PREFACE

Banking in the Internet and mobile era

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Abstract Large parts of today's banking business are based on the application of information technology (IT). This applies to advisory at the customer frontend to and internal operations in banks to the electronic stock exchanges and transaction networks. To position the five contributions in the special issue on "Banking in the Internet and Mobile Era", this editorial suggests a framework that structures the application areas of IT in the banking industry. It recognizes IT as the enabler for all four tiers of the banking value chain and highlights the specific role of the regulatory environment in this industry. The special issue emphasizes the transformation of the banking industry towards more customer-orientation as well as the role of Internet and mobile technologies to change established channels and banking services.

Introduction

Banking is an information-intensive business and an early adopter of information technology (IT). During the last decade, banking functions have been virtualized on a massive scale. We have observed a shift from physical money to electronic payments, and the replacement of savings books, share certificates,

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and branch service advisors with online, digital alternatives. In 2009, the global volume of non-cash transactions (e.g., credit transfers, direct debit, card payment transactions) totaled 260 billion, having grown at an average rate of 7 % since 2001 (Capgemini and RBS 2011). In the Eurozone, over 60 billion cashless transactions took place in 2011 after growing over 4 % annually from 2009. Despite the crisis that hit the major European economies in those years (ECB 2012). The introduction of the Single Euro Payments Area (SEPA) is bound to create a single market for cashless payments in Europe (ECB 2010).

The Internet and mobile technologies enable this transformation having important implications for the internal operations in banks, the value chain in the entire financial industry and the interaction of banks with their customers. Not only has the share of turnover from electronic commerce (from 9 % in 2004 to 13 % in 2009) measured as the ratio of electronic network sales by total turnover (ECB 2010, 12) increased, but also mobile phone subscriptions have grown significantly from some 20 subscriptions per 100 inhabitants in 1997 to more than 120 in 2008 with a rising number of Internet-enabled smartphones.

In a recent survey across 70 financial institutions, 45 % of the banks declared mobile channel development a priority in 2013 and even 63 % consider it as a priority in the next three years (Misys and Finextra 2012). An example for the impact of banking in the Internet and mobile era is ING, one of the leading retail banks in the Netherlands. Since introducing a mobile version of its regular online banking channel, over 1.2 million people have downloaded the app (ING 2012). Over one third of the Dutch population now has access to the bank via their smartphone and/or tablet. The interaction frequency is at a remarkable average of 3.5 times a week compared to once a week via the 'classic' Internet banking channel. In addition, mobile app users tend to pay their bills more often on time, save more and require fewer overdrafts. Half of them consider the ability to have real-time



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information on their cash position as a key benefit of the mobile app. At the same time, this development also cannibalizes the existing Internet channel as 77 % of the customers use their bank's Internet channel significantly less. The majority of the users are in the 18–39 year-old bracket, making mobile banking the preferred method of the future.

The potentials of banking in the Internet and mobile era are building on the long journey of IT application in the banking industry. Three development streams may be observed. First, banks are early adopters of IT. For example, the major developments of IT usage at Deutsche Bank date back to punchcard pilot projects in 1928 and led to the introduction of magnetic tapes and data processing systems in the 1960s, of banking terminals in the 1970s and 1980s and of electronic branch networks in the 1990s and 2000s. This also included the rise of online banking transactions to over 200 mn in 2008 (Lamberti and Büger 2009). In parallel, large IT departments have evolved in most banks which are now striving to contain their IT budgets. Outsourcing and the introduction of packaged software are among the options to reduce IT costs per bank employee which have remained at an average of 50,000 CHF for Swiss banks (Geyran and Stierli 2012). Again, these developments may be attributed to the application of Internet technologies which makes the internal evolution of IT a prerequisite for interorganizational connectivity. This second development may be observed with the growth of large electronic networks utilized by many (competing) actors in the financial industry, such as ATM, SWIFT, and SEPA. A third development refers to the substitution of physical trading floors with electronic markets in most major derivative and stock exchanges since 1980 (WFE 2011).

