



Banking without banks: Will technology transform financial intermediation?

1 What we know from the past: digitization as an enabler of financial (dis-)intermediation

Digitization changes the mechanisms of the established financial system from a hierarchical, centralized structure towards a more decentralized, networked one. But digitization is not a new phenomenon for the financial services industry. Some major milestones of early developments of digitization in the last century are the introduction of the automated teller machine (ATM) in 1959 in Arlington/Ohio (the first ATM in Europe was launched in 1967 by Barclays Bank in London), the transition from physical to electronic trading of NASDAQ in 1971, the introduction of home banking through Citibank and Chase Manhattan in 1981, the launch of the first internet banking in 1994 by Stanford Credit Union as well as the first mobile banking from the Norwegian Fokus Bank (Arner et al. 2015, pp. 9 ff.). The digital development of banking can generally be split up into three phases, each of them focusing on a different areas of digitization (Puschmann and Weber, 2017):

1. *Internal digitization (phase 1)*: The first phase of digitization concentrated on internal processes, such as advisory, payment transactions or portfolio management. Here, banks focused on the automation of financial services processes like for example cash transactions with ATMs.
2. *Provider-oriented digitization (phase 2)*: In the second phase financial service providers focused on the integration of core banking systems. For this, they had to standardize processes and application functions which were

delivered from standard core banking solution providers such as SAP or Temenos.

3. *Customer-oriented digitization (phase 3)*: This third phase of digitization is centered around customers and their processes redefining today's inside-out, product-centered to an outside-in logic. This phase is characterized by the application of new IT-developments like social media, smartphones, cloud computing etc.

The first two phases have already changed the banking value chain and financial intermediation, defined as banks' role as an intermediary of taking in funds from a depositor and then lending them out to a borrower (<http://www.businessdictionary.com/definition/financial-intermediation.html>). A well known example are the electronic stock exchanges that emerged as additional intermediaries between buyers and seller of securities. But with the third phase of digitization, financial intermediation might even increase in customer-related areas like robo-advisors and thus lead to new forms of financial intermediation between customer and banks.



2 What we know today: potential changes of the financial services value chain towards digital ecosystems

The market for so-called digital banking solutions or financial technology (short “FinTech”) solutions just recently developed as part of the third, customer-oriented phase of digitization in banking. These FinTech solutions differ regarding the provider type (bank/non-bank), interaction type (business-to-customer (B2C), customer-to-customer (C2C), business-to-business (B2B)) and the banking processes they support (advisory, payments, investments, financing, cross-process). Table 1 gives an overview on existing FinTech solutions and is characterized by the following developments (Puschmann, 2017):

1. **Banks:** Although many FinTech solutions from the third phase were developed from start-up companies from the non-banking sector, many banks currently start to adopt them. Among the B2C examples are video confer-

encing (advisory), robo-advisory (investments) and online credit application (financing). In contrast to B2C services where banks are the primary provider, C2C-solutions focus on peer-to-peer-services and platforms. Examples are peer-to-peer-payment or online customer communities.

2. **Non-banks:** The market sector of non-banks covers both start-up companies and large IT companies like for example Apple, Google or Alibaba. In contrast to banks, these FinTech solutions often focus on disintermediation and concentrate on single activities. In addition to the B2C and C2C interaction models, non-banks also provide B2B services which focus on cooperation among banks and non-banks. Prominent examples are digital client advisory (advisory), personal finance management (payments), digital identity or stock analysis and prediction (investments).

