PAYMENT SERVICES AND DIGITISATION

István Prágay

ABSTRACT

Placed within a historical perspective, this study reviews the interplay between the evolution of computer technology and cashless payments. Taking this as its starting point, it presents the technological trends and principal regulatory initiatives influencing the development of payment services.

For *businesses*, end-to-end automation of the financial supply chain, clear exception processing rules, and the enrichment and semantic clarity of financial messages, all provide tangible benefits. Digitisation enables small and medium-sized enterprises (SMEs) to streamline their business processes and connect to the enterprise resource planning (ERP) systems of large corporate partners.

For *consumers*, 24/7 instant payments offer the perspective of a cashless existence, since both individuals and micro enterprises will be able to pay by credit transfer with ease. The retail trade will evolve to a simpler checkout process, where the purchase and payment phases will not be separated.

Digitisation needs to be employed in Hungary in the fight to reduce cash payments and enhance financial inclusion. To achieve this, it is essential for consumers to perceive the practical advantages of cashless payment compared to cash, and to be able to manage their personal finances more easily.

Rapid changes demand continuous learning on the part of consumers and micro enterprises, to raise the level of their financial literacy.

This study seeks to answer the question of how Hungary can transform from a follower to a trendsetter in payment services, and thence a winner in the process of financial digitisation. Extensive collaboration among payment service providers and cooperation across economic sectors, together with consistent and coordinated application of payment schemes and standards, may lay the basis for superior services.

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1 THE CONCEPT AND CURRENT STATE OF DIGITISATION

Digitisation in its initial sense means the recording and storage of data, text, and analogue sound and video recordings in digital form. By this definition, digitisation is contemporaneous with digital data storage.

In the meantime, a fresh definition of digitisation has emerged, signifying a changing lifestyle – as well as economic and administrative activities – due to the general spread and use of interconnected mobile digital devices. Digitisation leads to a rollback in paper-based administration, the removal of spatial and temporal limits, automation, and the acceleration of communication and business transactions. People communicate remotely not only with other people, but also with machines, and can receive increasingly flexible and more personalised services.

Digitisation transforms payment services and payment flows, not only because it opens up more and more opportunities for payment service providers to offer their services in new ways, but also because our entire environment and way of life is transformed as a consequence. New devices and interactions trigger the creation of new payment solutions.

Technological progress is the cause and starting point for the digital transformation, with the impetus for the transformation determined by the following factors:[1]

a) customer expectations, devices, capability, and affordability of services;
b) the innovative capacity of payment service providers, strength of market competition, and sufficient effective demand that ensures a return; and
c) the quality of the regulatory environment (including multilateral agreements and standards), as well as the infrastructure.

The principal new technological trends which we foresee in the ensuing decades, and which are relevant in the context of payment services, are outlined below.

1.1 Mobile devices and broadband network connections

The runaway market success of smartphones with mobile internet capability is attributable to their affordable price, high-speed broadband connections, and touchscreen simplicity. A pocket computer, telephone, music player, camera and microphone, all contained in a single device, is an attractive prospect. The utility of such devices is further enhanced by the open nature of manufacturers' application programming interfaces (APIs) within operating systems, enabling any de

1 Santamaría, J. (2018): Do Androids Dream of Electric Sheep and e-Payments?

veloper to distribute their applications through online stores with a global reach (Google Play, Apple App Store).

The case of UBER is a good example of the use of APIs by developers. The mobile taxi ordering application was created with comparatively modest core development; nevertheless, the product itself is astonishingly rich in functions since external geolocation (providing the location of devices and vehicles), maps, navigation, notification and payment services, accessed via APIs, have been smoothly integrated into its development. The environment that favours UBER also laid the foundations for the birth of the FinTech phenomenon.

1.2 Touchscreen technology, card emulation, biometrics, augmented reality

These technologies permit customers (and in the case of electronic signatures, the service provider as well) to be unequivocally authenticated, and to place orders in a quick, convenient and secure manner. The mobile wallet may take the place of traditional payment cards, and even the physical wallet. Wearable devices and biometrics, meanwhile, enable identification and authentication of orders even in situations where other devices are not available. Augmented reality offers the physical experience of purchasing without the consumer needing to rise from their armchair.

