this direction. Finally, the follow-up to the

### Overview of main regulatory activities affecting the payment markets landscape in Europe

11



Note: "Wider regulatory context" groups examples of activities that may affect acceptance and adoption of payment services in the medium to long term affecting consumer habits.

Source: DB Research

<sup>10</sup> The Green Paper initiates a consultation process with the relevant stakeholder that might result in future legislative action. For details on the Green Paper see <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011DC0941:EN:NOT>.

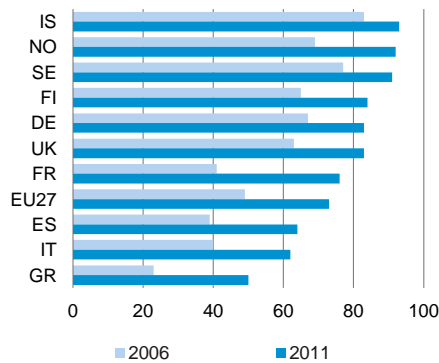


## The future of (mobile) payments

### Internet access

12

% of households

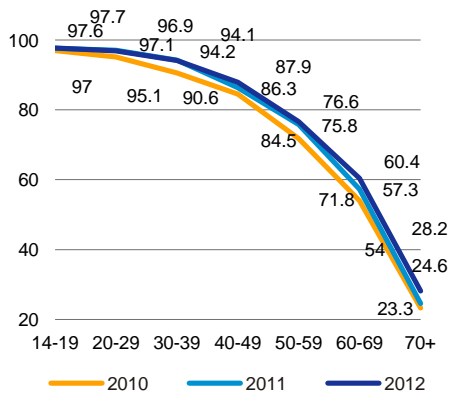


Source: Eurostat

### Current internet users in Germany

13

% of population (14+)

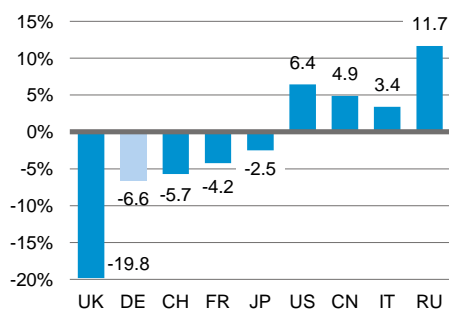


Sources: (N)Onliner Atlas 2012, DB Research

### More potential for online banking

14

% change of branch banks, 2006-2011



Source: Bank for International Settlements (BIS)

Green Paper and review of the EU Payment Service Directive scheduled for 2013 may lead to a number of changes in Europe's payments markets (e.g. extending the PSD to cross-border transactions and non-EUR payments, addressing harmonisation and competition issues in the market for cards and e-payments as well as standardisation issues e.g. for m-payments) the sum of which might be to reduce the attractiveness of the payments market for banks.

For cards, ongoing competition cases and possible regulatory action to promote the single European payment area for cards and follow-up actions to the Green Paper scheduled for 2013 are likely to result in further pressure on interchange fees in Europe.<sup>11</sup> Legislators already took action to reduce fees in the US, Canada and Mexico.

Banks are subject to more stringent regulation and cost pressure in the wake of the financial crisis. At the same time, there is a global trend to promote innovative services and allow for new players in the market for payments. Given that safe payment services underpin trust in economic transactions, regulators need to ensure that the safety of transactions is not compromised and that banks and non-bank PSPs act on a level playing field. This may require extending supervisory structures to account for the increasing importance of non-bank PSPs. Access to bank information for non-bank PSPs remains a sensitive point for banks because this may have a detrimental impact on established customer relationships if services offered by third parties prove unsatisfactory. Europeans are particularly sensitive about data protection, which influences the ongoing review of data protection rules in the EU as well as the adoption of digital services. It requires regulators to reconcile desires for innovation with public concerns about safety and data protection.

Banks are currently an integral part of the payments market and have to date made considerable investments in a safe and efficient infrastructure. Incentives for future investments in payment service innovation and the choice of business strategies to implement them will hinge on rules in the market for payment services and the financial sector at large.

## 3. Digitally-driven structural change challenging banks

In recent years the internet has developed from a predominantly passive information and entertainment platform into a serious (user participation) platform for political and above all economic interaction. The internet has matured. The broadening of many business models to incorporate a multi-channel strategy with the online channel as an important pillar is only one indication of the modernisation of (partly) analogue business processes. Future business models will be driven by several (digital) trends.

### The internet as a growth engine is growing up

Information and communications technology (ICT) is a key technology that continues its march across all sectors and is boosting efficiency and thus generating growth potential in existing markets and value creation networks. The internet provides all people (with the appropriate internet access) with multimedia communication tools, interactive processes for collaboration and participation as well as social platforms for evaluating and sharing content or joining together to pursue a variety of causes. The results that can be observed are the increased opening-up of processes in business (open innovation), science (open science), politics (open government) and society (open culture), in which actors can interactively and above all more transparently participate in discussing, deciding on

<sup>11</sup> European Commission (2012): Single Market Act II-Together for new Growth. European Commission, Brussels.

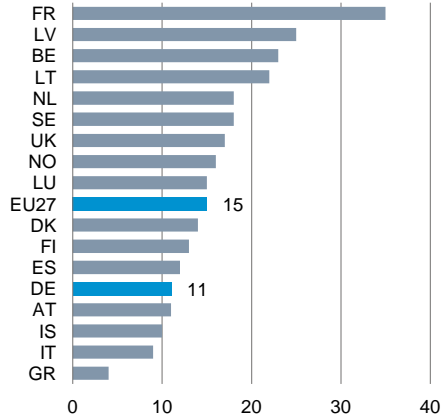


## The future of (mobile) payments

Online banking in a European comparison

15

% of population, change (percentage points) 2010 vs. 2006

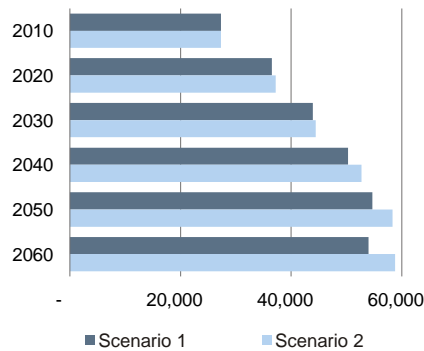


Sources: Eurostat, DB Research

Total number of online banking users in Germany

16

in '000



Sources: Federal Statistical Office, DB Research

and shaping many (value creation) processes.<sup>12</sup> The interactive participation of customers in corporate innovation processes via appropriate social platforms and new communications channels is becoming increasingly relevant even for traditional banks in order to establish or re-establish a close and trusting relationship with customers.

In Germany the number of internet users has risen to more than 75% this year (see chart 13); at the same time the growth rate has slowed over the last few years. This corresponds roughly to the EU-27 average of 73% in 2011, although the average masks considerable differences among the European countries. The rising number of internet users also means that the routine use of web-based technologies will continue to increase and that the *internet savvy* of consumers will rise further due to their mounting online experience.

### Online banking on the rise ...

In the period 2006 to 2011 the number of bank branches in Germany fell by 6.6% to a total of 39,643, whereas the UK saw 5,525 branches close (-19.8%) according to the Bank for International Settlements (see chart 14).<sup>13</sup> Although this development is spurred by several factors it is expected to continue also on account of the automation of standardised financial services. The rise of these services could generate additional growth potential in the digital banking services segment. According to DB Research projections, in 2030 a total of nearly 44 million Germans are expected to be familiar with online banking services. By comparison, the figure in 2010 was only slightly over 27 million (see chart 16).<sup>14</sup>

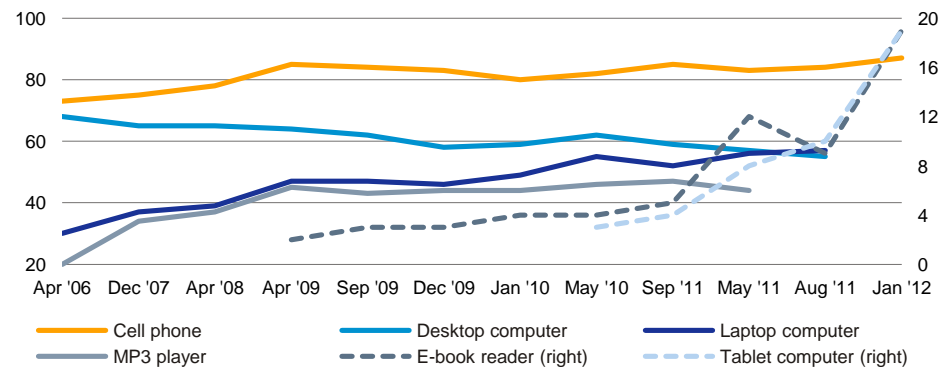
### ... as well as mobile internet usage

Besides demographic change and the automation of standardised services there are some other trends that are forcing the pace of digitally-driven structural change (not only on the technological side). Next to *virality* and/or the *network concept* a special role is also played by the human desire for emotional ties and *social inclusion* as well as the individual desire/urge to have permanent (mobile) online access regardless of the time or place.

(Digital) mobility on the rise

17

% of US adults aged 18+ who own each device, 2006-2012, n=2,253



Sources: Pew Internet surveys, DB Research

<sup>12</sup> Dapp, T. (2011). The digital society. New ways to more transparency, participation and innovation. Current Issues. Deutsche Bank Research. Frankfurt am Main.

<sup>13</sup> Statistics on payment, clearing and settlement systems in the CPSS countries (2012). Committee on Payment and Settlement Systems. Bank for International Settlements (BIS).

<sup>14</sup> Dapp, T. (2012): Online banking and demography. Future generations will take online (banking) for granted. Banking & Technology Snapshot. Deutsche Bank Research. Frankfurt am Main.





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This transformation process could continue to result in declining sales of stationary, internet-enabled devices. For example in the last six years the number of those people in the US who owned a desktop PC fell by 13 percentage points, while the number of owners of smartphones, notebooks, tablet PCs and e-book readers has grown appreciably since they have been on the market (see chart 17). Rising unit sales of tablet PCs, smartphones and other mobile and internet-enabled devices confirm this trend. This will cause the ongoing changes in media consumption and shopping habits to progress even further (see below).

### E-commerce on the rise

18

%, internet purchases by individuals  
(in the last 12 months)



Source: Eurostat

### Consumers are frequently shopping online

In the past few years, online retailers achieved higher sales growth than traditional retailers. This trend is also reflected in the shift from traditional mail-order retailing to multi-channel retailing. Sales are not exclusively made through the catalogue business but also online or through a combination of the two channels. The success of this restructuring is borne out by the large (online) mail-order companies like Amazon or ebay. More and more consumers are turning to the internet to shop. Goods ordered most frequently include books, consumer electronics and clothing. But increasingly, consumers are also ordering medications<sup>15</sup> and groceries online. A European comparison shows that the German online shopping market has room to grow. 73% of the Norwegian population ordered goods and services online in 2011 (see chart 18). This puts Germany, at 64%, well behind the Scandinavian countries, the UK, Denmark and the Netherlands. The rising share of e-commerce in total retail sales also points to the need for an efficient payment infrastructure. Moreover, the increasing share of mobile devices will result in more people using mobile services and making purchases while on the road. In general, companies that successfully incorporate a mobile element into their multi-channel strategies and synchronise their online and offline distribution channels will potentially be more attractive to consumers in the years ahead. This is also valid for mobile financial services.

