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Technology challenges in the financial services sector

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Abstract — **Banking continues to go through tremendous changes influenced by the aftermath of the economic crisis, the development of new regulations, the challenges and opportunities resulting from advances in technology and changing customer behaviour. Customers demand complex solutions through more understandable and secure products and services that match their individual needs. Their profitability is decreasing as they distribute their assets across multiple banks and even punish financial institutions through their lethargic passivity.**

This article reviews the current technological challenges to financial institutions in the financial services sector. The purposes of this article are twofold. The first purpose is to provide a theoretical discussion of the most influencing changes; the second is to review the main practical impacts on banks and their customers. The article highlights a number of important areas that should be kept in mind to achieve effective and efficient organisation for facing these challenges.

***Keywords*— banking, financial services, financial regulation, management, technical advances**

I. Introduction

A well-organized and efficient financial system is the central nervous system of every market economy. It is particularly important in reallocating capital for providing the basis for the continuous restructuring of the economy that is needed to support growth. The financial system has two main components: financial markets (money markets, bond markets and equity markets) in which claims are exchanged and financial intermediaries (such as banks) that are an indirect linkage between savers and borrowers. They act as principals in assuming liabilities and acquiring claims.

Looking closer at financial intermediaries and particularly at the banking sector it can be said that banks play important and critical roles in every financial system and in every economy. Different authors [1,2] have identified the roles of banks primarily related to liquidity transformation, information production, delegated monitoring and risk sharing. One of the most important tools for fulfilling these roles is the technological platform.

II. Technology challenges in the financial services sector

Although banks have always invested in expanding and improving their IT systems, the technological innovation in the banking sector reflects the internal structure of banks as being determined by a combination of changes in banks' external environments and advances in information technology.

Looking at the development of society, it is possible to identify a number of factors affecting the development of technology. The first factor is efficiency expectations (low operational costs, price competition) as the result of tight competition. The second factor relates to retail banks' traditional use of branches, ATMs, call centres, and the internet bank to interact with customers, when the changing needs, skills and preferences of customers, leveraged by growing technological innovations and the unprecedented development of electronic devices, has led to increased popularity and the adoption of new, recently emerged direct channels such as mobile banking, tablet banking and social media.

Innovations around better and faster delivery of the right products to a customer will help banks provide a differentiated customer experience and therefore lower customer retention costs in a situation where markets are highly saturated, volatile and uncertain and product and price no longer provide a clear competitive edge. Accordingly, looking at the development of technology, four main technology trends can be described – electronic channels, digital banking, big data and social media.

These trends have already affected banks and their customers, but their advancement shows no sign of slowing down. Subsequently, the author analyzes these trends in more detail.

A. *Electronic channels – anything, anywhere, anytime*

One of the most overwhelming trends in banking technology is the development of electronic channels. In this study the term electronic channels refers not only to internet banking, but includes several other services like ATMs, telephone banking (also called call centres) and mobile and tablet banking.

It must be noted that in 2014 customers of all ages are active customers of the internet and almost every activity (communication, music listening, travelling) can be accomplished within seconds at any time, from any location. Electronic devices are designed to bring instant gratification to any task. The same expectations accorded to fast service delivery are also accorded to providers of financial services as historical leaders in technology implementation. Therefore, electronic channels management is undergoing a transformation from simply having an operational function to being a tactical tool as part of the larger business and customer management strategy.

For example, in Estonia in the second half of 2014, a total of 75% of the value of payments came from internet banking payments [3], and the importance of self-service banking by mobile device or tablet is rising. Accordingly, all major banks

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of Estonia have declared electronic channels and digital banking as one of the core strategies for future development.

On the one hand customers are looking for online opportunities for connecting with their bank. They require simple and convenient financial services available around the clock when and where they want to use them. Additionally, products and services should be made engaging by creating a seamless (anything, anywhere, anytime) integration of all channels for an omni-channel experience across in-branch, assisted and digital interactions, differentiated customer experience and digital interactions as "wow" experiences that exceed their expectations. Respectively, products must be redesigned specifically for direct channels. These should be developed keeping in mind an end-to-end integrated process, with alignment between sales and the organisation on the various objectives. It should be focused on simplicity and the possibility of having "one-click" sales. There is also the opportunity to offer a variety of wizards and calculators (loans, pensions, corporate financial reports) which enable customers to conduct a "what-if" analysis before making important financial decisions.

