

DIGITAL REVOLUTION IN THE BANKING SECTOR

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ABSTRACT

The oldest bank still operating today, the Monte dei Paschi di Siena, started its operation with a simple business model 550 years ago: collection of deposits, providing loans, keeping a single central book, that is, the ledger, all of which was established in a building surrounded by strong walls. The basic model had hardly changed for centuries. Then, within the last thirty years, the wave of computerization and the information technology boom added to its complexity a dozen of channels and thousands of products. Finally, in the digital revolution of the last five years, each tessera of banking may be further coloured. Of course, the question is, which piece needs to be coloured first and which should be left for later. Certain tesserae are claimed by new market entrants, moreover, blockchain endeavours to replace the most traditional element of banking, namely, the reliable keeping of the ledger.

Ultimately, the success of a bank's operation may be measured by the satisfaction of three stakeholder groups.

- The clients provide feedback through their loyalty to the bank, by taking more or fewer services.
- The employees of the bank, value, besides their salaries, their workplace environment and the possibility for personal development.
- While the owners, regard sustainable profitability and the increase in the value of their shares.

By now, it has become critical for all three stakeholder groups, how the given financial institution reacts to the challenges posed by digitalization. Soon, the differences can be measured. For example, it is an important observation that while in 2010, the difference between the capital market evaluations of banks was determined mainly by the geographical composition of their portfolio, in 2017, two thirds of the variance in P/BV ratios was accounted for by the business models used on the given markets, the management approach and by digital competencies (McKinsey Panorama, 2017). Nowadays, the market growth potential of banks is less decisive, and what weighs more is how successfully a bank operates on its own market. And the spread is not small. Last year, the valuation of the top ten decile of European banks was eight times higher than that of the worst tenth. An increasing part of the difference is attributed to the digital strategy of banks.

This article gives an overview of the actual situation of the banking sector's digitalization. First, I will review the most relevant influences from the outside world, then show the four significant paths of digitalization today. The introduction of the situation is illustrated by foreign and Hungarian examples. At the end of each section, I will summarize what may be expected in the Hungarian banking sector in the upcoming couple of years.

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1 IMPULSES FROM THE WORLD SURROUNDING BANKS

From a technological point of view, banking is by far not the fastest developing sector. There are three main reasons for this:

- In respect of producing income, the most important clients are of the higher middle-aged group (50-60 yrs.), who have savings, transact a lot related to their daily life and have mortgage loans as well. However, they are typically not the most receptive age group to technological novelties, in comparison, for example, with people aged between 20 and 30 in the fields of telecommunication or media consumption. Therefore, banks can "afford" to show a behaviour following other industries and to apply only those innovations that have already proved to pay off in other sectors.
- Furthermore, the solutions in the banking sector are typically not protected as patents, thus, they are easy to copy. Therefore, the market player investing in technological innovation does not have any protected time allowance to collect the return of its investment. Consequently, they also do not innovate so boldly.
- Another very important expectation is the secure operation of the bank's information systems, which is again an argument supporting thoughtful progress.

As a result of the more cautious development, data transmission through the Internet and the technological progress of mobile phones have both knocked on the door of banks with a few years delay. From the knocking soon became banging and at least five great changes can be heard through the noise.

1.1 One mobile to rule them all

The increase of data transmission and computing speed, the sudden expansion of the backup storage capacity appeared most typically through the development of the mobile equipment in everyday life. Compared to the Nokia of the 1990's, a Samsung S8 has 1,000 times higher resolution and 2 million times greater memory, while the weight of the device is unchanged.

This telephone has turned out good enough that people use it not only for telephone calls. People have really become attached to the mobile device, as a digital Swiss Army knife. In general, it is within 1-meter distance from the users, they check it 100 times daily, it provides a photo-quality picture, and fourth of the users even takes the device in the bathroom. (*Benyó, 2017*). Users recognize within minutes if the mobile is not with them, faster than the lack of the wallet left at home.