### More links between the online and offline worlds ...

The *change in consumption and media usage patterns* of internet users (of all age cohorts) and the continuing *reduction in digital transaction costs* with rising *convergence of web-based ICT* (augmented reality, smart home) are also positively impacting the dynamics of digitally-driven structural change in people's daily working and private lives. In future, a sharper focus will be trained on the linking of every day objects that communicate with one another and make people's routines more amenable. The respective technologies will be integrated as flexibly as possible into the environment and people's everyday routines (*internet of things*) and as modern interfaces between man and machine will thereby create new (digital) business models, especially in the internet services segment. One fundamental prerequisite is the internet and the accessible and wireless linking of everyday objects.

In this context, there is an increasing amount of experimentation with technologies in the payments segment. Although Germany and Europe are still among the developing countries with regard to NFC (nearfield communication) technologies (see box 20), many pilot phases are currently being commenced in payments in order to be able to test the acceptance and robustness of the new medium. Promising applications for NFC are to be found in cashless and con-

<sup>15</sup> For example since January 1, 2004, medications may be sold in Germany through online channels.

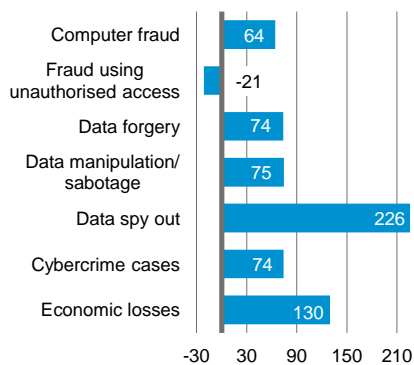


## The future of (mobile) payments

### Cybercrime in Germany

19

% change, 2007 - 2011



Source: BKA

### Mobile payments: NFC and QR technology

20

**NFC** (nearfield communication) is a technology for the wireless connection of devices and thus links the online and offline worlds. It is based on development of RFID (Radio Frequency Identification) technology, in which the data on a transponder can be read and stored contactlessly. NFC extends RFID technology for example to include the possibility of linking two mobile devices or a smartphone with a cash register terminal, the retail point of sale (POS). Emphasis should be placed on the simplicity with which this link-up is established: if two mobile devices are within range of one another they establish a connection very rapidly. The range for NFC has deliberately been limited to a maximum of between 10 and 20 cm so that the user can keep the communication under the best possible control\*.

Another option of linking the physical and the digital worlds is the Quick Response code. The **QR** code consists of a square matrix of black and white dots that can give a binary representation of coded data. Smartphones help consumers to obtain better in-store information about products: this service is provided by QR codes. If a smartphone is equipped with a special recognition software (or app), it can decode additional information from the matrix code. Among other things, QR codes provide consumers with additional product information when making their decision what to buy (especially in offline settings, too) or provide ratings from other consumers. This is likely to intensify the competition on quality and price in physical retail outlets even further. Purchasing via smartphone is likely to become appealing in future mainly for digital goods, such as music or games, tickets or certain tangible goods (e.g. books, toys, groceries).

However, as the market is still in flux the current set of technologies is far from being complete and will develop over time.

\*Source: Bundesamt für Sicherheit in der Kommunikationstechnik (BSI), 2009: Drahtlose Kommunikationssysteme und ihre Sicherheitsaspekte. Bonn.

tactless mobile payments (see chapter 4) and in the area of mobile commerce.<sup>16</sup> However, the signals transmitted by NFC-enabled devices can also be detected from a distance of several metres, which is further than the technology's inventors initially assumed. This security risk still needs to be banished along with the risk of hacking or phishing of payment information in order for this payment method to become a mass-market breakthrough.

### ... require more attention to IT security

New internet technologies become established in the market relatively quickly and are used and accepted by many consumers (speed of adoption). What can also be observed are shorter product life cycles, growing competitive pressure (cost-intensive patent disputes) and the growing complexity of products, services and processes. Often the speed and efficacy of the security technologies used lag behind the adoption of new internet technologies. This is also reflected in the rising number of cases of cybercrime (see chart 19). In particular mobile devices and the mobile app market are revealing a growing number of security vulnerabilities, and they provide potential targets for spying, sabotage and hacking using malware and spyware. According to an ECB report card fraud decreased in the euro area, but remains an internationally organised activity that calls for improvements concerning the security of internet payments.<sup>17</sup> Thus, providers of innovative (mobile) payment solutions need to be particularly sensitive to this issue.

## 4. Status quo: Market still in flux

The increasing use of mobile devices, a rising share of e-commerce via fixed-line or mobile internet and the prevalence of technologies linking the online and offline worlds such as NFC or QR codes (see box 20) have sparked interest in new modes of payments. Mobile payment strategies are being developed by different players but have not yet taken off. Thus, the payments market is still in flux.

Banks' established business models could be challenged by several business initiatives now underway that are introducing new players to the payments landscape. These business models target the growing digital world and are often motivated by a desire to develop an integrated solution for the online, mobile and offline channels. Some examples: (1) In Europe and the US alike, internet pure plays such as Paypal have gained considerable market share in the P2P payments business. The company is expanding its operations into new fields, such as mobile payments and POS activities. (2) Established players such as credit card companies are targeting online and mobile payments. (3) Important players in the digital world such as Google or Amazon, various credit card companies and mobile phone operators have started initiatives based e.g. on NFC technology.<sup>18</sup> Thus, a scenario analysis focusing on the future development of payments and other financial services as well as the implications for the financial industry needs to reach out beyond the mobile payments segments – in contrast to many analyses currently in progress.

In our analysis of the impact of innovative mobile payments we distinguish three modes of payment: (1) proximity payments, i.e. payments via mobile phone at the point of sale, (2) mobile online payments, i.e. payments via mobile phone for online purchases in a mobile context, and (3) remote online payment for pur-

<sup>16</sup> Innovation in retail payments (2012). Report of the Working Group on Innovation in Retail Payments. Committee on Payment and Settlement Systems. Bank for International Settlements. ISBN 92-9197-127-8 (online). [www.bis.org](http://www.bis.org).

<sup>17</sup> ECB (2012). Report on card fraud. July 2012. European Central Bank. Frankfurt am Main.

<sup>18</sup> Strategies based on virtual coins have gained great public attention, but have little market share. Thus, we will not include virtual coins in our analysis.



## The future of (mobile) payments

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chases in a fixed-line context. Regarding proximity payments and mobile online payments a particular challenge is the optimisation of existing payment methods for mobile devices, especially with respect to usability and security.

### *Large digital ecosystems*

Most attention is currently focused on the (walled garden) strategies<sup>19</sup> of the large digital ecosystems, such as Google, Amazon or Apple, with respect to payments or other financial services. These companies do not have their core business in financial services. They want to leverage their existing client base and aim at extending their business model into other sectors (see chapter 6). One of them is payments. For example, in the UK Google is introducing a credit card for advertisers to pay for advertising spendings through its AdWords<sup>20</sup> programme.<sup>21</sup> The strategy by Google to offer credit cards to advertisers appears to be in line with the financing expansion plans other companies like Amazon pursue. The intention is to prolong the value chain and increase the lock-in effect.

Another example is “Google Wallet” that was introduced in the United States in September 2011. While setting up this new NFC-based system Google teamed up with several partners (Citi, MasterCard, FirstData, Sprint) to gain control over the customer’s (digital) wallet. Google Wallet allows contactless payments at the point of sale. However, Google experienced resistance from mobile phone operators that blocked Google Wallet as it interfered with their own wallet solutions. Thus, the company launched a redesigned cloud-based wallet (in cooperation with MasterCard) allowing card holders to load their credit or debit cards to enable payments. This does not require any specific partnership with banks. However, banks could still partner with Google Wallet for branding reasons.

Other important digital ecosystems have no explicit payment strategy in place, yet. But some are taking first steps. In contrast to market expectations Apple did not include NFC technology in the recently presented iPhone 5. However, the company launched Apple Passbook in June 2012, allowing customers to store boarding passes, coupons and loyalty cards. The system is based on QR codes, not NFC.<sup>22</sup> Although it does not link to payments it could help customers to get used to mobile wallets in principle and thus facilitate the introduction of mobile payments at a later stage.

Less attention is probably being given to the activities of an important incumbent: PayPal is striving to expand its business model. The company has a comprehensive online business model focusing on P2P payments and is operating with a banking licence. Currently, it is expanding into the offline retail and mobile space. “PayPal here” was developed for small merchants and service providers to allow credit card payments via a mobile device with an additional hardware component. Moreover, PayPal has expanded the scope of its business model to large retailers; in the US the company is partnering with Home Depot. The aim is to provide retailers with a payments solution serving online, offline and mobile needs.

### *Credit card companies*

Credit card companies pursue various strategies with the intention to expand market share. First, they have come up with proprietary solutions in the mobile payments segment. Examples are MasterCard’s PayPass that includes NFC technology in conventional credit cards to be used for contactless payments at

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<sup>19</sup> Walled garden is a term used for a technology concept to describe a fenced-in business model (see chapter 6 for details).

<sup>20</sup> Google AdWords is Google’s main advertising product and main source of revenue.

<sup>21</sup> <http://adwords.blogspot.co.uk/2012/10/extra-credit-for-small-and-medium-sized.html>.

<sup>22</sup> See <http://mobilbranche.de/2012/09/passbook-revolutioniert-markt-fur-coupons-und-loyalty/22388>



the point of sale. To introduce this technology in Germany, MasterCard is partnering with banks (e.g. Sparda) and non-banks (Payback, Lufthansa) as issuers. Visa is setting up Paywave in Europe targeting NFC-based contactless payments as well. The company has initiated a number of pilot projects, e.g. with the Frankfurt taxi fleet. Second, credit card companies like MasterCard are partnering with digital ecosystems, such as Google. Synergies are obvious when it comes to a large global client base, a well established international merchant network or convenience. Third, MasterCard is attempting to gain market share in the online payments market. Via its Maestro function that is tied to debit cards the company is establishing an alternative payment mode to credit cards on the internet (Maestro e-commerce). This function is mandatory for all issuers and retailers that accept Maestro cards.

Credit card companies have a significant competitive advantage as they can leverage their existing (worldwide) payment infrastructure as well as established relationships with acquirers. Thus it is comparatively easy for them to broaden their established business model to incorporate new technologies and to take account of new (mobile) shopping environments as well as changes in payment habits and consumer behaviour. Offering mobile payment solutions as white-label products, i.e. an open software development interface (API) such as MasterCard's PayPass, could help other companies and their developers to build new mobile applications. This solution could serve as a catalyst to the wider use of credit cards in the mobile payments sphere.

#### *Telcos / mobile phone operators*

Telcos are well aware of the new business models and opportunities evolving especially as their traditional business model is eroding: mobile devices have become a commodity, competition is fierce and flat rates result in thin margins. Thus, in different countries mobile phone operators have kicked off m-payment initiatives. Mobile phone operators have the advantage of owning the customer relationship and having the communication infrastructure in place that could also be used for mobile online payments. Moreover, they could potentially benefit from mobile phone producers increasingly integrating NFC technology into their devices. Thus, telcos are in principle also in a good position to set up NFC-based mobile payments or wallet solutions. However, so far in Germany the business models of mobile phone operators have not gained traction. In the US, the launch of the ISIS mobile wallet solution was postponed several times, but then launched in October 2012. In spring 2012 Vodafone announced a cooperation agreement with Visa; the companies want to launch a wallet solution in Q2 2013. It is based on NFC technology and the card information will be stored on the SIM card. The announcement is interesting in two ways. First, it underlines the importance of cooperative alliances, in this case between a mobile phone operator and a credit card company. Moreover, merchants are also supposed to be part of the coalition. Second, it highlights the specific role of credit card companies in these alliances as they have the advantage of a global network and well-established processes and standards.