The maturity level of the different FinTech solutions differ regarding the pro-

Table 1

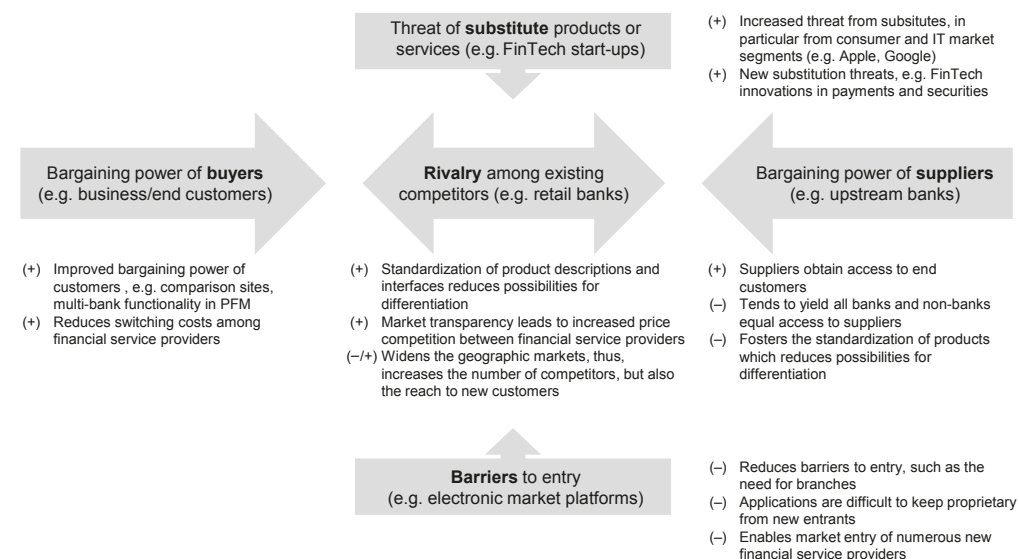
Overview on FinTech Solutions

Provider type	Interaction type	Advisory	Payments	Investments	Financing	Cross-Process
Bank	B2C	Video conferencing (HVB, DE)	Social Media Payment (Commonwealth Bank of Australia, AU)	Robo-advisory (UBS, CH)	Online credit application (Targobank, DE)	Online bank account opening (Fidor Bank, DE)
	C2C	Online customer community (Bank of America, U.S.)	Peer-to-peer payment (Paymit, CH)	Community-based interest rate (Fidor Bank, DE)	Crowdlending (Hypothekarbank Lenzburg, CH)	Social network (Fidor Bank, DE)
Non-bank	B2C	Personal finance management (Mint, U.S.)	Cryptocurrency (Bitcoin)	Multi-asset trading (360t.com, DE)	Corporate credits (Finpoint, DE)	Electronic data safe (Secure-Safe, CH)
	C2C	Community-based advisory (Wikifolio, AT)	Mobile Payment (Square, U.S.)	Covesting (Covestor, U.S.)	Crowdlending (Lendico, DE)	Loyalty points marketplace (PointsPay, CH)
	B2B	Digital client advisory (Folio-Dynamix, U.S.)	Personal finance management (Meniga, SE)	Stock analysis and prediction (Stockpulse, DE)	Crowdlending (PostFinance & Lendico, CH)	Digital identity (WebID Solutions, DE)

Source: Puschmann (2017).

Chart 1

Impact of FinTech on the banking value chain and financial intermediation



Source: Porter (2001), Alt und Puschmann (2012, p. 212).

cess areas covered. A recent study for example identified, that the most important sector of the emerging FinTech market is financing, followed by payments, cross-processes and investments (Haddad and Hornuf 2016, p. 21).

FinTech solutions enable both, more efficient business processes among the involved parties and the change of the existing value chain in banking towards new digital ecosystems¹. A more in-depth analysis of the drivers behind this transformation can be structured along five forces (according to Porter, 2001; Alt and Puschmann, 2012, see chart 1):

• The new digital ecosystems strengthen the *bargaining power of buyers* because of reduced switching costs and the elimination of existing bilateral channel structures.

- FinTech leads to *increased rivalry among existing competitors* due to the entry of numerous non-banks and the adoption of FinTech solutions by banks.
- The increasing standardization reduces the *barriers to entry* in the market. Examples are the Payment Services Directive 2 (PSD2) or the Open Application Interface Programming (Open API) approaches of the British Financial Conduct Authority (FCA).
- The growing number of FinTech startups and the increasing service offering of technology companies lead to a growing *threat of substitute products or services*. An example is Financial Innovation Now, a cooperation of Amazon, Apple, Google, Paypal und Intuit for the development of new global financial services.