By the attachment of the users and the versatility of devices, the 5 billion mobile phones, especially the 2.8 billion smartphones (GSMA, 2018) have become the competitors of wallets and bank cards.

In telecommunication, apart from the next leaps of data transmission speed (4G, 5G), the next big thing on user side will be the Internet of Things (tools connected to the network, collecting and transferring information). The size of the range of tools, including fitness classes, vehicle fleet tracking and industrial sensor devices, already exceeds 7 billion. Presumably, the data and measurements of more devices will induce financial transactions, therefore they will become bank "clients".

1.2 Z, hardly an ant

Mobile telephony and continuously being connected to the network are decisive factors affecting also the personality traits of certain social age groups. While the baby boomers (born 1946 to 1964) and the X-generation (1965–80) who are the most important group from a business point of view for banks in the moment, are only conservative participants of information development, for generation Y (1980–95) it is just as natural as Internet is, and generation Z (1995–2010) could not even live without online connection.

On average, it is more and more difficult to keep up the attention of younger generations for a longer period of time. They are less patient, better informed, they want relevant information, and they aim at fast decisions and choices. By the change in the attitude of younger generations, their customer expectations are also transformed, to which their financial service providers need to adapt.

1.3 Natural born digitals

Network effect is one of the significant phenomena of the online world. More users attract even more users, but the crowd will not be uncomfortable like at the local grocer. The more people shop on Amazon, the more sellers will register on the platform, which again attracts more customers. The result is that 40% of online retail trade in America is carried on the Amazon platform and in some countries 90% of web searches is processed by Google (*Economist*, 2018).

Digital native companies are not related to a certain industry. The seed of their knowledge is in creating customer-friendly service interfaces and in the systematic use of the data collected during the transactions. Whether they started off as messaging, social media or retail trade businesses, now they are experimenting on which industry's products they could effectively sell to their several millions of loyal customers. The product may be travel services, media content, household electronics or fashion clothing. They offer a wide range of goods on a uniform, customer-friendly platform attracting great masses, taking the distribution out of the hands of the producers. Somewhat similarly to the headway of the supermarkets against the specialized shops, platform companies pull down the boundaries between industries at rapid speed (*Alturi et al.*, 2017).

The separation of distribution and production poses also potential threat to banks. Especially, because it is difficult to predict in advance what profit content share the two activities have. There are examples for the prospective proportions in their commission share with financial mediators and agents, based on which, distribution may reach even a 25-50% share from the total profit of the product.

1.4 The beauty and the beast

In the headway of digital native companies, their customer focus plays a great role. Amazon implemented its "1-Click" shopping nearly twenty years ago, in 1999. Even if a few data need to be submitted as a preparation, the process is short, easy to follow, the questions are easy to interpret and the customer always knows what to expect.

By now, simple customer journey (the product purchasing process, during which the client gets and gives information and is exposed to various mood, satisfaction and emotional impacts about the product and brand) has become a basic expectation by users. This is a great challenge to the banking sector, where it is not rare to have even 30-50 pages long application forms. Although, it is true that the legal requirements represent strict constraints regarding the number of pages and the complexity of processes. However, the plainness of the questions, the size of input fields and the navigation are fully dependent on the bank.

1.5 The rebellion of startups

Over the past years, computing capacity, hosting, and technology in general have become significantly cheaper. By this in itself, the market entry barrier to the banking market has been reduced. Furthermore, the possibilities provided by the new technologies induced ideas by the thousands on how to reform certain areas of banking. Lots of former bankers, experts in certain areas, felt that by starting their own business, they can exploit their ideas with greater success. Their enterprise met with a relative abundance of venture capital, and within a few years, more than ten thousand startups set to work on the reformation of banking, or of at least a certain field of it.

In the first years of the decade, most of them still aimed at building great own clientele. This, however, could be achieved only by the most inventive and relevant fintech startups. The majority today already focus on perfecting the advantage of their own service idea, while they plan the introduction to the market in cooperation with market participants that have already established clientele.