#### *Start-ups*

As with many new technologies, start-ups carve out a niche in the market and develop innovative solutions. This is also the case with online and mobile payments. There are several smaller internet pure plays that have specialised in online payments, e.g. Klarna (present in seven European countries, i.e. NO, DK, FI, SE, NL, DE, AT), Skrill (global reach) or Dwolla (US). Some of them have a specific regional focus and add value to clients by offering specialised payment solutions, such as purchase on account or payments via a newly created account, thus reducing complexity.

Start-ups come up with new front-end solutions

21

Square initially introduced a physical extension for mobile phones to read credit cards. Customers authorise the transaction by signing physically on the mobile phone. Apps can be used to complete the cashier functionality. While this business model was initially set up for micro-business, recently Square partnered with Starbucks. The company also refocused its strategy targeting small and medium-sized companies in general. The payment solution implemented for Starbucks is based on a prepaid card and an app allowing mobile payments in the store (on the basis of geofencing, i.e. location-based services). The solution effectively leverages a loyalty card which is already widely used by clients and moves it to the mobile phone. The solution has thus gained a considerable number of users. Another example is Mytaxi. The app allows customers to order a taxi and pay via credit card provided that the data are stored in the app.\*

\* See <http://washington.mytaxi.com>



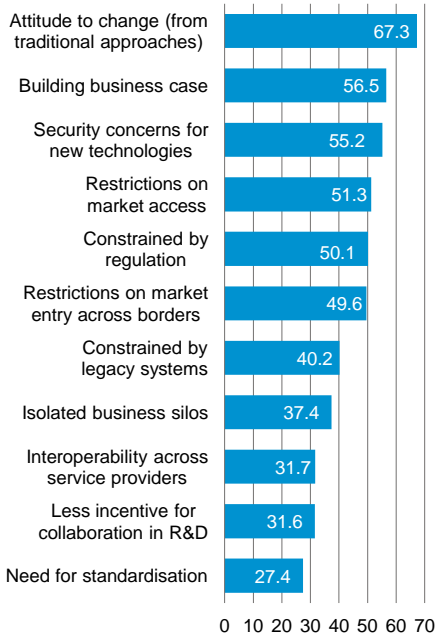


## The future of (mobile) payments

### Key barriers to innovation in bank payments

22

% of respondents (n=30 international banks), 2012

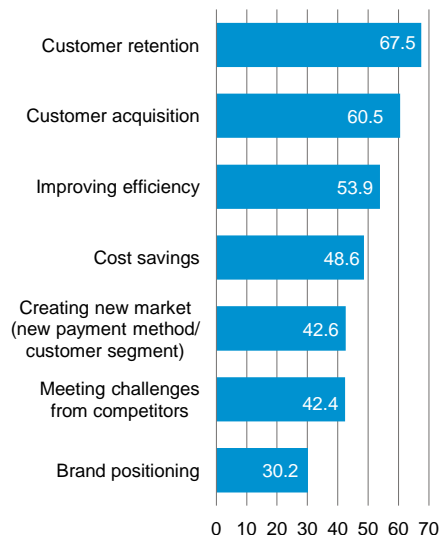


Source: Capgemini Analysis

### Key innovation drivers in bank payments

23

% of respondents (n=30 international banks), 2012



Source: Capgemini Analysis

Moreover, numerous start-ups have developed new front-end solutions for mobile payments (see box 21 for examples). However, most of these solutions do not represent a complete, innovative payment system but are rather a new “front-end” to customers and merchants. These solutions are in most cases complementary to traditional card-based payment services adding merely a mobile functionality. This might actually be the “secret of their success” as they can leverage the existing infrastructure and considerably increase convenience to the customer. This is important in two ways. First, as these systems make it easier for merchants to accept cards they might help substituting for cash as a payment method and facilitate the changeover to mobile payment solutions. Second, as these start-ups are teaming up with the providers of the existing card infrastructure, they might actually support the incumbents’ market share (as opposed to new players such as Paypal or Google). However, as several examples reveal, start-ups that have developed truly innovative solutions with disruptive potential might quickly become the take-over target of a larger player striving for market share.

### Banks

Most banks are not first movers in m-payments or other web-based technologies, particularly in Germany. This might be due to the uncertainty regarding the future technological development and the emerging business models. Also, the comparatively low usage of credit cards in Germany results in a rather uncertain outlook for those payment solutions that rest on credit cards. In other countries, e.g. the US or Japan, m-payment solutions have received more interest by banks (see section 5 on case studies). But even there banks do not come up with proprietary solutions, but rather partner with other companies to establish a mobile payment value chain (e.g. Citi’s cooperation with Google Wallet in the US). Cooperation with mobile phone operators or producers is necessary to ensure that the cards banks issue are integrated into mobile wallets.

The introduction of NFC technology on debit and credit cards has progressed differently in various countries. In Germany, NFC technology is currently promoted by telcos and public-sector banks (Sparkassen) as they include the technology on traditional banking cards (“girogo”). They have established partnerships with different chain stores and set up a pilot project in Hanover. In the UK several issuers have established contactless credit cards at the POS. In the US, in turn, attempts were made to introduce contactless cards a couple of years ago. However, the system has not been widely accepted by clients. Banks – as well as credit card companies – have the advantage of leveraging a large network including consumers and corporate clients. They can also build on a well-established payment infrastructure.

## 5. Case studies<sup>23</sup>

Our analysis of mobile and online payment initiatives has made it clear that the proliferation of these business models has made more progress in some countries than in others. This is due to various factors such as payment habits, the role of certain players in the (home) market or partnerships between suppliers or with merchants. To illustrate the progress made we have included regional case studies on the US, the UK and Japan.

### US – Mobile payments at cutting edge and evolving

The US has been at the forefront of disruptive technology and business models as evidenced by recent advancements in mobile payments. There is an in-

<sup>23</sup> Authors: Bryan Keane / Ashish Sabadra (US), Jason Napier (UK), Yoshinobu Yamada (Japan).



## The future of (mobile) payments

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### Software-based solutions with cloud-based wallet best suited

creased adoption of software-based technology such as QR codes, geo-fencing and line-skipping apps<sup>24</sup> driven by cloud-based wallets. Moreover, there is also increased interest from industry stalwarts including payment networks, internet companies, mobile operators, retailers and merchant acquirers, along with start-ups expanding the payments economic pie by accelerating secular migration to electronic payment and value-added services (e.g., targeted real-time offers and loyalty programmes).

Increasingly, companies are moving the wallet to the cloud to support retailers' omni-channel strategies, streamline the payment process to add cards and support offers and loyalty programmes, and most importantly overcome adoption hurdles for NFC-based payments. Software-based technologies such as QR codes, geo-fencing<sup>25</sup>, and line-skipping apps are driven by cloud-based wallets and the ability to deliver better value propositions such as hands-free payment (no physical interaction with point-of-sale devices to complete transactions). Also, line-skipping apps eliminate checkout lines and improve response times and customer experiences. Apple's Passbook will likely further boost QR codes, pushing the technology already prevalent in mobile advertising to mobile payments.

### Traditional payment players continue to play a key role

Mobile payments will likely drive incremental transactions through the existing payment infrastructure and provide incremental revenue opportunities through value-added services, but they also pose potential disintermediation risk to existing players, like traditional financial institutions. As a result, payment networks, acquirers, issuer processors and card issuers are expanding their offerings into mobile payments. Visa and MasterCard are building on their payments expertise, issuer relationships, ubiquitous merchant acceptance and brand recognition, and leveraging strategic acquisitions to build mobile payment capabilities. Visa announced the commercial launch of "V.me"<sup>26</sup> in November 2012 and has signed over 50 issuers and over 20 top e-commerce merchants. MasterCard's PayPass-enabled network of wallets is expected in 2013. Merchant acquirers, namely First Data, Global Payments, Vantiv and Total Systems, have made strategic acquisitions and introduced new products such as Mobile POS and Trusted Service Manager services to effectively serve their existing customers and capture share of the expanding market. Issuer processors such as Fiserv and Fidelity National are expanding their mobile banking and card processing solutions to help issuers position for the new wave of mobile payments.

### Digital ecosystems want to reach the physical world

PayPal and Google are aggressively working on mobile payments and expanding their online presence into the physical world. PayPal's partnership with Discover to enable wallet acceptance at retail locations, leverage cheaper funding alternatives (e.g., ACH, Automated Clearing House) and pursue a credit option (Bill Me Later) positions it well for the next wave of mobile payments. Although PayPal does have to create a value proposition to migrate its online customers to the physical world it could face increased pressure from banks as it erodes interchange revenues. Google continues to partner with existing payment players. Google's cloud-based wallet launched in summer 2012 helped overcome initial resistance to the phone-based wallet, and the wallet 2.0 expected in 2013 could enable the cloud wallet at retail locations using Google Card.

### Merchant and mobile operators take consortium route

Top retailers have also thrown their hat into the payments ring with the announcement of Merchant Commerce Exchange (MCX) and the top three mobile operators in the US (AT&T, Verizon and T-Mobile) launching the joint venture ISIS<sup>27</sup>. MCX is still in early stages and vague on details. ISIS finally launched a

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<sup>24</sup> This is a cloud-based mobile payment system which allows consumers to order and pay ahead from their mobile app and essentially skip the line at all kinds of businesses.

<sup>25</sup> Location-based services are a general class of computer program-level services used to include specific controls for location and time data as control features in computer programs.

<sup>26</sup> <https://www.v.me/>

<sup>27</sup> <http://www.paywithisis.com/>



## The future of (mobile) payments

Start-ups resetting the traditional model without threatening networks and acquirers

pilot in two US cities in October 2012 after multiple delays. Although mobile operators tout 200 m US subscribers as a potential customer base, doubts remain concerning ISIS's eventual success as mobile subscribers may not translate into wallet users.

The mobile payments industry is also abuzz with several hot start-ups including Square, LevelUp, GoPago and Dwolla to name just a few. Square serves a category of micro-merchants not economically feasible for larger players to serve with an aggregator business model and simplified pricing scheme. Its recent deal with Starbucks has arguably boosted it into the mainstream as it will process payments at 7k Starbucks stores<sup>28</sup> and leverage the coffee shop to springboard international expansion. LevelUp's zero-transaction fee is generating a lot of traction with retailers lacking their own loyalty programmes (LevelUp charges 35% of loyalty programme amounts), and its 2D barcode technology could become more widespread as the industry matures. Dwolla has developed an alternative payment network and is actively working to sign small issuers. Despite the emergence of these new competing networks, credit card companies still stand to benefit from future transactions riding on their rails through mobile.

A typical mature credit market

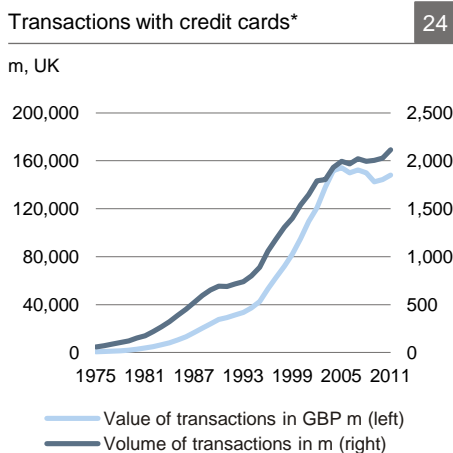
### UK – Innovation in contactless and mobile will drive scale acceptance

Credit cards were introduced in the UK by Barclays in 1966, using "zip-zap" paper folio machines. These were replaced with magnetic stripe-driven card technology in 1984 and chip & pin in the late 1990s, with Barclays beginning the introduction of contactless payments in 2007. Credit card debt is 4% of UK household debt, about half the size of the personal loan market (7%) and dwarfed by the GBP 1.26 tr mortgage pool. In the past 10 years some GBP 3.6 tr in purchases have been settled via UK plastic cards; there are currently ca.190 m cards in circulation, more than 5 per adult, split 30% credit card, 44% debit card and 26% on other cards (includes American Express, cheque guarantee cards). Only two-thirds of credit card accounts are active. Though credit growth was strong into the mid-2000s, balances stopped growing in 2006 and have fallen since.