¹ A business ecosystem is defined as an “economic community supported by a foundation of interacting organizations and individuals – the organisms of the business world. The economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The member organisms also include suppliers, lead producers, competitors, and other stakeholders. Over time, they co-evolve their capabilities and roles, and tend to align themselves with the directions set by one or more central companies. Those companies holding leadership roles may change over time, but the function of the ecosystem leader is valued by the community as it enables members to move toward shared visions of aligning their investments, and finding mutually supportive roles.” (Moore, 1993).

- The easier comparability of banking and products and services leads to an increased *bargaining power of suppliers*. An example is DNAppstore, an electronic toolbox for banks to bundle services from different service providers.

3 What we know today about the future: The internet of values and the peer-to-peer-economy

The five driving forces introduced before already seem to change the mechanism of the existing banking value chain. But does this mean that we are at the forefront of a new global financial order with new actors, new currencies and the possibility to conduct financial transactions across borders without any limitations? Four drivers might spur this development in the future:

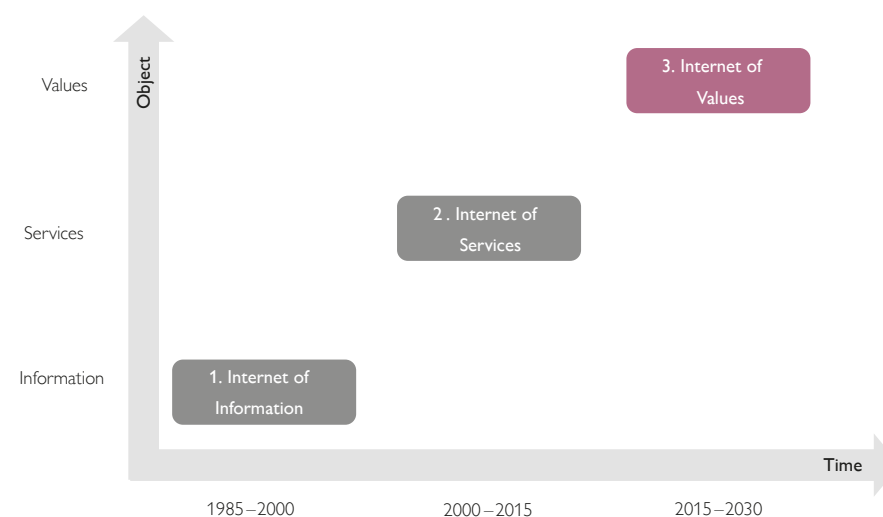
- *First*, the emerging peer-to-peer economy leads to a fundamental change of how economies work in the future (Sundararajan, 2016). Examples are Airbnb for renting flats or Getaround's mobility platform for lending and borrowing cars among private individuals. This peer-to-peer economy is not only characterized by transactions among peers, but also has an increasing impact on the existing digital infrastructures. First examples are AKASHA's peer-to-peer social networking platform or Sharetribe's peer-to-peer service marketplace. They all have in common that they are not built on centralized digital platforms like Google or Facebook (Parker et al., 2016).
- *Second*, from a technical point of view, the internet developed from the "internet of information" to the "internet of services" and currently takes another step towards the "internet of values" (chart 2). The first phase covered the standardization and exchange of information with the Hypertext Transfer Protocol (HTTP)

and the Hypertext Markup Language (HTML). The second phase focused on digital platforms like Facebook and Google and included standards like the Simple Object Access Protocol (SOAP). The third phase focuses on standards around blockchain, standards for digital payments, smart contracts and other areas for the exchange of values. The W3C consortium for example initiated a standardization group for online payments.

- *Third*, the development of cryptocurrencies has led to a new possibility to exchange "money" among individuals (peer-to-peer) that do not necessarily know and trust each other. Among the examples are Bitcoin or Ether. These cryptocurrencies all have the advantage that they provide a standard for exchanging "money" across country borders in almost real-time without the limitations of the existing financial infrastructures that require currency exchange platforms and banks. This trend is spurred by the big technology companies like Apple that just recently started to offer a peer-to-peer payment service via its iMessaging service or the different approaches for digital wallets. Both, the digital wallet and the possibility to exchange "standard" money globally is attractive from a consumer point of view, yet the national hurdles still limit these approaches.
- *Fourth*, many national regulators started to decrease hurdles for FinTech startups and their solutions which might lead to a de-regulation of this market. Examples are London, Hong Kong, Singapore, and Switzerland. All these countries for example introduced so-called regulatory sandboxes where startups can test innovative solutions in a protected area. An example is Switzerland where public funds of up to CHF

Chart 2

Evolution phases of the Internet



Source: Author's compilation.