In order to support the achievement of the bank's key performance indicators through the development of electronic channels, an advised activity plan with clear business objectives should be put into place (see Figure 1).

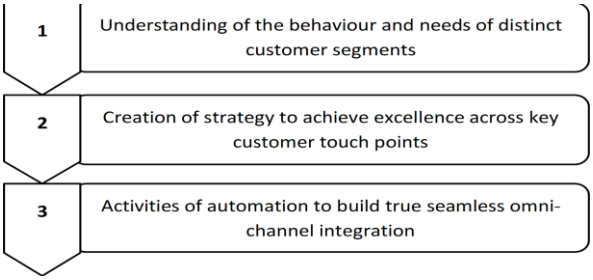

Figure 1. Creation of an electronic channels development activity plan (author's illustration)

Strategy should give an overview of customer needs, reveal how to achieve channel excellence across key customer touch points, and uncover the opportunities to move customers from high-cost contact centres and branch operations to the lower-cost channel to optimize satisfaction and profits. The main benefit from bank customers' point of view is comfort, time savings and quick and continuous access to information as transactions can be made around the clock, without requiring physical interaction with the bank. The other important reason is a feeling of control, because if customers do not like something, they can just log out.

For banks leading customers from higher-cost traditional bank branches to lower-cost online channels, a reduction in overall cost-to-serve while improving return on investments can be the first method of assistance. The main goal of any company is to maximize profits for its owners, and banks are no exception. Electronic channels provide the perfect opportunity for minimizing costs for banks and their customers. For example, it helps customers to use less cash, and if the amount of cash in circulation decreases, the efficiency of the banking sector will increase as both customers' and banks' costs will decrease through diminishing costs (for instance cash storage, cash fees or processing costs). But secondly, quantitative evidence [4,5] suggests that high digital usage correlates closely with customers' profitability and loyalty and therefore, banks enjoy a better brand image. Customers who use more channels become more loyal, buy more products and are more satisfied. For example, mobile bank users assign a higher Net Promoter Score (NPS) than people who do not use mobile devices. Not only do they recommend the bank to other people, but they also stay longer with their bank and buy more products.

However, financial institutions in Scandinavia are already looking for tools to bring people back into branches because they cannot cross-sell so successfully through online channels. According to EFMA research [6] in Finland, the average bank customer visits the branch only once every seven years.

B. *Digital banking - operational efficiency through digitalization*

Another major technological trend is digital banking – an essential competitive edge in today's banking landscape. It can even be said that it is a critical factor for the more agile and innovative operating model.

The aim of digital banking is twofold. Firstly, digital banking supports fast and convenient services, and experiences have shown that the customer will adopt digital banking propositions breathtakingly fast. Secondly, digital banking can be a cost-saving opportunity for financial institutions and create new sources of value and revenue. Digitalization of processes can be a major lever to increase operational efficiency in branches by providing enabling tools (such as interactive touch screens) to create a paperless environment and facilitate straight-through processing (STP), reduce costs and create a new source of fees that can be called convenience fees. According to Olanrewaju [7] a full digital transformation can realize 40 to 90 percent of a bank's cost base by the automation of internal servicing and fulfilment processes. But that does not mean the mimicking of digitally current operations and capabilities; it should become the core of operations and the heart of operational management, leadership and culture. Innovations in online and mobile platforms, video banking and customer relationship management (CRM) are taking precedence to connect with customers on a virtual level.

This process can be achieved by transforming existing IT platforms or rigid legacy technology. But banks' legacy systems are complex and an upgrade is a challenging and expensive task. Therefore, these new developments require a combination of IT systems and human skills and proficiency that is substantially different from systems designed for so-called traditional banking.

C. *"Big Data" – making use of numbers*

One of the important – and it can be even said strategically important – technological tools for performance management and for the development of winning long-term strategies is data analysis. Although banks have an unprecedented amount of data about their customers available, most is not even

captured to better understand client buying and channel-use patterns. Therefore, analytics technologies can be used to capture and analyze vast, continuous data streams to better understand customers and get closer to them to develop an intimate experience that will keep existing customers coming back and attract new ones.