Profitability is good, revenue diversity is the ambition

Despite moribund volumes, record customer interest rates, a low cost of funding non-interest-bearing customers, tight cost control, and falling impairments there are attractive returns from UK card operations. We estimate an ROE of 18% for the industry as a whole. With customer churn below 10% a year – much lower in some cases – issuers would be most interested in cost effective maintenance of market share. With GBP 14.7 bn in gross credit card loans in the UK, Barclays remains the largest player, with around a third of the market by customer balances. Barclays is the largest merchant acquirer in the UK with about a third of the market. This has helped deliver some diversity to the company's revenue base to see 15% or GBP 0.6 bn p.a. in income derived from merchant acquiring, supplier finance and commercial cards.

Barclays launched the contactless payments roll-out in the UK in 2007, making the bank today the issuer of 80% of the country's contactless debt/credit cards and 90% of the contact-enabled terminals. Over time we expect this market share to drop but acceptance rates on the high street to increase, driving increased customer acceptance of the virtues of contactless payments. WorldPay, for example, recently won the contract to install contactless within McDonalds outlets, which saw a 12% increase in contactless payments on Barclays cards within the franchise. Next year contactless bank payments are to be extended to London busses and tubes, and further growth in contactless merchant acquiring will be driven by the natural replacement cycle of POS hardware.



\*=affiliated to Amex, MasterCard or Visa

Source: British Bankers' Association and Association for Payment Clearing Services

<sup>28</sup> By launching in 7,000 Starbucks stores on November 8, 2012, Square has become one of the early services into the mobile payments race.

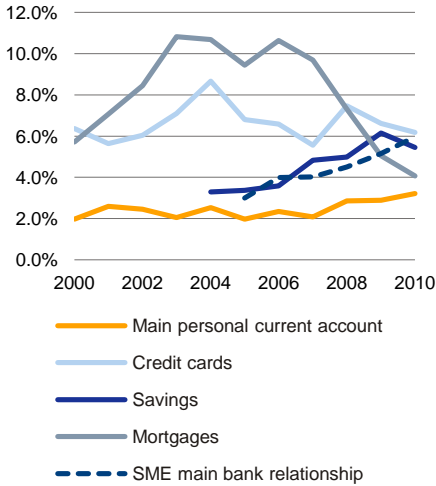


## The future of (mobile) payments

### Annual switching rates

25

% of survey respondents who switched account in the previous 12 months, UK

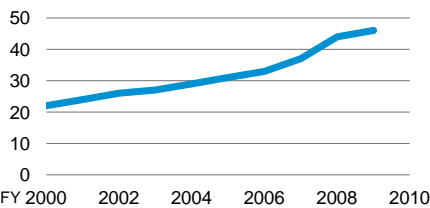


Source: ICB

### Clearing amounts - credit cards

26

JP, JPY, tr

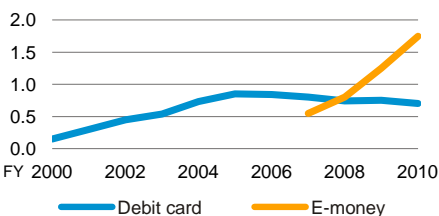


Source: BOJ

### Clearing amounts - debit cards and e-money

27

JP, JPY, tr



Source: BOJ

Payment by text message was launched by Barclays under the Pingit product in 2012, allowing users to send and receive money via mobile telephone, instantly and subject to the same security and bank guarantees as for debit and credit card payments. Though initially marketed to retail users Pingit is also being promoted to corporate and business customers as a means of facilitating customer payments up to GBP 750. Customers don't pay fees for transfers and recipients' funds are immediately available. Barclays avoids rework via end-to-end processing, remains within the payments flow and has a product advantage over peers without an equivalent product at present. According to the firm, retail payments average GBP 80 with most users in the affluent middle-age demographic.

Other mobile payment options are currently fairly limited with Barclays offering wallet-driven payments through Android phones such as the Samsung Galaxy S III. Google Wallet has been launched in the UK as well. It hosts bank cards and facilitates online and in-person payments. Moreover it is used in the context of the Google apps store. However, market share has remained tiny so far. The European Commission cleared the creation of a payments joint venture between the largest mobile companies including Orange, T-Mobile, Vodafone UK and Telefonica UK on September 6. This presages the development of an industry payments standard for the UK, about which the joint venture partners say they are committed "to making the joint venture services open to all, including all operators and Mobile Virtual Network Operators, 3rd party publishers, banks, advertising agencies, retailers and any company that wants to engage in this space".

### Japan – Status quo in digital payments

Settlements via electronic money (e-money) in Japan came to JPY 2 tr in fiscal year 2011 (FY11) with over 170 m e-money cards in issuance. This represents huge growth from JPY 500 bn in FY05. The Japanese population is around 127 m, so consumers already hold an average of more than one card. Electronic petty cash settlement services in Japan can be divided into three broad categories: e-money, credit cards and debit cards. E-money includes server types and contactless smart cards. Settlement for the former is limited to online games and such, an estimated market (annual settlement value) of only JPY 26 bn in FY11. Smart cards are issued independently and are generally included as a part of function on mobile phones. Credit cards also have contact and contactless types. However, smart cards possess an overwhelming share of the contactless market, and most credit cards are the traditional contact type. Bank-issued debit cards are all contact.

Japan's e-money market is dominated by seven players: Waon, Nanaco, Rakuten Edy, Suica, Pasma, ICOCA and iD. Waon and Nanaco are the top two companies in terms of settlement amount. The former is issued by Aeon and the latter by Seven & i Holdings, both of which have major supermarket and convenience store chains. Rakuten, issuer of Edy, is the largest internet shopping mall operator. Suica (JR East), Pasma (private railways in metro Tokyo) and ICOCA (JR West) are all issued by railway firms. Train passes automatically include an e-money function, increasing the convenience for users. The iD is provided by NTT DoCoMo, the largest mobile phone company in Japan. Credit card settlements are growing robustly thanks to their incorporation into internet shopping, and boast the highest settlement share. E-money continues to expand rapidly with the profusion of terminals not only in general shops but in convenience stores and restaurants. They passed debit cards in settlement volume in FY08 (see chart 27). Market participants widely expect the market to continue growing at an annual 15-20% pace.





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The heart of Japanese settlement systems is private banks, which have settlement accounts with the BoJ and operate the Japanese Banks' Payment Clearing Network, the fund clearing agency for interbank transactions. Around half of personal financial assets in Japan are in bank deposits, a ratio that has changed little over the past 30 years. Nearly all salaries in Japan are paid electronically into bank accounts, and utilities, credit card bills and monthly mortgage payments are generally transferred automatically from personal accounts. Moreover, city and regional bank ATMs are all linked, and ATMs are located as well in convenience stores. Individuals can also transfer money quickly through ATMs. The rapidly rising popularity of e-money is probably due in good part to the use of petty cash settlements by consumers eager to avoid carrying coins. Consumers are further attracted by point systems provided by supermarkets and convenience stores with e-money purchases, and the convenience of systems included in mobile telephones and train passes, which can simply be touched to store terminals to make a purchase. The BoJ has found that the average e-money settlement amount per transaction is around JPY 800 (USD 10), so this does not directly compete with bank credit cards, bank transfers or money transfer services. As settlements are compartmentalised, they do not have a significant impact on bank earnings.

### Net banking takes independent path

There are numerous intermediaries in the field of internet banking, but most settlements are done by credit card. Settlement services by bank account transfer are provided by: Seven Bank (mainly convenience store ATMs); internet-only Sony Bank (Sony) and Rakuten Bank (Rakuten); Japan Net Bank (SMFG); and SBI Sumishin Net Bank (Sumitomo Mitsui Trust Holdings and Softbank Investment joint venture). Jibun Bank (MUFG), a mobile-only bank, offers similar services. Japanese internet-only banks attract deposits with relatively high interest rates and use the money for home mortgages and bond investment, so settlements themselves are not necessarily their main business. However, the companies are now all stably in profit some years after their founding and can be expected to approach the internet shopping business actively.

As the case studies show, the stage of development in the countries analysed is not homogeneous. Path dependency plays a role in the introduction phase of new technologies. For example, in the UK the market focuses on contactless credit cards whereas in the US mobile solutions are leading the development. Also, application solutions play a role for consumer adoption, e.g. contactless solutions in transport. However, with innovative solutions in mobile payments being similar across countries with respect to technology and set-up and large international players driving these solutions it is to be expected that convergence is underway. Asia might still evolve differently as Western digital ecosystems such as Google or Apple do not play a dominant role (yet) and users usually prefer national solutions. In the next chapter we look into the strategies, the instruments offered and the relative market position of the rising digital ecosystems with respect to innovative mobile financial services.

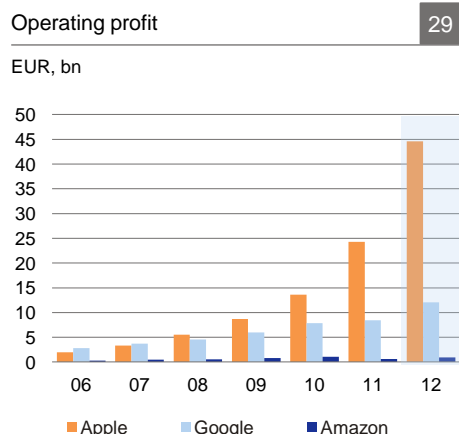
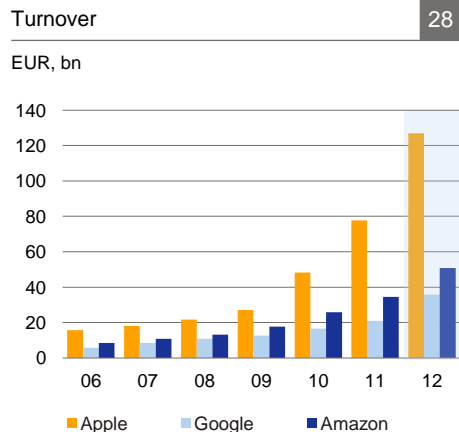
## 6. The rising power of digital ecosystems

### 6.1 The internet provides fenced-in playgrounds for digital ecosystems

The shaping of the internet in recent years has largely been determined by the big internet firms such as Google, Apple or Amazon. The companies compete(d) over technology, attention and of course customer loyalty. Billions of people surf online several times a day in order to satisfy their desires. According to a report by the Landesanstalt für Medien (North Rhine-Westphalian Media Institute) German internet users spend an average of roughly 81% of their time online



## The future of (mobile) payments



consuming the offerings of US content providers.<sup>29</sup> Fora are visited, information is researched, evaluated and recommended to other users, social networks are maintained/updated, products and services are bought and/or sold, and participation and collaboration platforms are used.