1 million are exempted from authorization. In addition, some countries even launched new FinTech licenses. For example, Switzerland just recently introduced a banking license "light" to accept public funds of up to CHF 100 million.

4 What we don't know yet about the future: Technology limitations, regulation and legal preconditions

All four drivers may have an impact on the future of the financial system. With the development towards a peer-to-peer, self-organizing financial system, the existing functions of the financial system to provide liquidity, to govern and coordinate financial markets and to reduce information asymmetry may change to some extent. If for example a firm can self-issue security papers fully digital on a blockchain, it can initiate and coordinate all processes in a decentralized manner without the need for a central party like a bank (e.g., for an IPO) or a stock exchange (e.g., for trading). In addition, cross-country stock trading could be improved by payments based on crypto-

currencies and thus, stock trading could be settled in real-time. These scenarios fundamentally change financial intermediation and the financial system as they decentralize more services than ever before. But although the potentials seem to be huge, there are still some limitations. A first one is the still low technical maturity of standards including areas like security, etc. Sure, they might evolve over the forthcoming years, but as we learned from the development of HTTP and HTML, it took many years and the same will probably apply for blockchain-related standards, too. A second limitation are the the political and regulatory preconditions that are not yet given to foster the internet of values. Still, most national regulations are too different as if a global standard might emerge in the next few years. In addition, many legal questions like ownership rights etc. have to be addressed.

Just as the first examples of the early internet pioneers have shown, many ideas emerged very early (e.g., to watch TV online), but finally took many years to develop. The same can now be observed with the internet of values, where many

new services can already be seen on the horizon (Ito et al., 2017). But it may take some more years until we can finally use them. In addition, not all things might become reality, a lesson that we could also learn from the first phases of the internet. So the future of the internet of values remains exciting over the next years.

References

- Alt, R. and T. Puschmann. 2012.** The Rise of Customer-oriented Banking – Electronic Markets are Paving the Way for Change in the Financial Industry. *Electronic Markets* 4(22). 203–215.
- Alt., R. and T. Puschmann. 2016.** Digitalisierung der Finanzindustrie: Grundlagen der Fintech-Evolution. Springer Gabler: Berlin & Heidelberg.
- Arner, D., J. N. Barberis and R. P. Buckley. 2015.** Evolution of Fintech: A New Post-Crisis Paradigm? University of Hong Kong and University of New South Wales: Hong Kong & Sydney.
- Haddad C. and L. Hornuf. 2016.** The Emergence of the Global Fintech Market: Economic and Technological Determinants. University of Trier: Lille & Trier.
- Ito, J., N. Narula and R. Ali. 2017.** The Blockchain Will Do to the Financial System What the Internet Did to Media. *Harvard Business Review*. Digital Article. Retrieved from <https://hbr.org/2017/03/the-blockchain-will-do-to-banks-and-law-firms-what-the-internet-did-to-media>.
- Moore, J. F. 1993.** Predators and Prey: A new Ecology of Competition. *Harvard Business Review* 71(3). 75–86.
- Parker, G. G., M. W. Van Alstyne and S. P. Choudary. 2016.** Platform Revolution: How networked Markets are Transforming the Economy – and how to make them work for you. New York (NY): W. W. Norton & Company.
- Porter, M. E. 2001.** Strategy and the internet. *Harvard Business Review* 79(3). 62–78.
- Puschmann, T. 2017.** Fintech. *Business & Information Systems Engineering* 59(1). 69–76.
- Puschmann, T. and R. Weber. 2017.** Neuerfindung des Finanzsektors? *Schweizerische Zeitschrift für Wirtschafts- und Finanzmarktrecht (SZW)* 89 (1). 79–94.
- Sundararajan, A. 2016.** The Sharing Economy: The End of Employment and the Rise of Crowd-Based. Cambridge: MIT Press.