Value chain in banking

Today, these developments have emerged into a value chain in the banking industry comprising multiple tiers (see Fig. 1). However, compared to other industries, such as the

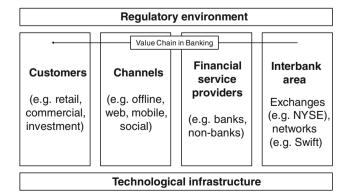


Fig. 1 Framework for banking in the mobile and internet era



automotive and the electronics industry, the activities are less distributed and a higher degree of vertical integration are still attributed to banks. The proposed value chain is aligned to the position paper included in this special issue (Alt and Puschmann 2012) and distinguishes four areas where IT may be applied. On the customer side, so-called personal finance management systems, such as Quicken, MoneyStrands or Gnucash, support end customers and many enterprise systems the commercial as well as investment customers. The channels may be specific marketplaces, mobile technologies, social platforms or payment systems, such as Facebook or PayPal. Financial service providers comprise traditional banks on the one hand which are striving to concentrate on specific competencies and start-ups or actors from other industries, such as telecommunication, retail or IT companies. Finally, the interbank area consists of the exchanges and networks as mentioned above and typically lacks a direct linkage to customers. The value chain is strongly influenced by the regulatory environment and the available technological potentials or infrastructure.

With the regulatory environment changing as a result of the financial crisis, the technological infrastructure expanding with the emergence and success of (mobile) Internet technologies and in the middle the banking value chain from customers via channels to interconnected financial service providers, this special issue presents five research papers each yielding a unique perspective on this topic. As an introduction, this editorial first summarizes key developments in the regulatory environment, then positions developments in the technological infrastructure in the context of banking, and finally addresses the impact on the banking value chain.

Regulatory and competitive environment

Seldom has there been a more turbulent time in the banking industry. Banks and bankers are being held responsible for the largest global economic crisis since World War II and companies as well as individuals increasingly face economic difficulties. While the global addiction for credit and the associated behavior of financial institutions arguably caused the financial crisis (Bean 2012), the change towards credit prudence is now said to be blocking economic growth as SMEs and corporates alike are struggling to finance new endeavors. Add to this a growing public resistance, perhaps best illustrated with the Occupy movement, and it is clear that the financial world has come to a vital point in its history where major decisions are required regarding the shape of banking in the future.

When the system collapsed, governments had to step in, saving the banks 'too big to fail' first. As a result, governments were the next institutions in peril and have contributed to the current Euro Crisis which puts economic recovery

even further into the future. However, it also led to the call for regulatory reforms of the financial community which will fundamentally impact the existing banking business (Haldane 2012). Separating retail and investment banking, risk-averse compensation plans, refocusing on retail banking and, most importantly, the higher capital requirements (i.e., Basel III) all play a major role in a bank's strategic and day-to-day decision making. Capital has become more scarce, business models are under pressure and the ability for banks to adopt new ways of (IT enabled) working is hampered at best.

Meanwhile, regulators and public opinion alike are pushing for increased competition for banks from other countries and industries. The SEPA regulations require banks to accept a single European standard for credit transfers, direct debits and card transactions, effectively creating a single European payments market where traditional domestic payment processors will merge into more standardized pan-European payment processors operating with higher economies of scale. Ultimately, international companies will be able to select a single financial institution to handle payments across all European countries. Other regulations even strengthen this effect, such as the recognition of non-bank 'Payment Service Providers' in the EU, which paved the way for non-banks, such as Google, Apple and Tesco, to enter areas that had long been the exclusive domain of banks. Establishing a shared utility storing customer account details across banks and removing the privacy aspect from these customer details would facilitate the market entry of these 'non-banks' and facilitate consumers to switch their banking relationships (Haldane 2012).

Technological infrastructure

In the last 20 years, the rise of Internet and mobile technologies has affected the entire banking value chain and resulted in new opportunities and business models. In the banking industry, the terms 'mobile banking' and 'Internet banking' typically refer to specific channels offered to clients to interact with their banks. They complement the bank's channel portfolio, from branch-based personal attention by clerks via personal attention in call-centers and impersonal direct mailings (see also Stafford and Gillenson 2003). Most retail banks nowadays offer an Internet channel where clients may access their accounts, and to a greater or lesser extent initiate instructions, change personal data and the like. Mobile banking is a logical extension of this with the mobile smartphone and a variety of intuitive apps being introduced.

The rise of the direct banking model illustrates how the diffusion of the Internet and the changing landscape of banking have converged. For example, ING introduced a business

model in the US solely based on technology as the primary channel between the consumer and the bank. Instead of establishing hundreds of branch offices, call centers were used for the personal contact when needed, the website for most transactional interactions and the existing network of ATM machines for handling cash.