2 THE MAIN PATHWAYS OF DIGITALIZATION IN THE BANKING SECTOR

When a business starts a comprehensive program, it is advisable to define its focus and extent. This may help in defining what tasks the project's participants should undertake and what not, and it is also indispensable measuring the achievement of the project's goals later.

This also applies to digital transformation. The situation is made more difficult by the fact that the expression "digital" may be interpreted in several ways. For example, the definition by Wikipedia is more natural-scientific: "Digital: a discrete (non-continuous), countably fragmented, and thus numerically-definable and recordable set of values (such as a signal (computer science), computer, broadband Internet connections, digital cameras, digital voice recording, etc.) of a variable phenomenon or physical quantity".

From the viewpoint of enterprises, digital transformation means the transformation of the business model with respect to four main elements:

- the new operational approach has to be customer-oriented, and needs to provide an outstanding user experience;
- processes need to be centrally controllable and fast amendable;
- consumer journeys have to work automatized and paperless; and
- recommendations and answers to clients must be based on the evaluation of the available data.

For the digital native participants of the banking sector, these aims are natural, and they provide the main possibility to gain competitive advantage over incumbents. While, traditional banks must consider in what way and at what pace they will change their current operation.

In this respect, two bigger trends can be seen: those preparing one great leap, and the ones transforming by modules. A classic example of the former is Nordea Bank, where they held back the development of the existing information technology system and started the development of a new platform that took years and a billion dollars, in order that the new environment becomes simple, flexible and open, creating the iOS of banking.

The more common choice, which holds definitely smaller risk in the short run, is modular refreshing of existing processes and systems. On this track, the order of developments is determined by the receptivity of the clients and the threats posed by the new market entrants. The threat is materialized in an attack on the client relationship and in the income being at risk.

2.1 Payment and transfer applications

Payments and wire transfers are not the most profitable services of banks, but they provide an excellent stage to acquire clients. The amount originating from these services is in the order of 10-15 % of the banks' income (*McKinsey, 2017*). At the same time, it generates several daily client interactions, thus, it is the most frequent connection point in the bank-client relationship. That is why it is important what kind of client experience each transaction ends with.

While a few years ago clients were happy if they did not have to manage cash, or if a wire transfer arrived in a few days, today the best practices have a service level including transaction launches in a few seconds and real time settlements. Two extremes live along each other well, illustrating the time-consuming nature of the change in customer habits. Still, millions use the checks to be filled with ink, see for example, the use of the yellow checks in Hungary still exceeding 200 million pieces per year today. However, even waiters are not surprised if someone pays with a mobile phone. Between these two extremes, several thousands of fintechs experiment with lots of solutions. Among fintech startups, consumer payment solutions are the most popular market segment based on the number of new companies.

Mobile payment solutions may be divided into two groups. The first is the remote Internet payments of purchases, where simplicity is the key. The 20-28-character long account number, the IBAN code or the 16-digit card number compete with a personal identification number, email address or telephone number. The other

usage is the proximity payment with the aid of a mobile-wallet application and NFC technology.

The spreading speed of mobile payments varies greatly by market. Where bank cards are widely used, a slower rise is measured than it was expected earlier. The reason is, that it is not obvious, which one is more comfortable: digging out a nowadays 15 cm long, 20-decagram smartphone from the pocket or bag, or pulling out a 9 cm, 5-gram bank card from the shirt pocket.

Apart from the convenience, the other hindering factor of mobile payments' spreading is the more time-consuming nature of building customer trust. Many are afraid of cybercrime and the unauthorised use of their data. Several market researches show that for the customers, the most important aspect of a payment transaction is the safety of their bank account data and personal data. Speed and convenience are only secondary (Eölyüs, 2017).