1.3 Blockchain technology

Blockchain technology arranges transactions in blocks, authenticates these blocks, links the blocks into block chains, and ensures publication of records and their preservation in a replicated, shared ledger, which allows easily manageable databases and transaction systems to be created, replacing costly and complex infrastructure and intermediaries. Cryptocurrencies have demonstrated the suitability of the technology within their own sphere of application. Traditional payment service providers have nothing to do with cryptocurrencies, since cryptocurrencies – like electronic versions of the cowry shells of old – can be transferred directly between owners. Blockchain technology has nevertheless aroused the interest of financial service providers, since it may prove suitable for partially or wholly replacing interbank infrastructures. To put it another way, simple schemes may take the place of infrastructures that can currently be operated only at significant cost. In the case of cryptocurrencies, the authenticity of records is verified not by an entity (operator), but by specified participants in the network, and once they validate a transaction, it becomes common knowledge and cannot be altered. The bitcoin scheme has no specified owner or administrator. Other blockchain applications may demand the designation of a scheme owner enjoying general public confidence.

Intensive efforts are already under way with a view to successfully applying this revolutionary technology beyond cryptocurrencies, although many remain sceptical regarding the scalability of transaction records based on blockchains.

1.4 Artificial intelligence

Artificial intelligence, particularly using quantum computers that overcome the physical limitations of today's computers, promises to replace telephone customer services with messaging robots (chatbots) and even talking computers.[2] The machines behind the chatbots familiar today exchange brief messages in the same way two human beings "chat" with each other.

1.5 The Internet of Things, data mining and data analysis (Big Data)

The Internet of Things (IoT) comprises a network of web-connected sensors, of which there may be several in a household or shop, that help to respond flexibly to our needs, even generating automated transactions. The application of sensors in machine-to-machine (M2M) communication will significantly increase the number of transactions and thus payments, providing valuable data to payment service providers about the consumption habits of their customers.
Data mining and data analysis help banks better understand the needs of their customers, to enable them to present flexible, timely and tailor-made offers.

2 THE DIGITAL TRANSFORMATION OF PAYMENT SERVICES SO FAR, FROM A HISTORICAL PERSPECTIVE

Provision of financial services entails the administration of financial contracts, including the management and processing of data. As accounting factories, banks and financial service providers in general pioneered the practical application of computer technology, so that as early as the 1960s and 1970s, the financial services sector had already begun to employ computer technology at the operational level.

Companies with large, geographically extensive networks were initially able to improve the efficiency of their operations and cash management by centralising their treasury operations. Beginning from the 1970s, enterprise resource planning (ERP) systems started to evolve.

2 From 2016, Bank of America introduced – and has since been continuously developing – its "Erica" digital telephone customer service, or chatbot, and customers are already able to chat with "Erica" on their mobiles. Parallel with this, the bank downsized its human resource-intensive call centre.

The computerisation of payroll accounting had far-reaching consequences, enabling the disbursement of salaries and wages through personal checking accounts or giro accounts. This change relieved employers of the costly administrative burden of cash payments. Retail banking, until then typically confined to the functions of a savings bank (issuing passbooks and savings certificates) and granting simple loans, became a more complex business. Computer technology helped streamline public utility fee collection, enabling fees to be debited directly to employees' checking or giro accounts. Automatic teller machines (ATMs) were designed to allow wage earners quicker and simpler access to their money. This invention necessitated the issuing of magnetic stripe cards to provide access to cash in the form of an ATM card, which could also be used as a cheque guarantee card facilitating identification of the holder when paying by cheque.

The development of the payment function of bank cards began with charge cards for business entertainment and travel expenses, and the clearing and settlement mechanisms that were developed for this purpose were then adopted for consumer credit and debit cards. By the 1980s and 1990s, cash withdrawal cards and cheque guarantee cards had evolved into debit cards tied to payment accounts, thereby also gaining a payment function. The acceptance of payment cards – following the era of voice authorisation, paper-based blacklists and card imprinters used to fill out purchase receipts – then shifted to electronic POS terminals. From the 1990s, payment accounts could be accessed via the internet, initially by means of messages composed, sent and received by client programs, and later via direct internet banking access and smart (chip) cards, which started to supersede magnetic stripe cards.

As payment cards have become smart, the authorisation of transactions between any two points on the planet takes place within seconds. Smart chips provide strong protection against fraud, while NFC wireless technology and mobile wallet applications enable contactless use of cards, as well as the emulation of payment cards on telephones or portable devices such as bracelets or smart watches.