Only a few of the numerous platforms operating with web-based technologies can boast relatively strong market positions. The US providers (e.g. Google, Apple or Amazon) that can (currently) be counted on a single hand dominate the internet business and thus determine large sections of the marketable innovations online. Given this dominance of US providers European, let alone German providers are losing influence and importance in the competition for digital products, services and processes. Over the next few years it is to be expected that the four US players (besides perhaps one or two others) will largely determine the conditions (not only) for the digital consumption of media and information, but that they will also make inroads into hitherto unexplored business segments and markets (e.g. financial services). All of them combined thus constitute a serious and perhaps even worryingly strong market position with regard to competition and innovation (not only for the payments segment).

In addition, there are quite a few customers who express their trust in established service providers on the internet and their processes. Companies such as Amazon or Apple are associated with user-friendly, convenient and reliable service.<sup>30</sup> They enjoy a similarly high level of trust as traditional financial services providers. If a retailer or a customer of Amazon is offered the complete value chain from the presentation of the offering to the payment options from a convenient single source, it is obvious that the payment process *per se* only represents a final step in the value creation process. The more automated and convenient the individual process steps on one platform, the less consumers will accept that they are supposed to switch over to a bank with an additional procedure (e.g. online banking) for the last step, that is the payment transaction. Convenience, security and above all the principle of “everything from a convenient single source” is becoming established online in particular.

### 6.2 The walled garden management strategies of digital ecosystems

In the debate about the keys to success of major online service providers the issue has long since ceased to be what size Google has attained in the meantime, or whether Amazon expands its product range (even) further. Rather, from an economic and innovation-policy point of view the increasingly important factors are the reasons for the online giants' rapid development into market-dominating digital ecosystems. They successfully forge bonds with their customers and suppliers both horizontally and vertically along their value chain via strategic interfaces (Application Programming Interfaces, APIs) and alliances. The coming years will therefore see the established ecosystems become more active in terms of acquisitions and/or strategic alliances in order to maintain and expand their market dominance.<sup>31</sup>

*Walled garden* is a term used for a technology concept to describe a fenced-in environment. The strategy signifies a business model in which the manufacturer attempts to use exclusive distribution models to retain control over software,

<sup>29</sup> Landesanstalt für Medien Nordrhein-Westfalen (2012). Digitalkompakt LfM #05. Apple. Google. Facebook. Amazon. Strategien und Geschäftsmodelle einfach auf den Punkt gebracht. LfM. Dusseldorf.

<sup>30</sup> EHI Retail Institute (2011). Mobile in Retail. Status quo und Zukunft. Köln.

<sup>31</sup> Key factors are economies of scale with regard to system architecture, reach, acceptance, lock-in effects, interoperability and/or interface policy as well as rising switching costs for customers – these are all potential barriers to market entry for new vendors. Also not to be underestimated are indicators that are not really (cardinally) measurable such as the lifestyle factor or the user-friendly or well-designed mobile device. The latter factors of course strengthen customer loyalty and thus also the lock-in effect.



## The future of (mobile) payments

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mobile devices (generally hardware) and content, which are only made accessible to a specific group of customers (club good<sup>32</sup>). It can be observed that most of the digital ecosystems are in direct competition with one another in more and more business areas despite their differing business models, sources of revenue and competences. All of them have similar objectives: they integrate a large volume of digital content, mobile devices and internet services under a single umbrella so that their customers ideally no longer have to leave the ecosystem/platform. The vendors thereby solidify their own market position, increasingly (also) enter new business areas in order to reinforce their long-term growth and establish their own standards (technologies) within their systems.

Compared with the traditional, platform-neutral internet the main arguments made in favour of “walled garden” strategies are usually convenience, security and monetarisation:<sup>33</sup>

- *Convenience*, because a company like Amazon, for example, generates personalised product purchase and book/e-book suggestions using algorithms based on its knowledge of the tastes of the respective user using the walled garden. Apple in turn scores points by reducing complicated technology to user-friendly functions combined with high-quality design. In very general terms the “walled” reduction in complexity allows a more convenient linking of different services. The associated user-friendliness and time saved as a result also increases the willingness to pay.
- *Security*, because in the walled garden protection against malware is always easier to implement. The more closed an ecosystem is from the rest of the internet, the easier it is to keep out malware and other security risks. Especially because the broad range of major ecosystems is leading to an increase in the volume of sensitive personal data, this security dimension is growing in importance.
- *Monetarisation*, because more open systems for example battle against a high percentage of illegally copied apps. Also it is not so easy to link these systems with paid-for services. If the critical mass of users has been reached, more closed platforms for third-party vendors may therefore be more attractive from a monetarisation point of view, even if this should be accompanied by a restriction of the freedom in the structuring of the service. A certain degree of restriction thus provides advantages with regard to monetarisation efforts for both platform operators and third-party vendors.

Walled gardens, however, do also contradict to a certain extent the interests of developers and users who would like to decide for themselves how they have long-term access to the hardware and technology they have acquired. An offering in a walled garden system is, however, designed in such a way that switching to a different platform can be relatively time-consuming and cost-intensive.<sup>34</sup>

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<sup>32</sup> Club goods are those goods whose consumption is excludable and for which the rivalry in consumption is low.

<sup>33</sup> See Bahr, F. et al. (2012). *Schönes neues Internet? Chancen und Risiken für Innovation in digitalen Ökosystemen*. Policy Brief 05/12. Stiftung neue Verantwortung. Berlin.

<sup>34</sup> In some cases the operating system used has some rights restrictions attached to it (DRM, Digital Rights Management). In order to circumvent these interoperability barriers the security vulnerabilities of the devices can be exploited to outwit the operating system's protection mechanisms (jailbreaking, rooting). As a rule, however, the warranty and guarantee protection as well as the technical support of the provider is then no longer valid, which can send the costs for the consumer rising even more sharply.



### *Interoperability and open interfaces (APIs)*

Interoperability<sup>35</sup> as well as non-discriminatory standardisation between heterogeneous technical systems have been and are a guiding principle for the development of the WWW. Developer interfaces (APIs) are increasingly used as a traditional platform strategy to tie third parties with other niche offerings to the ecosystem. In the early phases third parties and programmers are encouraged with the aid of open interfaces to build their own services and applications based on the respective platform. Open APIs are a prerequisite for a seamless connection between interfaces, services and applications, so that digital content can be accessed inside and outside existing websites. For example, a myriad of social apps such as social games, widgets, mashups and social plug-ins (e.g. the “Like” button) are provided so that internet users can communicate and play with one another and make comments and recommendations to each other on the respective platform.

Although not a digital ecosystem MasterCard’s strategy is relevant in this context as it is one of the credit card companies in a future strategic alliance with a digital ecosystem. As described earlier MasterCard released the mobile service “PayPass” software development interface for different mobile operating systems. This helps issuers, mobile network operators and third party developers to build innovative new mobile applications that allow consumers to use contactless payments.<sup>36</sup> Using open APIs generates two key benefits for ecosystems and their partners as this example shows. Firstly, the external applications create new potential uses for consumers, while the platform operators forge bonds with the developer community and create additional lock-in effects.<sup>37</sup> Secondly, the appeal of the ecosystem’s services also increases, if complementary offerings enhance the customer benefits.

Nevertheless, interoperability between digital ecosystems is also limited by oligopolistic practices of competition and collaboration. In the last few years it could be observed that major platform operators made a strategic decision against interoperability in order to exert better control over information flows spread virally by users and in order to monetarise them (in future).<sup>38</sup>

### *Lock-in effects and switching costs*

Lock-in effects usually consist of a technological link being offered between the hardware and the software as well as numerous internet services in order to increase customer loyalty even further. Within an ecosystem the lack of interoperability with other systems, proprietary software and different technological standards are making it increasingly difficult for the end-consumer to utilise services from third parties that are not geared towards the standards and restrictions of the ecosystem. The switch to another ecosystem can thus become a cost-intensive exercise, because the lack of the necessary interfaces or technological standards prevents the linking-up of different services or devices. In the context of certain business models, i.e. sales of (mobile) digital services, offering

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<sup>35</sup> Interoperability is the ability of various systems, technologies or organisations to work together. This usually requires compliance with common standards. If two systems can be joined together, they can also be described as being compatible.

<sup>36</sup> See press release from September 17, 2012. <http://newsroom.mastercard.com/press-releases/mastercard-releases-mobile-paypass-software-development-kit-to-simplify-payment-application-creation/>.

<sup>37</sup> All the same, the ecosystem more or less determines the course, because it can often fall back on a loyal clientele of millions and boast high market shares, whereas third-party vendors can benefit from and share in the income generated by existing infrastructures, especially from the data of millions of clients.

<sup>38</sup> This of course diminishes the user experience because linking up with other platforms is impossible. Some platform operators limit and control media flows deliberately in order to limit the interoperability with competitors and improve it with collaborators, by contrast.





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### Cross-subsidisation

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The example of the Kindle Fire shows how Amazon speculates that internet users who own a mobile device will purchase more digital content (books, music, films, e-books etc.) on its own platform. The keenly calculated or even (deliberately) loss-leading investment in the Amazon Kindle Fire would thereby quickly prove to be lucrative. Given the variety of products, services and (handling) processes in the Amazon product range there is a relatively high probability that the strategy will be successful. The question is how long Amazon can undercut the market for mobile devices by offering aggressive terms and high quality. This strategic instrument is of course an option for banks, too. It is conceivable that financial institutions will offer web-based services which are keenly calculated to tie in customers and to tie them to their own platform. However, banks usually have less leeway pursuing such a strategy.

payment solutions might even increase lock-in effects and could thus prove to be effective to tie customers even closer to the platform.

Lock-in might also play a role with respect to sellers: Amazon is launching a service to lock-in their relatively loyal suppliers. They offer loans to online sellers to adhere them to the platform.<sup>39</sup> This is another indication that financial services providers might expect competition from an unexpected angle.

### Cross-subsidisation

Another (management) strategy employed (not only, but often used) by platform operators is cross-subsidisation. Many products are offered at aggressive prices in order to gain as many customers as possible and thereby further increase market share or to undercut the prices of competitors. The principle of cross-subsidisation is not really a new one and is seen as a strategic competitive tool in many industries. Using cross-subsidisation becomes a problem when it results in inefficient structures being retained and greater intransparency.

### Strategic alliances also in other industries

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Alliances between digital ecosystems, payment services and telcos adhere to a certain pattern, i.e. this form of cooperation will become established not only in the banking segment. Future value creation will increasingly be generated via digital channels as well. Since a multiplicity of sectors are subject to digitally-driven structural change, primarily triggered by rising human demand for (digital) mobility and the trend towards the convergence of information and communications technologies (ICT) similar alliances will also be formed in other sectors or can already be observed, for example in the automotive industry, the rail sector, the media and entertainment segments, and in the retail sector.

### Strategic alliances

Digital platforms and ecosystems are colliding increasingly violently. A probable scenario for the future is that market players will increasingly enter into strategic alliances with one another at the appropriate interfaces or with third-party vendors in order to achieve the largest possible amount of overlap in terms of size, reach, customers and integration opportunities. From the user's point of view a lot of things will become simpler. While the PC with an operating system is becoming less and less visible, the ecosystem as a whole with its numerous internet services will take centre-stage. The simplicity and convenience demands of users are, however, linked with an oligopolistic structure of the digital ecosystems.

To sum up, the digital ecosystems will – with the aid of the aforementioned factors – succeed in binding millions of customers as well as numerous developers and third-party vendors to their platforms. The ecosystems will benefit just like the service providers that hook up with the internet giants along the periphery, either because the vendors provide services that appeal to users or supply complementary content, or because they pay for the access to the users. In this context partners that facilitate the supply of payment services are just another element to complete the value chain.