By the end of 2016, in the USA, 17% of the 230 million smartphone users paid with their mobile in shops (Misasi, 2017). 'On the spot' mobile payment is available in Hungary since the middle of 2017, and tens of thousands have already used it.

Others, still experiment with card-focused service solutions. (N26, Curve, Touch Bank). Although, all of them provide also a mobile app next to the card, with which the basic functions, such as cancelling the card, turning on and off Internet payment, setting the conditions of loyalty programs, can be simply managed. Their services usually have a few very distinct elements, for example, account opening in a few minutes, merging several bank cards into one or free international cash withdrawal.

Further two important areas of the payment traffic innovations are international payments, and the account management of small businesses. In the former field, Transferwise could achieve economies of scale, with its clientele of over 1 million, by international payments made typically within the day instead of a few days and with its low and transparent fees. In this latter field, many, for example OTP eBiz Kft., are experimenting with the automation of administration tasks of small businesses. The essence of their value offered is that they assist the financial manager's work with many tools, e.g. it is enough to handle an incoming invoice only once, afterwards, the certification of completion, accounting and transfer are managed with a few clicks.

Other than for keeping their client relations, payment services are important for banks, because payment data can be particularly well used for estimating the next needs of clients, for making more relevant offers and, if necessary, for evaluating credit risk.

By the implementation of the PSD2 (Revised Payment Service Directive), part of the transaction data assets of banks will be made available to third parties. Digi-

tal platform companies and fintech businesses are typically ahead of traditional banks with the utilization of data assets. The former ones have several years of experience of how to build their own data basis from the choices made by the users on their platforms, what modelling to use when analysing such data, and how to re-channel those analysis results into sales.

In Hungary, hundreds of thousands will try mobile payment in the next years, and nearly all bigger banks will offer a solution for this. While online payment solutions with simple identification will have a good chance for breakthrough against bank cards, in shops, mobile phones will be slow to supplant bank cards. The new market entrants appearing with the implementation of the PSD2 will not have an easy task in introducing such new services to the market that engage and entice clients. The greatest threat to Hungarian banks would be, if international platform companies extended their presence on the Hungarian market.

2.2 Digital client journeys from the beginning till the end

Re-planning of digital client journeys is the area, by which sales efficiency, cost savings and customer satisfaction can all be influenced at the same time. 98% of the inquirers may be lost due to a difficult onboarding process, while a well-planned process can improve the number of contracting clients to a great extent. The projects that are started to digitalize banking processes have to aim not only at channelling of already existing paper or partially paper-based processes to mobile phones but have to seize the opportunity to re-plan the processes. The development of technology and the increase in the digital affinity of clients, surely makes the automatization of new elements possible, which dispenses with certain costs of wages, paper and logistics. They can not only reduce costs, but soon they can also improve the time of availability and the quality of responses with communication and chat surfaces operated with artificial intelligence. Finally, a fast process helping the client to recognize difficult issues can improve the client's trust in the bank.

A lot of thought is given to in which product range the digital channel should be brought to the forefront. The fast display of financial balance, of account activity, the one-click possibility to view the transaction details or repeat a transaction or to make simple investment decisions are surely some of those. The earlier tiresome account opening can be shortened through digital client paths in an exemplary way. This means a reduction from 45 minutes to 8-10 minutes in occupying the client's time. For the retail platform service providers, consumer credits would be an obvious area, therefore, it is worthwhile also for traditional banks to prepare for it. On the other hand, there are those more complex products, where it is not reasonable for the client to consider the elements of complexity alone. Such

are the first mortgage, merging of loans, long-term savings planning, life insurances, probate issues and complaints.

A few basic principles of planning digital customer journeys have evolved, which, if kept, better ensure the welcome of clients:

- to burden clients with the least possible data requests;
- simple and comprehensible design, the least possible clicks;
- easy to follow process; the client should always know what the remaining steps are and how much time that takes;
- full transparency of product terms and conditions;
- avoiding special jargon; usage of wording that is understandable without pre-cognition;
- helping comprehension with visual graphic illustrations;
- priority of security and data protection.