Payment service infrastructures and communications have accelerated, as real-time, transaction-by-transaction processing gradually supersedes previous batch data processing.

Somewhat delayed and spiced with some distinctive local flavour, this schematically outlined evolution has taken place – and is continuing to take place – in Hungary. In this country, wage payments in cash persisted right up until the first half of the 1990s. A standardised interbank clearing and settlement infrastructure has been in place here only since the mid-1990s. Hungary's backwardness in the area of payment services has not been entirely eliminated to this day. Our indicators with respect to both payment account ownership and the use of internet

banking are, for the time being, more modest than the average among EU member states (although no worse than justified by our general level of development).

The tectonic transformations of recent decades were favourable for payment service providers in a number of respects. Consumer banking supplies stable funding for banks and information on consumers' financial behaviour, the latter providing a basis for credit scoring and the anticipation of payment difficulties. The handling of payments and the management of payment accounts have become significant and stable sources of revenue for payment service providers.

3 PRINCIPAL REGULATORY INITIATIVES INFLUENCING THE FURTHER DEVELOPMENT OF PAYMENT SERVICES

3.1 The second Payment Services Directive (PSD2)

Directive 2007/64/EC on payment services (PSD1) targeted integration in the field of payment services in Europe. The second Directive (EU) 2015/2366 (PSD2), besides further strengthening consumer protection rules and expanding the range of transactions falling within its scope, tightens regulations on the authentication of customers and payment orders within the context of digitisation.

Under the main regulation, authentication must be based on at least two of the following three elements:

– knowledge (something only the user of the service knows);

– possession (something only the user possesses); and

– inherence (something that is a personal or biological characteristic of the user).

Full application of the regulation would present a stiff challenge to service providers, as stringent security requirements may conflict with the desire not to inconvenience customers. The Regulatory Technical Standards (RTS) created under the mandate of the directive determine in detail the exemptions from the main regulation.

The directive – also taking into account the emergence of the FinTech business – obliges account-servicing payment service providers to provide access to the payment accounts they service for the following:

a) issuers of payment instruments (transaction authorisation without blocking);

b) payment initiation service providers (payment order inputs);

c) account information service providers (account and payment data).

Besides payment institutions holding a special licence and specialising in this area under the directive, the latter two roles may be filled by account-servicing payment service providers. Detailed rules for access to payment accounts by payment initiation and account information service providers are likewise contained in the above-mentioned RTS.

The RTS for strong customer authentication and common and secure open standards of communication will be applicable after an 18-month preparatory period from September 2019.

3.2 The strategy for development of financial literacy

In December 2017, the Hungarian government adopted its comprehensive, seven-year national strategy for improving the financial literacy of consumers. The strategy establishes a common framework for running the financial literacy projects of various public sector stakeholders, such as the National Bank of Hungary (MNB), Ministry for National Economy (NGM), State Audit Office (ÁSZ), and Ministry of Human Capacities (Emmi), while maintaining their integrity. The approach enables the national project to identify areas which – in the absence of a comprehensive strategy – previously constituted blind spots, and to divert funds and capacities to filling these gaps in knowledge.

The development of consumers' capacity for self-protection complements consumer protection efforts, since material prosperity in large part depends on whether consumers make well-founded or unrealistic financial decisions appropriate to their life situation. The strategy places great emphasis on education within the school system, but adults, the elderly and disadvantaged also each receive special attention. The acquisition of digital skills, proficiency in digital financial services, and understanding of the risks in cyberspace are all important considerations in the implementation of the strategy.

The strategy covers a wider scope than its title suggests, and is in reality four strategies in one, extending beyond the promotion of financial literacy to embrace:

a) a plan for the further development of (prior) financial advisory services, since it is prudent, before undertaking a long-term financial obligation, to take advantage of independent financial advice;

b) the fight against cash (including, for example, the NGM's POS terminal installation programme); and

c) a project to promote financial inclusion of groups of the population who at present primarily or exclusively use cash, enabling them to take advantage of financial services.

These projects complement each other, since better financial capability facilitates financial inclusion, while the availability and familiarity of payment services promotes the reduced use of cash. In developing countries, the key focus is on financial inclusion or the fight against cash, with the promotion of financial literacy complementing the core programme. In Hungary, in keeping with the practice in developed countries, the focus is on the improvement of financial literacy.