## 6.3 Implications for traditional banks

Against a background of rising digital ecosystems and their successful management strategies, the financial sector would be well advised to keep an eye on the big internet firms, because these are increasingly putting out their feelers in segments outside of their own territory (also traditional banking). There is a high probability that digital ecosystems will collaborate with credit card companies and telcos to rearrange the market for payments and standardised (mobile) financial services. To keep the impacts of possible destructive competition for financial institutions low, traditional banks should pay regard to the following aspects:

- A large proportion of the innovative, web-based ideas in the digital payments area comes from the non-bank segment. Market-relevant innovation and technology drivers include digital ecosystems which, with their "walled garden" strategies, can further expand their market positions in order to offer customers the convenience of one-stop shopping. In the last few months

<sup>39</sup> <http://online.wsj.com/article/SB10000872396390443493304578034103049644978.html>.



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more and more digital ecosystems have been rolling out a number of payments pilots in international markets, showcasing the companies' mobile and web-based payment technologies.

- Digital ecosystems have sufficient liquidity to experiment in the area of (mobile) financial services. If one project fails, the ecosystems opt for and finance the next one in the pipeline. So this raises the question for traditional banks as to whether they (will) play a relatively active role or more of a passive one.
- Among the future strategic alliances that are set to emerge in the areas of electronic payments and mobile financial services, no doubt internationally operating card and payment service providers (MasterCard, Visa, PayPal etc.) are going to play a role just like the established telcos (Telekom, Vodafone, O2 etc.). Of course, newcomers and start-ups will also dock on at all stages along the alliances' value chains with products and services overarching various levels. Niche providers that focus on products and services already being offered in digital ecosystems and improve their consumer appeal have particularly good chances of capturing slices of the (not yet distributed) pie. But as a rule they will only offer new front-end solutions and not get involved in settlement. This last aspect continues to offer traditional banks lucrative growth opportunities.
- The traditional banking industry should not wait too long to adapt its own business processes to the challenges of the digital world, since the number of competitors experimenting with new products and web services – in some cases successfully – is on the rise. It is not yet clear which technologies will win the race, but it is worthwhile in any event (also) for banks to soon take part in designing new digital payment methods.

## 7. Scenarios

The following scenarios lay out the possible future of (mobile) financial services and their implications for banks. These scenarios rest on a number of drivers, some of which we consider as quite predictable and others that are rather uncertain with respect to their future development. We will first analyse those drivers that we regard as rather certain and in a second step look at those drivers that critically determine the specification of our scenarios.

### 7.1 Framework conditions and trends

**In future, big players will shape the market:** In our scenario, the focus is on the bigger players like the ecosystems with a correspondingly broad reach, an existing (internationally oriented) infrastructure and a large client base. We assume that they will decisively shape the future market outcome. In the structuring of potential strategic alliances in the market for mobile and online financial services it remains undisputed that small niche providers and start-ups will also influence the digital payments market, such as for Square's alliance with Starbucks at present. All the same, it is to be expected that smaller providers on account of their market position and relevance will tend to dock onto the periphery of the digital ecosystems or the strategic alliances forming in the value networks. However, only just a few start-ups will develop disruptive forces that can significantly alter the market.

**Successful business models will rest on strategic alliances.** As described in chapter 6 this is because one company alone will not be in the position to serve the complete value chain as technology is too complex and knowledge about particular market segments is essential. Moreover, alliances may be stronger with respect to customer reach and acceptance. With regard to potential (future)



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strategic alliances in the mobile financial services segment we consider it likely that above all the following internationally operating types of firm will participate:

- (credit) card providers (MasterCard, Visa, etc.),
- digital ecosystems (Google, PayPal, Amazon, Apple, etc.),
- telcos (Telekom, O2, Vodafone, etc.) and
- financial services providers and niche suppliers from the financial services segment.

Most of them either are active already today in the mobile payments segment (see chapter 4), are preparing for market entry or would profit from enlarging their value chain. Having said this, it is important to note that not in all cases are all groups part of the alliance, but that coalitions might involve only certain groups, i.e. digital ecosystems and credit card companies or telecoms and credit card companies. Each of the potential partners contributes differing competitive advantages to the alliance: for instance, an experienced (credit) card provider with an existing infrastructure and a global dealer network (credit card terminals at POS) could cooperate with a digital ecosystem. The latter offers mainly web-based and technology-driven services and thereby supplements the traditional card payment with mobile components (apps; internet-enabled mobile devices).

The objective of strategic alliances in financial services is to achieve the largest possible, where applicable international (client and dealer), reach. The resulting total number of customers to be served is considerable; this in turn is likely to positively impact the acceptance factor (taking into account lock-in effects), as consumers and merchants are already in a client relationship with the individual players. Depending on which (technological) standards are applied, potentially arising switching costs for the consumer could thus turn out to be relatively low (see walled garden strategies in chapter 6).

**Initially, regulation will help banks' competitors:** Regulation is a critical factor for the banking landscape of the future. With respect to innovative payment systems it is important to note that currently stimulating more competition is a key political objective which could help the market entry of alternative payment providers. For this reason we assume that new players will initially profit from a desire of regulators to enhance competition in the payments markets. However, with the advance of digital ecosystems in the market for payments and possibly deposits or other standardised financial services, regulators are likely to step up efforts to establish a level playing field with respect to data protection, security and anti-fraud requirements. Our analysis assumes that these factors will gain importance at a later point in time when new players have entered the market already and that subsequently regulatory efforts will be stepped up.

**Path dependency will play a crucial role** in our view when it comes to consumer habits and payment methods used. As spelled out in part 2 of our study, in the US, for example, credit card payments play a much bigger role than in Germany or France. Moreover, the US and the UK see consumers using more loyalty cards and coupons than is the case in Germany, for example. Thus, it is not self-evident that precisely those business models that are viable in the US will gain traction also in continental Europe. In countries such as Germany, suppliers of wallets might also want to consider that debit cards are widely used for making transactions. Thus for suppliers it might make sense to include them in the portfolio. For our scenario analysis this means that modes of payments and technologies used in future might differ from country to country depending on payment habits and market structure (e.g. in the retail sector) prevalent today. However, the impact of large, internationally operating digital ecosystems and credit card companies alike will tend to foster convergence as similar or even uniform solutions will be introduced beyond national borders.



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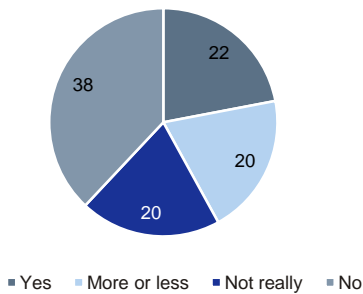
**Consolidation will shape the market:** As in all periods of fast moving innovation, in the near term a multitude of business models will emerge. This will be followed by a shake-out period when successful start-ups will be bought by larger players and unprofitable coalitions will leave the market. The overall market outcome with respect to business models and players will depend on those drivers which develop with a greater degree of uncertainty. These are discussed in the following section.

### 7.2 What will drive acceptance and market outcome?

Do you know mobile wallets?

32

% of German B2C and B2B retailers, 2011



Source: EHI Retail Institute

The market for innovative mobile payments is still in a very early stage. Even in the US, which is – next to Japan – clearly the frontrunner, business models are only about 1-2 years old. Thus, the future development is highly uncertain. But what is driving the market shares of particular new business models and players? The critical drivers that will determine the market outcome in about three to five years' time are consumer acceptance, merchant willingness to offer innovative payment solutions to clients, and the strategy of incumbent financial institutions with respect to innovative solutions.

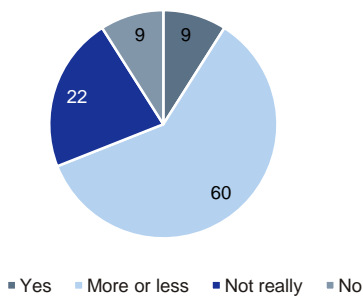
#### Merchants

Merchants play a crucial role with respect to the adoption of new payment technologies. Innovative payment systems could be in the hands of the customer but would still not take off if merchants are reluctant to accept them or customers do not see the advantage (so-called chicken-or-egg dilemma). The big retailers and chain stores are often reluctant to change their payment routines in the first place as one-off changeover costs for cashiers and processes are considered to be too high. On the internet, things are somewhat easier as changeover costs are smaller. Nevertheless, integrating a new payment method online also incurs costs for programming and back-end integration.

Will mobile wallets be successful?

33

% of German B2C and B2B retailers, 2011



Source: EHI Retail Institute

Other key factors influencing the merchant's decision-making process are operating costs and processing time. Innovative payment systems will be benchmarked against the systems already in place when it comes to system stability, execution and operating costs: in the short term, the fees paid by merchants for e.g. offering debit or credit card services to their clients will provide the ceiling for new systems striving to gain market share. In the medium term, payment service providers might compete by lowering fees. Thus, merchants will consider carefully whether they include another payment system into their portfolio which will be an additional mode of payment but not a perfect substitute for existing payment solutions.

Merchants will of course also consider the additional benefits stemming from the introduction of new payment solutions. Above all they will take into account whether consumers might expect them to include innovative mobile solutions in future. As empirical research shows, another potential benefit for merchants is that the new system might add value by channelling additional information to clients and/or increase customer loyalty. Initially, the desire to differentiate own services from competitors' might also play a role. A key advantage for merchants is improved reporting and real-time analysis of clients' purchases. Moreover, reducing complexity and the number of steps in the payment process might be a plus. Some online vendors, for example, offer bundled services to clients; payments or loans could be another element of their portfolio.

The chicken-or-egg dilemma can be overcome more easily if several large chain stores or digital ecosystems could be involved as the critical mass of (online) merchants could then be reached faster. From the perspective of payment service providers it is critical to establish partnerships with large online and offline retailers early on. Innovative payment systems building on an existing payment

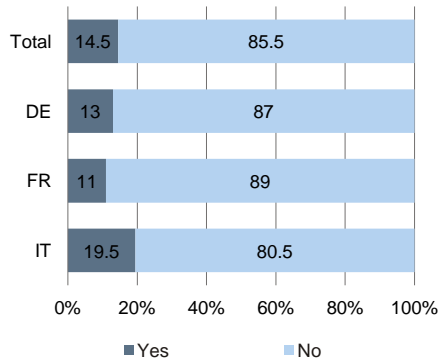




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### Mobile payments not well known 34

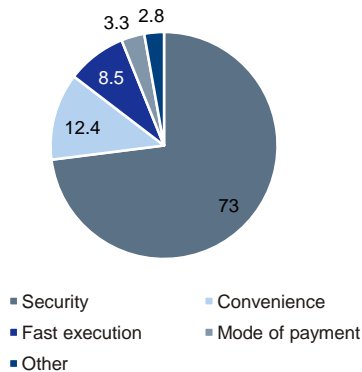
Do you know mobile payment systems? consumers, DE, FR, IT, %, 2012



Source: Steinbeis Research Center for Financial Services

### Security most important 35

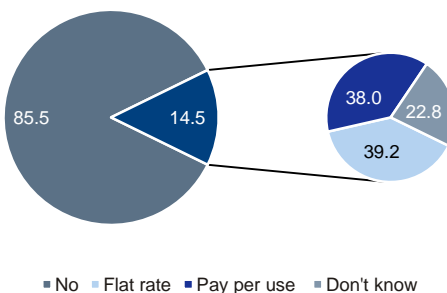
What is the most important factor with respect to mobile payments? DE, %



Source: Steinbeis Research Center for Financial Services

### New services, but no extra costs, please 36

Would you pay extra fees for using mobile payments?, DE, FR, IT, %, 2012



Source: Steinbeis Research Center for Financial Services

infrastructure (e.g. credit cards) might also have an advantage as the infrastructure at the POS, i.e. terminals, could be upgraded within the regular process.