A greater and greater portion of clients, and not only those below 30, use the Internet and inform themselves about banking issues over the Web. Still, only a relatively small portion of the clients actually finishes the product application through digital channels today. For example, in the Hungarian personal loan segment, the market share of loans starting with an online lead is around 20%, while the proportion of loan grants which have been carried out fully digitally is around 5%. A change of this proportion is expected. More and more people will perform not only the product selection, but also the full purchase process, through digital means.

Nevertheless, for decades, there still will be people, who will want to go to a branch for the signing of a contract or for financial performance. To them, the feeling of security provided by the branch and the personal contact are important. For the high-standard service of such clients, it is recommended that the new client journeys are planned in an omnichannel way, meaning, that the digital process should be nearly identical with the process in the branch, and that the data available digitally should be also available in the branch as well. By this, it can be achieved that the application started digitally at home, may be finished in the branch without recording the data two times.

Most Hungarian banks have already recognized that they have to improve their customer journeys in order to serve their clients through digital channels. For example, the appearance of online personal loan offers and account opening offers through video, is apparent. Presumably, this trend will continue, with the appearance of more renewed digital processes, especially in the area of account opening and consumer credits. The development of mobile banks, with simpler access identification and easier transactions, will receive even more emphasis.

2.3 Digitalization through all channels

The use of various channels by clients necessitates that banks consciously create the division of work among the branches, agents, online banking, mobile banking and other channels. It may seem surprising at first, but within the transactions made at European Banks in 2016 not only the proportion of branch and ATM transactions, but the proportion of online banking channels also decreased. However, the proportion of mobile transactions increased from zero to 25 % within three years (Finalta, 2017). On the other hand, 74% of consumer product sales still happens in branches, while 14% takes place online and 5% through telephone. So far, mobiles represent hardly 2%.

In short, branches will still be around for long, but it is not at all irrelevant, how they will be. Two groups of the digital tools will also be present in the branches.

More and more banks decide to create self-service areas within the branches. They place cash withdrawal and deposit ATMs, as well as customer terminals there. During opening hours, bank tellers help and educate the clients regarding the use of the machines. There have been attempts also to have a bank teller in this area to show the clients the usage of the bank's digital solutions on the clients' own devices carried with them.

In the other part of the branch, assistance with the more complex financial products takes place. The new digital tools can make providing information to clients and fast data input easier. Much more comprehensible explanation may be given about planning a savings strategy for 20-30 years or about choosing a mortgage loan, if visual tools are available to aid the understanding of the client. In bigger branches, nearly all banking affairs may be completed or at least the process may be started. The price for this, is that these branches work with thousands of pages of administrative bylaws and several hundreds of document types to be signed by the clients. Digitalization of the documents to be signed and the electronic recording of signatures reduces paper usage and simplifies their retrieve.

With the growing popularity of video chat services, a more and more common alternative is the video account, where the client communicates with the administrator in the call centre through a video channel. This solution, which is popular in Scandinavia, is able to maintain the personal nature of administration while sparing the costs of travelling to the branch for the client.

Online banks, similarly to branches, have various functions. For a long time, the main metric of the capabilities of an online bank was how many functions it had. The best ones could implement 150-200 functions into the web bank. However, the vast majority of clients uses hardly half a dozen functions. Therefore, by now, the real virtue is creating menu structures that are easy and transparent, and the

realization of personalized, self-learning interfaces. The creation of digital customer journeys can be fully completed through this channel.

Mobile banks should remain simple and easy to use. One of the big challenges of the next era will be to stay moderate in face of the unlimited amount of function-ideas. Safety is also very important, but simple access needs to be ensured. There is a banking example for how the replacement by fingerprint identification of the six-digit identification code, ending up as a puzzle, multiplied the number of mobile bank entrants within weeks. The possibility to conveniently change the password is also important, while the free adjustment of transaction limits allows the determination of individualized security levels.