News reports suggest that the action plan of the strategy is due to land on the government's desk in March 2018.

3.3 The introduction of instant payments

The instant payments service for domestic forint payments is an initiative of the MNB (the central bank) and is being implemented under its direction. The planned launch date of the service is 1 July 2019. Instant payment means much more than merely accelerated transaction execution or availability beyond bank opening hours. On the one hand, execution will be very rapid and final, with the beneficiary receiving the money within a few seconds. On the other hand, auxiliary services (e.g. payment requests, proxy account identifiers) will ease payment initiation. Instant interbank settlement allows for this channel to be used not only for transfers of small amounts, but also for relatively larger transfers. In Hungary, for example, it will actually be obligatory to execute non-batched transfer orders under HUF 10 million in value through this scheme.

The beneficiary of an instant transfer will not need to make a note of the IBAN number of their account, as they may link their own telephone number or e-mail address to the account, so that money may be remitted to the payment account based on proxies (telephone number, e-mail address) usually found on any business card, as *proxy account identifiers*. The payer need not even take the trouble to fill in the amount or accompanying information since the beneficiary may make these data available in a message, or in optically readable form.

These changes may render physical wallets redundant, as payments may be made by credit transfer from a mobile wallet to another person or contractor (even to a repairman or street vendor), while payment may also be initiated through a POS terminal. While the starting point is payment between individuals, eventually the solution would become applicable in any domestic forint payment situation.

The service may create a new digital ecosystem. The more convenient, simple and rapid the solutions that are developed and tailored to consumer habits, the greater the degree to which instant payment may promote the diminishing use of cash.

More and more banks in Hungary are making the instant payment service available in euros as well.

4 THE FINTECH PHENOMENON

Digitisation has reduced the physical and financial limits of market entry, while at the same time increasing the expectations of consumers. The viability of new business models, the facilitation of online and mobile access to financial services, and the availability of venture capital financing, have all awakened the entrepreneurial spirit in the field of financial services. FinTech has also contributed to the creation of *new business models,* for example crowdfunding. In the area of payment services, virtual currencies change hands during the payment process without the need for a system of financial intermediaries.

An example of *digitisation of the traditional payment business model* is provided by the TransferWise international money transfer service. Based on the convenient, but comparatively costly method of sending money via cash transfer, TransferWise has essentially adopted the internal settlement operating model of money transfer service providers, but employs electronic payment instead of cash payments, thus enabling a potentially significant price advantage.

The majority of FinTech ventures operating in the area of payment services are concerned with *access to payment accounts or services facilitating card payment*. Few FinTech companies can expect rapid success in enticing customers away from traditional payment service providers, since developing the full range of services of such providers or acquiring a new customer base is a slow and costly process; for this reason, they choose instead to specialise, thereby gaining themselves the opportunity to cherry-pick the activities they favour the most.

For their part, traditional payment service providers are not letting the appearance of FinTech enterprises go by without a response, on the one hand experimenting with innovative developments of their own, and on the other hand acquiring promising FinTech ventures or supporting their growth as investors or partners. FinTech incubators, meanwhile, enable traditional service providers to identify marketable innovations at the initial phase.

The FinTech revolution has raised the level of customer expectations, with consumers expecting payment service providers to offer them the experience familiar from online stores.

For independent FinTech enterprises, payment services represent a regulated area as the PSD2 enters into effect. The introduction of instant payments opens up wide-reaching market opportunities for domestic FinTech ventures.

5 THREE CONDITIONS FOR THE SUCCESS OF DIGITISATION

We expect digitisation to enhance reliability, security and accessibility of services. The primary goal, therefore, is to maintain the uninterrupted provision of services. Furthermore, it is important for digital solutions to satisfy the real needs of customers, and for payment services to genuinely enhance the prosperity of citizens and help businesses strengthen their competitiveness. Finally, via targeted public policy measures and self-regulation, a healthy regulatory and market environment must be created, in order to allow for best-of-class services to emerge amid strong market competition.

5.1 Confidence, security, uninterrupted service

Digitisation is boosting the number of connections between digital devices and the customer interfaces of payment service providers by orders of magnitude. The emergence of third-party payment service providers adds further to the complexity of these connections. The elimination of paper-based solutions, combined with conspicuous growth in turnover and the mass of data being managed, make expectations with respect to the uninterrupted, secure execution of electronic payments a fundamental requirement, alongside full enforcement of data protection criteria. The loss of public confidence in digital payment solutions would arrest, or even reverse, the further digitisation of payment services.