### Consumers

As new payment service providers will compete for market share consumers are initially spoiled for choice. Smartphones or other mobile devices will rapidly penetrate the market (see chapter 3 of this report) and mobile phone producers, operators as well as digital ecosystems (such as Google) will equip them with NFC or other suitable technologies. Thus, consumers will hold the new technology "in their hands". Moreover, as credit card companies and banks add NFC technology to their credit and debit cards consumers have another payment option. On the internet consumers also face new payment methods such as those offered e.g. by Maestro, Klarna or Skrill. But what are the factors influencing their choice to use or not to use a certain payment system?

First of all, potential users will take into account where and how they could use the new payment system. The chicken-or-egg dilemma of any new payment method is that merchants do not invest unless many clients use it, and clients are reluctant unless many merchants accept it.<sup>40</sup> Interoperability is a sine qua non in this context. Moreover, empirical evidence shows that consumers are so far fairly reluctant to use mobile payments or don't know much about them (see chart 34). Thus, those players initiating new payment methods will have to make them known to the customer and pay close attention to the use case and value added to the customer.

Second, they need to be convinced that the new payment method is superior to the ones they already use today. Decision-making factors are convenience (easy to use – in the online and/or mobile space), reliability of the system, cost of transferring money, trust in the service provider and security issues.<sup>41</sup> In Germany, in particular, 73% of the customers pay very high attention to security aspects (see chart 35). Another important factor might also be whether the payment system could be used internationally.

Third, consumers will consider whether a payment system adds value to or is even required in combination with other (digital) services they use. This is especially relevant when it comes to digital ecosystems they are part of and which might produce strong lock-in effects (see section 6 on walled garden strategies of digital ecosystems). Moreover, wallets might add value as they have the advantage of including vouchers, gift coupons and bonus card systems. Gamification<sup>42</sup> of these services might raise their appeal to consumers even further. New (front-end) payment methods are of interest also in the context of conventional services, for example when they are combined with an app such as ordering a taxi via smartphone.

Fourth, the decision to use an innovative payment system is influenced by the one-off cost to use the payment vehicle (i.e. costs to register and authenticate). Also, most consumers don't want to pay extra fees as several studies in different European countries underline (see chart 36). This has important implications. First, transaction fees will most likely be paid by merchants. Second, margins for payment service providers will be thin. New sources of revenues might come from advertising or coupons, but will remain limited as competition will be fierce.

<sup>40</sup> See Meyer, Thomas (2011). Mobile payments. On the shoulders of contactless payments.

<sup>41</sup> Deutsche Bank Research. E-Banking Snapshot 38.

<sup>42</sup> In future the availability of biometric authentication methods as a means to improve security could also be a decision-making factor.

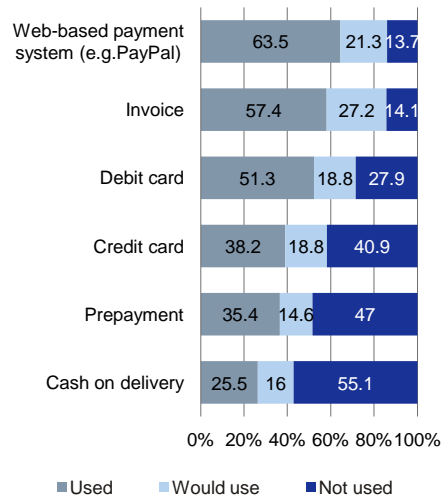
<sup>42</sup> Gamification refers to the design of a non-game service aiming to provide game-like experiences and thus raising the appeal of the service to customers.



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### Preferred online payment system 37

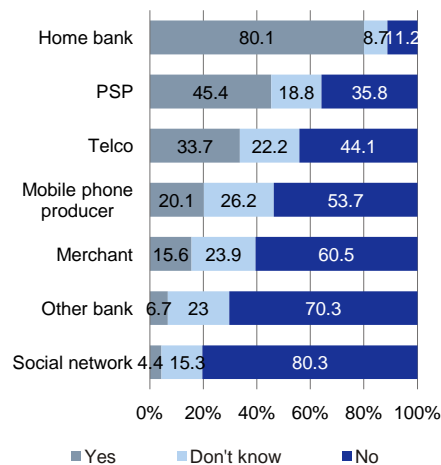
% of German smartphone owners, 2012, (n=526)



Source: ECC Handel

### Most people want mobile payment services from their home bank 38

Preferred supplier of mobile payments  
DE, FR, IT, %, 2012



Source: Steinbeis Research Center for Financial Services

### Incumbents

Whether traditional financial institutions will be involved in the market for innovative (mobile) payment banks or even be able to gain a significant market share hinges on several factors.

- First of all, it depends heavily on whether financial institutions succeed in offering their own web-based (mobile) financial service solutions in a timely fashion. This requires the launch of a strategic decision-making process and an assessment of the costs and benefits of an engagement in mobile financial services. As in all phases of fast-moving innovations it might make sense for those players that are immediately affected, in this case financial institutions, to pursue a multi-technology strategy. As market outcome is highly uncertain this might increase the probability of being part of the “right” coalition in future.
- Second, there is of course the opportunity for banks and financial institutions to position themselves as attractive alliance partners. Their position as partners in transaction banking is probably undisputed as newcomers usually do not target this part of the value chain. However, competition is going to be more fierce when it comes to the front-end and thus to the relationship with the customer.
- This is where – third – banks can and should utilise and appropriately deploy their competitive advantages above all. Banks can define mobile payments as an extension of card-based payment systems and can thus mitigate the standardisation problem (true not only for banks but also for credit card companies). This will potentially enable a smooth changeover into the mobile payments world. Moreover, banks have long-standing experience with data security and fraud prevention. Customers and merchants trust these systems, which generally lowers the threshold for adoption. This is underlined by empirical research: a large share of customers in Germany would like to see their own bank as a service provider for mobile payments (see chart 38). Of course the robustness of the technology and the necessary safety aspects will also play a major role. According to a KPMG report which asked, for example, which requirements must be satisfied in future in the area of mobile payments, data protection and payment security were prioritised by 88% of respondents, followed by low fixed costs (84%) and transaction-based charges (83%). In addition, survey evidence suggests that customers consider banks as very trustworthy when it comes to protecting personal information.

Overall, the strategic decision of a bank whether to proactively enter the market, form alliances with promising partners or leverage its own competitive advantage will decisively influence its future market position in mobile financial services. As bank strategy is a rather uncertain future driver we will classify our scenarios according to (a) banks being frontrunners and (b) banks being laggards in the adoption of mobile payments.

### 7.3 Scenarios

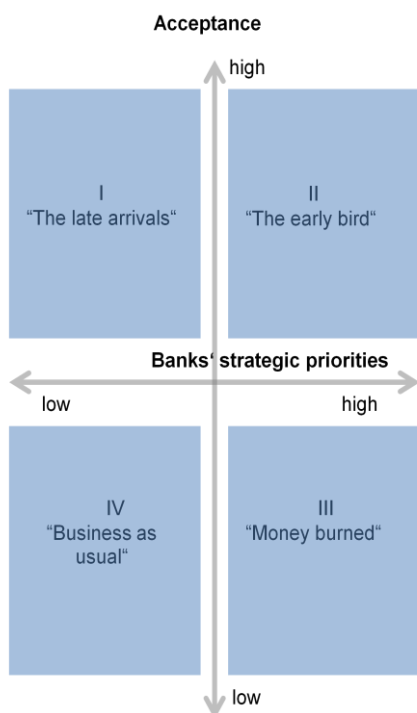
We develop our scenarios of the payments landscape in about three to five years time along the two dimensions described above: one is acceptance of innovative payment solutions technologies of consumers and merchants alike (y-axis in chart 39). This implies that the chicken-or-egg problem will be solved. The second dimension captures banks’ strategic priorities (x-axis in chart 39). We thus come up with four different scenarios. We start our analysis with a short description of the two scenarios in which consumer and merchant acceptance of innovative payment systems is low.



## The future of (mobile) payments

Scenarios

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Source: DB Research

### Scenario IV: Business as usual

In scenario IV banks' strategic priorities with respect to innovative (mobile) solutions have been low. This is because they have either paid little attention or because they have deliberately chosen to be a latecomer or not to offer mobile solutions at all, mainly to be on the safe side with respect to investment risks. At the same time, the market for innovative mobile payments will not have taken off. For example, consumers could have found that payments via mobile phone are not compelling and add no value to e.g. credit or debit card payments. Alternatively, merchants might have refused to introduce these solutions because e.g. they were too expensive compared with modes of payments already used today or because security or data protection concerns were overwhelming. Thus, the chicken-or-egg problem was not overcome. "Business as usual" is the name of this scenario as banks will still be pursuing today's business model with only incremental innovations taking place.

### Scenario III: Money burned

Scenario III resembles the previous one in that acceptance by consumers and merchants is low. However, banks have been among the early birds introducing mobile payment solutions early on. They have collaborated with digital ecosystems and/or telcos to set up new front-end solutions. At the same time, they have expanded their transaction-banking units to capture potential new revenue streams. However, as acceptance has been low – for the reasons stated above – banks' investments into these new solutions will have resulted in "money burned". Beyond these losses banks will pursue their initial business models – as described in scenario IV.

### Scenario II: Destructive competition light – "The early bird"

In scenario II a large number of merchants have included the new technologies in their set of payment options offered and consumers have made a habit of using them. (Mobile) web-based solutions, e.g. wallets in the cloud, have led the way and were implemented relatively easily as changeover costs for merchants were lower. At the same time, these solutions were considered attractive by consumers as location-based services, coupons and loyalty programmes were included in wallet solutions and could be used at the POS as well as online. In some countries, where NFC was already in place – such as in the UK where contactless credit cards are frequently used at the POS already today – this technology has gained market share in mobile business also. In countries such as Germany NFC received a bit of a kick-start, i.e. via a cooperative alliance including large retailers.

Initially, a multitude of business models emerged in the field of mobile payments. This was the case as numerous players – including a number of start-ups that offered innovative front-end solutions – entered the market. A shake-out period began when for example successful start-ups were bought by larger players and unprofitable coalitions left the market. As a result a few strategic alliances were formed with balanced levels of market clout, comprising digital ecosystems, credit card companies and/or representatives of telcos, with the digital ecosystems and the credit card providers combined providing the broadest customer reach and internationality.

In the end those alliances have proven to be successful in the market that delivered the greatest convenience to consumers ("one-stop shop") and experienced the highest acceptance both from dealers and customers. In addition there were factors, such as the possibility of embedding (existing) operating systems (iOS, Android, Windows etc.), that were just as decisive such as interoperability, user-friendliness and design.



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In the “early bird” scenario the established financial institutions successfully took timely action to ride “the digital wave (of structural change)”. They succeeded not only in docking onto the emerging alliances. With the internet having become omnipresent – also in retail stores (“internet of things”) – and with fixed-line and mobile internet usage having increasingly merged, banks (as well as telcos and digital ecosystems) have also been successful when implementing an overarching payment strategy that targets mobile, fixed-line and POS. Consequently banks have offered (their own) mobile financial services and play a not insignificant role in the international digital payments business. Overall the payments landscape is still characterised by a multitude of payment solutions (cash, credit and debit cards, bank transfers etc.).