Opportunities in the regulatory regimes, such as removing the obstacles for banks and insurers to merge, have led to large financial conglomerates with a focus on operational excellence (Tallon 2010). In these environments, IT is key to achieving the economies of scale required to effectively process millions of transactions per day. This also applies to the interaction with customers, where standard products and services are delivered via automated self-serve channels. However, on the other side of the spectrum, banks are focusing on personal attention and relationship banking. IT, in particular Customer Relationship Management software, may again play a critical role, but for keeping track of client interactions and not for facilitating mass transaction processing systems.

In any case, it is clear that in an interconnected world, banks requires a deep understanding of the potentials of IT for customers, their channels, their internal processes and competitive positioning towards other financial institutions and service providers. The example of ING's mobile banking app demonstrates critical considerations on behalf of the banks: at the operational level to understand that mobile users access their accounts three times as often as regular Internet users (resulting in higher performance requirements), at the tactical level to handle cross-sell opportunities from existing channels, and at the strategic level to adapt to new customer segments and their expectations from mobile solutions.

Customers and channels

The Internet and mobile era also requires a different approach to servicing in view of 24/7 connectivity. Most (western) societies experience a shift in demographics with an increasing share of senior citizens creating a target group that has different requirements towards services in terms of accessibility, security and ease of use. As such, service providers need to decide whether they should focus first and foremost on the Internet/mobile enabled services desired by the 'young' ('digitial natives'), or on the personal attention and the close physical presence for the 'wise'? The advent of localized banking may also be recognized as a counter-movement to the globalization and anonymization of client relationships (Haldane 2012). One perspective is the roll-out of the Handelsbanken franchise in the UK, who on average open one branch every two weeks. Local people at the bank respond to the needs of local clients,



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without centrally controlled decision making processes, bonuses and sales targets.

Channels may be conceived as interaction mechanisms between the client (consumer/corporates/institutionals) and the bank. Although IT-based channels, such as branch-less banking and remote/Internet payment services, have been introduced in many countries, mobile technologies and the social web are already pointing towards the revolution at the customer interface. Among the innovations described in greater detail in this issue's position paper are alternative currencies, exchange platforms or crowdfunding. The relevance of this area may also be reflected in the fact that three of the accepted submissions to this special issue address channel topics.

Financial service providers and services

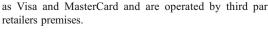
The move towards utility-like banking, the increase of capital requirements on financial institutions and the refocus on value creation in a low-growth economy is expected to foster specialization and networking in the financial industry (Wallace and Herrick 2009). In fact, the role of IT has gradually shifted from 'supporting the business' towards 'enabling the business' with the advent of self-service (from ATMs to online banking) being the key change agent (Lamberti and Büger 2009). Remarkably, many technological capabilities had been available for a long time, but it required the consumer's familiarity with handling technology to trigger the adoption of ATMs and later (Internet based) online banking. IT was no longer limited to handling a growing volume of transactions, but applied to all levels of the business. From strategic considerations of how banks may generate new sources of revenue (e.g., selling marketing intelligence from the transaction histories of clients), product innovations (e.g., payment methods that further stimulate Internet/mobile commerce by including risk management) to operational excellence by further increasing the degree of selfservice (e.g., opening up online banking to senior citizens using new Internet browsing devices).

Interbank area

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This final part of the banking value chain refers to the arena between the financial service providers. The industry is

¹ The term 'channel' is conceived broader than commonly used in the banking industry. In particular, payment mechanisms, such as payment terminals in retail stores, are included, while banks usually only consider client servicing interfaces as channels. In fact, payment mechanisms typically are not controlled by the bank but by institutions such as Visa and MasterCard and are operated by third parties on the retailers premises.



probably unique in its level of interdependency, where the toughest competitors cooperate to enable the flawless execution of (international) payments and other financial transactions. Community services, such as the network service SWIFT, have existed for decades and ensure that financial service providers may securely and reliably communicate with each other. In essence, these community services are in place to overcome the challenges when IT systems of separate, often competing, institutions need to interact automatically. At a higher level in the value chain, international clearing systems and other payment service providers safeguard a high reliability of actual payments and the associated guarantees, even between banks that have had no prior relationship with each other except that they both participate in the same clearing service, card scheme or other payment infrastructure. With the drive towards utilizing banking, especially for the retail banking segment, the role of interbank institutions may well expand. At the same time alternative business models, facilitated by the Internet, may erode the relevance of the traditional institutions. Examples of the first are the initiatives credit card companies are launching towards mobile banking and electronic wallets (e.g., MasterCard Paypass, Visa digital wallet V.me (see MasterCard 2012 and Johnson 2012)). Examples of the latter are the emergence of alternative payment systems, such as Paypal, as well as the opening up of the SWIFT network to large corporate clients (albeit in consultation with the respective banks involved).