Every stakeholder has tasks in the interests of maintaining security. It is highly recommended that payment service providers study and incorporate into their own practice[3] the guidelines on the security of internet payments of the European Banking Authority, as well as the recommendations of the European Central Bank relating to mobile payments and access to payment accounts.

Cybersecurity is also served by application of the MNB's recommendation 7/2017 (VII. 5) on the defence of IT systems, as well as by fulfilment of the requirements prescribed for service providers operating critical elements of the infrastructure.

5.2 Recognition of customer expectations

This chapter constitutes only a list of examples, containing observations in the specialist reference sources, rather than the results of any systematic survey.

3 KOVÁCS, L. – DÁVID, S. (2016): Fraud Risk in Electronic Payment Transactions. *Journal of Money Laundering Control*, Vol. 19, No. 2, 2016, pp. 148–157

5.2.1 Consumers

The main impetus behind digitisation is to satisfy heightened consumer expectations. Consumers demand a fundamentally secure, rapid, convenient and transparently priced service. Simplicity in the execution of transactions is an essential expectation.

In unexpected situations, consumers want assistance and intelligible, rapid answers.

To ensure transparency of their personal finances, consumers expect intelligible, detailed follow-up information on their account balance and transactions. They also want to be able to search their account history quickly and for a longer period into the past. Besides a summary of transactions by legal title, they also want to be able to look up individual entries in detail. Full transparency of payments cannot be attained without structured, meaningful transaction information. If contained within the transaction information, the account history can preserve in electronic form copies of merchant invoices related to transactions, and other documents such as warranties, technical specifications, instruction manuals, or contact details of vendors or service providers.

Consumers who are happy to have their payment cards virtualised to their mobiles will be at least as happy to have their customer loyalty cards and accounts virtualised.

5.2.2 Retailers

Retail sales cover a broad spectrum from hypermarkets through online stores to small shops, but retail service microenterprises also belong in this category. These businesses expect customer payments to be effected quickly, that payment is preferably irrevocable, and that the value of the purchase is credited to their payment account as soon as possible. The retailer is also not indifferent to the existence and rate of merchant fees, the cost of the infrastructure for accepting means of payment, and the burden of its operation.

Retailers, and particularly online stores, have an interest in easing checkout and eliminating the hassle of payment authorisation. A conspicuous payment phase offers consumers an opportunity for deliberation, making them more liable to abandon their purchase than those who have consented to the debiting of their account in advance.

5.2.3 Public utility service providers

Public utilities expect due bills to be paid according to a regular schedule with the lowest possible transaction costs. Indication of late payment by the consumer in advance (particularly if default interest is charged) is more favourable than an aborted

payment transaction. For public utility service providers, invoice matching is of overriding importance, and consequently they generally insist on initiating the payment process themselves, and that they receive payment data as a supplement to each money transfer in the original form suitable for automated matching.

5.2.4 Businesses

Businesses want to connect electronic banking services directly to their ERP and other systems, but favour standard solutions over bank-specific connections. They want open, standardised APIs to be offered. As participants in the financial supply chain (on the documentation and payment side of the physical supply chain), they want to enjoy the benefits of end-to-end automation of payment initiation and subsequent transaction notification, in close coordination with the management of their other financial documents, such as invoices. By conducting matching in close to real time, they aim to maintain up-to-date records, promoting both an enhanced standard of service for their customers and better financial management.

Besides instant matching, businesses expect streamlined exception processing (such as returns, recalls, refunds, etc.) in a predictable, preferably automated fashion. Resources and time devoted to business administration can best be redeployed to the company's regular and marketing activities.

Small and medium-sized enterprises greatly benefit if ERP suppliers incorporate functions that enable automatic processing of payments into their basic products.

5.2. 5 Payment service providers offering account information services

Payment service providers that offer account information services (which may also be account-servicing payment service providers) can also be regarded as customers, in the sense that it is in their interests to have access to the broadest possible range of key information through open API connections with banks, since the quality of consolidated information depends on the quantity and quality of raw data. These service providers are essentially able to operate in symbiosis with account-servicing banks. It is important for them to be able to connect with account-servicing payment service providers under uniform conditions, avoiding the necessity of involving specialised API intermediaries.