There is an increasing number of international examples for the successful reduction of branch numbers without substantial client loss. Often, banks reach 20-50% reduction in the number of branches. At these examples it is worth considering the penetration level of branches at the beginning and at the end: often the latter is also quite high. It happens even in case of successful examples that the customer satisfaction temporarily drops, since at the start, the capacity and service standard of digital channels are not necessarily ready for the forced shift from branches. Furthermore, a difficulty arises in handling smaller towns, where digital affinity of the clients is generally lower, and who, if left without personal contact, change to another service provider in greater numbers.

In the next years, the relevance of branches will slowly further decrease, but the branch network will still remain an important sales platform for long. Lots of new applications will help the work of branches and agents. Online banks will be more and more customized, supporting thereby easier usage.

2.4 Data analysis

The first databanks of banks are well into their teen years. Most of them are long over their first model buildings, hypothesis and, if they were lucky, they could deliver such pilots in which the client conversion improved by 3 percentage points regarding the product selected, based on the data mining model. The only problem is that additional revenues from the sparse pilots are dwarfed by the total financial results of the bank, but even by those related to greater initiatives.

In order to achieve a substantial financial effect, the activity of data analysis has to be improved. For it to become a real driving force, it needs to be built into the strategy and organizational operation of the bank.

Since banking interactions happen increasingly in digital space, more and more customer interactions have recorded data traces. Decrease in the price and increase of the speed of storage capacities make it possible that the banks store as

much as possible from these digital traces. The development of statistical methods and the lower price of computing capacity show the tendency that it is possible to detect correlations from the data.

Today, data storage, data preparation or the construction of estimation models seem to be solvable. The implementation of the test results in the practical business operation, sales and risk decisions is more difficult. The often somewhat segregated data mining centres can present their results to those making business decisions only superficially, no common reasoning is achieved about enriching the data assets. The expected effect of use cases and usage ideas is often not estimated. Thus, the evaluations do not necessarily connect to the issue of the greatest influence, and the prioritization among the ideas stays incidental. The continuous testing-evaluation-correction cycle would require collaboration between the data miners, the business, IT, risk management and compliance areas, which is also hard to achieve. However, without it, the system where the organization would pilot around hundred hypotheses and afterwards would decide on their expansion or rejection, does not evolve.

Digital native companies typically have more experience about the exploitation of data assets. They channel back the results of their evaluations to the users in real time. In order to stand the competition, most banks will still have to integrate the data analysis functions into their operation.

The fulfilment of data analysis capabilities may be hindered in the banking sector by two factors. The first one is temporary: the next months will pass in the context of compliance with the new regulatory requirements, the GDPR (General Data Protection Regulation). The second one is more lasting: the relatively small size of the Hungarian market makes the return on the investment in data analyses use cases difficult, since a 5 p.p. conversion improvement, here, means rather a few thousand instead of a few million clients.

3. THE LONG TERM ISSUE

As the platform companies endeavour to partake in the marketing of products of several industries, so digitalization opens the way also before banks to enter new fields.

A few years ago, we suggested that we sell books or pizza in an area of an OTP Bank branch that has become vacant. At that time, the banker colleagues fast eliminated the suggestion from the list of relevant ideas. Today, through the 'Simple' application, OTP is selling pizza, books, even cinema and theatre tickets.

It seems likely that within the digital space, users will not use different applica-

tions for each of their needs, but will finish as many tasks as possible in the environment they like. The service provider that supplies the friendliest interface will be able to mostly consider the client as its own.

In the competition to serve people in a wider range, banks start from a favourable position. Their clients typically consider banks as trustworthy and safe partners. Banks also know the preferences of their clients well from their data assets. Moreover, banks are well-capitalized enough to develop their own platforms. Several areas of demand, such as housing issues, administration of daily life or shopping are also close to banking activity. The question remains: which banks will invest in establishing the ecosystem in Hungary within the next years?

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