Special issue contributions

The first contribution of this special issue is a position paper by Rainer Alt and Thomas Puschmann discussing the implications of the emerging IT-based banking innovations for the banking industry as previously mentioned. Customerorientation is identified as a guiding principle for future banking solutions and used to develop a framework structuring the broad variety of innovations that may be observed today. The authors expect that traditional banks need to reposition themselves in view of the growing competition at the customer interface and extend the architecture of electronic market infrastructures in the banking industry towards a possible future customer-oriented financial market infrastructure. The impact is illustrated using a competitive analysis of the banking industry and analogies to the media industry where new entrants from the computing industry have caused disruptive changes.

The second paper is a study by Kyung-Hun Ha, Andrea Canedoli, Aaron Baur and Markus Bick that explores the most commonly used drivers for the adoption of mobile banking. Based on a comprehensive review of literature between 2008 and 2011, the results first indicate that the Technology Acceptance Model (TAM) was mainly adapted

by most mobile banking studies. Second, the authors also reveal that the major drivers of adoption may be categorized into four dimensions, i.e. perceived usefulness, perceived risk, perceived compatibility and perceived cost. Although numerous studies have investigated the drivers of mobile banking adoption, this study adds to this body of knowledge by critically reviewing the findings of previous efforts and evaluates the results in this field for researchers as well as practitioners.

The third paper focuses on a specific aspect of mobile banking, i.e. the operational execution of payments. Philip O'Reilly, Aidan Duane and Pavel Andreev investigate the factors influencing the willingness of consumers to use their smartphone to execute payments. The authors claim this is the vital step in the maturity of mobile commerce. Only if consumers sufficiently trust technology to make the final step of the transaction (i.e. the payment), mobile commerce has the opportunity to attain a comparable status as Internet commerce. Their research develops and empirically validates a conceptual model for exploring the impact of vendor and mechanism trust on consumers' willingness to use smartphones for m-payments and delivers valuable insights for vendors as well as legislators.

While the two previous papers investigate adoption factors of (mobile) channels and more or less assume that such channels are a positive development for the financial service provider, the fourth paper actually addresses this question. Hung-Jen Tu investigates whether the introduction of (Internet) channels has positive impacts on the performance of the banks offering them, using data from 24 Taiwanese financial services firms and applying the event study methodology and data envelopment analysis. The article concludes that the introduction of Internet channels positively influences the performance of the bank.

The final paper in this special issue emphasizes the importance of the mobile and Internet world for the delivery of key banking services. Richard B. Carter, Troy J. Strader and Frederick H. Dark show how digital product and services firms, who are shaping the mobile and Internet world, are different from other more traditional companies in terms of their cost structure and the 'winner-take-all' industry competition. The authors emphasize the implications of this optimal window for the Initial Public Offerings (IPO) of such companies. This provides knowledge to those financial professionals that need to support clients in optimizing the necessary capital gain from their company's IPO.

Conclusion

All papers in this special issue contribute in their own way to the discussion on how banks may adapt their business models to become 'socially useful' again. In terms of future research, scientists and bankers are encouraged to collaborate in pushing this agenda forward. We are convinced we have only seen the beginning of the potential offered by mobile and Internet technology, not only in improving how existing financial institutions operate, but also in introducing new perspective of structuring financial relationships. Especially in understanding the strategic impact of societal developments triggered by technological capabilities, scientists could assist banks. Banks typically lack extensive research and development departments - even those that do tend to focus on economic developments as a support for assessing their market strategy. The (open) innovation platforms and dedicated organizational units (often called 'labs') which have emerged on a small scale in many banks may be regarded as harbingers of the future. On the research side, methodologies other than statistically analyzing past developments may need to be deployed. Here design oriented IS research is gaining more impact, providing an alternative that is both scientifically sound and practically relevant (Österle and Otto 2010). With this exciting view towards the future of banking we would like to conclude by thanking all reviewers and authors who made this special issue possible.

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