5.3 Regulatory and market environment

It is the task of players on the competitive market to develop efficient payment services able to respond to the expectations of customers. The dynamics and quality of services offered on the market are determined not only by effective demand

and the system of financial intermediaries, but also by other structural conditions, elements of which include a solid legal background; flexible financial infrastructures; well-functioning, extensive communication infrastructure; quality of financial standards; and quality – and practical enforcement – of bilateral and multilateral agreements between payment service providers regarding the execution of payment transactions.

Among numerous positive developments, it can be mentioned that:

– legislators have adopted the PSD2 directive fully and by deadline;
– implementation of the instant payment service is proceeding according to the plans of the National Bank of Hungary;
– a strategy for the promotion of financial literacy has been adopted, implementation of which will contribute to breaking down barriers to the growth of cashless payment services and reducing cash in circulation; and
– international card companies are bringing numerous cutting-edge solutions to Hungary.

Not every piece of the big jigsaw puzzle is in place either on the international level or in Hungary. Although it is difficult to draw up an exhaustive list of the missing pieces, several factors can be identified by taking into account international blueprints, namely:

– The Single Euro Payments Area (SEPA) project standardising payment instruments and schemes, regulating customer-to-customer payment procedures. Some non-eurozone, EEA countries have adjusted their domestic payment schemes to the SEPA benchmark.
– Participation in international financial standardisation, helping to avoid derogations in the subsequent application of standards.
– Domestic standardisation activity complementing international standardisation, and facilitating implementation of international standards.
– Establishment of practical cooperation spanning sectors, expedient for the automation of the financial supply chain.

6 CONCLUSION

Digitisation provides an excellent opportunity to upgrade payment services to a higher level. The wave of digitisation carries with it the potential to reduce the use of cash, make cashless payments ubiquitous, promote financial inclusion, make personal financial management as well as corporate cash management more convenient and transparent, and ease the administrative burden on enterprises.

Cashless payments are generally executed in a chain of financial messages, often through a series of intermediary payment service providers and infrastructures. For this reason, deepening of cooperation within the financial sector, as well as between the financial and other branches of the economy, carries special significance, from issues of security to open access, and from the meticulous definition of business and operational rules to the semantic enrichment of payment messages.

REFERENCES

Capgemini – BNP Paribas (2017): World Payment Report 2017.

González-Páramo, J. M. (2017): Digitalisation and Banking Sector – Seminar „Tomorrow's Banking and How Central Banks Have Developed in last 15 Years" (transcription of speech). Helsinki, 2017. 01. 16.

European Banking Federation (2017): Driving the digital transformation – The EBF blueprint for digital banking and policy change (http://www.ebfdigitalbanking.eu/images/EBF_Digital-Report.pdf).

GPFI (2014): The Opportunities of Digitizing Payments. A report by the World Bank Development Research Group, the Better Than Cash Alliance and the Bill & Melinda Gates Foundation to the G20 Global Partnership for Financial Inclusion.

Kemppainen, K. (2017): Payments becoming increasingly real time and less visible. Bank of Finland, Bulletin 2/2017.

Kovács, L. – Dávid, S. (2016): Fraud risk in electronic payment transactions. *Journal of Money Laundering Control*, Vol. 19, No. 2, pp. 148–157.

Lipis Advisors (2014): The Future of Corporate Payments – Payments Innovation Alliance. White Paper (http://www.wipro.com/documents/the-future-of-corporate-payments.pdf).

McKinsey on Payments (2013): Forging a path to payments digitization. No. 16, March.

Santamaría, J. (2018): Do androids dream of electric sheep and e-payments? (előadás). #TIPSapp event, Frankfurt, 2018. 02. 06.

Strategy for Development of Financial Literacy [Pénzügyi tudatosság fejlesztésének stratégiája] (2017): http://www.kormany.hu/download/8/c5/51000/Pénzügyi%20tudatosság%20stratégia.pdf.

World Economic Forum (2017): Beyond fintech: A Pragmatic Assessment Of Disruptive Potential in Financial Services. Part of the Future of Financial Services series, prepared in collaboration with Deloitte, August (http://www3.weforum.org/docs/Beyond_Fintech_-_A_Pragmatic_Assessment_of_Disruptive_Potential_in_Financial_Services.pdf).