Banks succeeded in exploiting their strengths and relevant sectoral experience especially as regards the increasing demands of consumers with respect to data protection and security and have demonstrated their expertise in payments. The marketing strategy and its expansion to include digital channels (multichannel approach), which also proves to be a success with retailers, paid off for financial institutions.

In strategic alliances the advantages of financial services providers’ established and widely accepted payment infrastructure combined with the existence of technological standards delivered positive outcomes and ensured cost-saving synergies. The result has thus been only relatively gentle destructive competition for the traditional financial sector. The market share of non-banks in the payment business has risen only moderately. Especially the net-savvy and technology-driven clientele trust the alliances in which the financial services providers participate and continue to utilise the infrastructure of their respective principal bank for their everyday online and offline transactions. Consumers also still have their primary account with their principal bank.

In the “early bird” scenario destructive competition and thus the business implications for banks have been modest as newcomers were kept within limits and banks were able to extend their product portfolio to the realm of (mobile) financial services. However, positive and negative effects are palpable at the same time. Their impact for a particular financial institution also depends upon the bank’s business model, the structure of the (national) banking market, payment habits and structures in a particular country (i.e. share of cash vs. credit card payments). Some stylised facts underline business implications in scenario II:

- **More cashless payments:** With the rise of mobile and online payments cash has increasingly been replaced by cards as a mode of payment. Thus the ongoing trend towards cashless payments has received another boost. Transaction banking services, issuance and acquiring have benefited.
- **Moderate revenue loss from fees, single opportunities in transaction banking:** As banks have substantially grown their business in online and mobile payments, the share of clients using peer-to-peer (P2P) online and mobile payment systems to transfer money directly without using banking infrastructure has not increased all that much. Nevertheless, banks have lost some business in the area of low to medium-value transactions (i.e. money transfers). Thus, banks have experienced a moderate loss in fee-based business. In this scenario those banks that are strong in transaction banking have modestly profited from offering fee-based transaction banking services for P2P service providers. As there are comparatively few large players in the market, it was important for banks to establish these new client relationships early on to have a foot in the door. However, as competition is fierce, margins are getting thinner.
- **More card business, but neutral on revenues:** Innovative payment systems based on credit cards have gained traction. As cash transactions have increasingly been replaced by credit cards, issuers have gained from a rise in



the volume of interchange fees acquirers pay to card issuers on purchase transactions. However, these issuers are not only financial institutions but also digital ecosystems that broaden their business model. At the same time, regulatory efforts and increasing competition in the cards business have exerted pressure on the fee per transaction. In the “early-bird” scenario where banks still play a major role, the overall effect on revenues has been neutral.

- **Customer retention is an issue:** To the extent that innovative mobile and online financial services are provided by digital ecosystems this has resulted in a decoupling of the payment process from the bank account and a loosening of the relationship between the client and the bank.<sup>43</sup> In 2012, debit and credit cards issued by banks were in “the clients’ hands” when paying at the POS. However, when using a mobile wallet the customer does not necessarily relate to the issuer, i.e. the bank. Financial institutions have attempted to establish a special relationship with the supplier of the wallet to ensure appropriate branding within the wallet and have to pay fees for this service. However, the risk of a loosening client relationship is still palpable when a mobile wallet operates with a prepaid credit card issued by the operator itself. In this case the dedicated card that was uploaded by the client is only indirectly included in the transaction and the customer will not relate to the issuing bank at all. Overall, although financial institutions have lost only a limited market share – also of tech-savvy customers – to non-banks, customer retention is an issue.

#### *Scenario I: Destructive competition extended – “The late arrivals”*

In “The late arrivals” scenario consumers and merchants have also broadly accepted innovative (mobile) payment solutions. In this respect and concerning the way new technologies conquer the market, scenario I is identical to scenario II (“The early bird”). However, in “The late arrivals” scenario, the traditional financial institutions failed to ride the “digital wave (of structural change)”. This is either because they have not been able to formulate a strategy to deal with the new opportunities at all or have waited so long that other players have divided the market among themselves. Thus, they have not succeeded in docking on to the alliances that have been formed in the meantime nor have they had any remarkable success with proprietary solutions online or at the POS. Banks have also not managed to offer timely and appropriate mobile financial services that use web-based technologies. That is why net-savvy consumers have first turned to other providers; other customers have followed suit at a later stage. As a direct consequence banks have lost increasing amounts of lucrative market share in the (digital) payments segment.

In this scenario digital ecosystems, credit card suppliers and – to a lesser extent – telcos have been able to win relatively large shares of the market for online and offline payment transactions. This is not only because they were in the market first but also because the payment solutions they offer have been attractive to consumers in the context of their walled garden strategies (see chapter 6). This means that consumers have perceived innovative payment solutions as the “natural” extension of other services already offered or have been forced into them because of payment solutions pre-selected by the digital ecosystems and thus lock-in effects. However, also in this scenario the overall payments landscape is still characterised by a multitude of payment solutions (cash, credit and debit cards, bank transfers etc.), of which innovative mobile solutions have captured a significant share. Although banks have not managed to establish themselves at the front-end of innovative payment solutions they have still kept the

<sup>43</sup> See Schiefelbein, Mirko, Holger Friedrich und Sebastian Müller: Bank Attackers. Die Zukunft des Bankings – mit Banken. COREtransform GmbH, Juni 2012, p. 11.





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back-end, i.e. transaction banking services, which have not been in the focus of digital ecosystems.

Digital ecosystems have decided, moreover, to continue expanding their business activities into the hitherto bank-dominated areas of deposit taking and lending. However, they have not covered the whole range of banking products but have offered standardised financial services (e.g. credit cards, consumer credit, deposits) that allow them to extend their business along the value chain. Overall, the larger product space offered led to a further loss of customers for traditional banks (to, for example, “Apple Bank”, “Google Bank” etc.). However, digital ecosystems have not become deeply vertically integrated, deciding instead to use white-label products or partner with financial institutions to offer their banking products.

In the “late-arrival” scenario business implications for banks are much more severe as banks in this case engage relatively quickly in destructive competition and lose significant market shares. This applies to both standardised payments and other typical banking activities, such as deposits. As in scenario II the rise of mobile and online payments has increasingly led to cash having been replaced by cards as a mode of payment, benefitting transaction banking services, issuance and acquiring.

- **Considerable revenue loss from fees, some opportunities in transaction banking:** As a large number of (tech-savvy) clients have migrated to peer-to-peer (P2P) online and mobile payment systems to transfer money directly without using banking infrastructure, banks’ market share in the area of low to medium-value transactions (i.e. money transfers) has decreased substantially. This has resulted in a loss of fee-based business. While this development has hampered the business of smaller financial institutions in particular that are focused on retail banking, some larger banks also active in transaction banking have identified new business opportunities. They have offered fee-based transaction banking services for the few P2P service providers dominating the market. However, even in this scenario there are only few business partners out there asking for transaction banking services.
- **Card business increasing significantly, but still lower revenues:** As described in scenario II issuers have profited from innovative payment systems being based on credit cards. In scenario I, however, the share of digital ecosystems issuing credit cards has risen significantly. Banks’ share of the pie is thus much smaller than in scenario II. Moreover, not only regulatory efforts but especially increasing competition in the cards business has exerted significant pressure on the fee per transaction. Digital ecosystems have the ability to cross-subsidise (see “walled garden” strategies in chapter 6) and thereby exert additional pressure on fees. By contrast, banks – as well as other players such as telcos – have less flexibility in their pricing policy. Overall, the downward pressure on prices has more than offset the positive volume effect, leaving revenues lower.
- **Customer retention has become difficult:** In the “late arrival” scenario non-banks have become more dominant in the payments market. Thus the loosening of the relationship between the client and the bank described above has become a more severe issue for banks in this scenario. A large number of clients – first the tech-savvy ones, later others followed – have moved on and decided to use other standardised financial services non-banks offer as well.
- **Banks lose deposits and consumer credit business.** Non-banks offering deposits or consumer credit have touched the core of the financial institutions’ business model. Deposits have traditionally been the banks’ most important source of funding and are both a reliable and low-cost way for



banks to refinance their business. A number of clients have moved their primary account away from their banks; however, most have opened a second or third account to complement the payments they channel via innovative service providers. Thus, this development has proven detrimental to revenues but has not put the banks' financing position at risk.

The four scenarios described above sketch different future development paths of innovative mobile payment solutions and their impact on the related business segments of banks. We refrain from attaching precise probabilities to the scenarios but think that the scenarios III and IV which assume non-acceptance of innovative (mobile) payment solutions are far less likely than the scenarios I and II. First, some progress has been made in the use of mobile technologies in the last couple of years and new payment solutions are a compelling additional (and lucrative) service for large ecosystems. Second, as the examples in other countries such as the US or Japan show, innovative solutions have been introduced successfully and users embrace new technologies. Thus we attach a low probability to the status quo scenarios which would imply virtually no change in the business models of financial institutions.

## 8. Summary

The market environment for traditional financial institutions in the contest for mobile (web-based) financial services is highly dynamic and calls for timely action. The regulatory environment with regard to the already long-running global financial crisis is intensifying this momentum further. New competitors are forcing their way into the market, in particular big internet players such as Google, Apple and Amazon are putting their feelers out (further) and making cross-sectoral and cross-level investments in new internet services, technologies and collaboration partners in order to further expand their respective market positions. Single providers already have the banking licence required to offer certain banking services; other have an e-money licence. At the same time, established players such as ecosystems, telcos and credit card companies are stepping up their efforts to establish innovative payment solutions as well.

Not only in digital payments, but also in sight deposits and other traditional banking services could this market development have an impact on future market shares of traditional banks provided that the chicken-or-egg problem will be solved and banks are rather reluctant to embrace the new opportunities. The banking industry faces challenges that at the same time, however, offer lucrative opportunities and growth potential. Overly passive behaviour by the banks in the age of digital structural change combined with increasingly rapid adoption of web-based (mobile) technologies might in the medium term entail the risk of shrinking market shares and fewer customers in the mobile financial services segment, (digital) payments and beyond. Depending on which route the traditional financial institutions choose, the destructive competition will take a relatively gentle or painful course.

If banks should succeed in presenting better-informed and net-savvy customers with attractive financial solutions that satisfy the growing consumer demand for mobility, networking, communication, interaction and information, then the looming destructive competition will take a more moderate form (scenario II). Thus, banks may play an active role in shaping the future market.

However, banks are likely to lose market shares (scenario I) if they do not succeed in offering appropriate mobile financial services and consciously decide to make a more passive adjustment to the digital world. This could include the decision not to take the opportunity to dock on to the emerging alliances at a suitable location in order to contribute their own strengths and broad expertise to the ecosystem. Destructive competition will in this case be considerably more pronounced for the financial institutions. As a result, a decoupling of the pay-



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ment process from the bank account will take place and relationships with today's clients are likely to become looser. Also, revenues from low to medium-value transactions will fall. In this scenario, non-banks have grabbed a considerable market share of deposits.

In any event, the traditional financial institutions have several options to counter the threat of destructive competition. As in all phases of fast-moving innovations it might make sense for financial institutions to pursue a multi-technology and multi-channel strategy. The main challenges consist of bringing proven, traditional expertise together with new market requirements that are adapted to the digital age, for example in the dispute about striking a balance between data and information security on the one hand and the growing demand for convenience and user-friendliness on the other. The decision about which action to prioritise should, however, be made in a timely fashion, because every form of action brings with it challenges of a change in organisation, infrastructures and corporate culture that cannot be implemented overnight.

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