For example, a variety of advanced technologies can be used to develop marketing capabilities for a competitive advantage – prospect mining through retargeting, next-best-product-marketing and database mining. This development of marketing capabilities includes the use of sentiment and predictive analytic tools to examine and determine customers' current and future behaviours and preferences. In an era of demand for personalisation, the effective use of the right data can help to better understand customer attitudes, needs and lifestyles and create a more relevant and compelling customer experience.

But banks also face some major challenges around data management. First of all, in-house data must be linked to external information, but the difficulty is not in finding enough data, but in finding the right data – what is "right" can change according to environmental changes. The rate of change is not always apparent, but it is real, and tomorrow's customer will likely have different needs and expectations.

Secondly, the use of advanced analytics technologies should move banks' behaviour from a reactive state to a proactive one or from the descriptive stage – simply analyzing what happened in the past – to gaining predictive and prescriptive insights and helping customers to decide their future actions. Combining customer data with business intelligence and predictive analytics can help to: increase cross-sell opportunities, enhance customer value and profitability, learn from customer behaviour for product development and marketing purposes and make better-informed decisions. A business intelligence system should have a familiar and easy-to-use interface for front line staff – CRM. The CRM solution should be fully integrated with the everyday work to make it easy to translate customer insight and centralised marketing campaigns into successful customer interactions.

The third challenge in the data management field is meeting the wide-ranging and exponential increases in demands from regulators and others for reporting and disclosures. Financial institutions have to prove to supervisory institutions that the right data, risk management models and IT architecture enable them to manage all risks and control systems (including compliance and internal audits) effectively. It is becoming imperative to manage better semi- and unstructured data from demographic and psychographic information about clients to product reviews and commentary from different sources to mitigate risks, optimize business performance and reduce costs.

The fourth challenge is regulation. In an aspiration to protect customers' privacy, regulation will continue to evolve, and that poses significant compliance risks for banks. Banks must carefully consider the benefits of Big Data against the cost and risks of collecting large amounts of customer information.

One example of customer information that can be leveraged and used to find its true potential are Know Your Customer (KYC) regulatory requirements, which are often seen only as a cost of doing business and not used for additional business and payment transactions, which are extensive, but often only used as a historical record.

D. Social media – two-way communication

Changes in customer behaviour require a transition from the "bank-based push method" to the so-called "customer pull model". Consequently, a bank will have to be focused on satisfying customer needs, easily accessible, conduct operations seamlessly and have relevant dialogues with clients. The marketing communication style of the past, the monologue, has to become dialogue, a sequence of interactions, and the communication of simple and clear offerings beneficial for both parties – direct communication with customers. New possibilities for the "customer pull model" and modern marketing communication can be created through the ability to answer customers' messages immediately and the use of social media (social networks, blogs, web sites, viral marketing etc). [8]

Nowadays, social media will simply become part of banks' operational and marketing strategy the same way the telephone, the internet and email did before them. The question about social media is not whether or not to participate, but rather how it can best be applied and implemented to achieve the greatest benefits for the bank, its shareholders and its customers.

On the one hand, the data provided by social media can help better understand customers' motivations, behaviour, sentiments and needs. For example, banks can start blogs or forums to discuss new products and services with their clients, or participate in social networks to increase transparency and foster customer loyalty. LinkedIn provides information about job changes and Facebook provides information on new homes and new babies that can influence cross-sale opportunities, credit decisions, relationship pricing or loan collection.

On the other hand, customers already expect their banks to replace one-way communication methods and open the dialogue by offering high level personal interaction and financial advice through social media and allow them to suggest innovations and provide feedback about bank services and products. Using social media as one of the communication channels can create active experiences, which create emotions, which in turn encourage the buying of products. But there are also some challenges associated with the implementation of social media.

First of all: regulation. There is little official guidance on the use of social media yet, but risk management cannot be forgotten. For example, the plugs into third-party social media platforms, challenges in data security and protection of customer data from third parties. The second hurdle is related to technology. On the one hand, banks are struggling to offer an omni-channel experience for their customers; on the other

hand, to succeed, social media should be integrated into banking operations. [9]

Finally, it cannot be forgotten that the ongoing challenge is monetizing social media usage. Leading banks have shown positive results in using it to reduce operational costs and increase efficiencies within the enterprise, but nobody has achieved a sustainable revenue stream.

However, social media can be the tool that helps shore up relationships between banks and customers and re-engineer their customers. Therefore, it should be integrated into the marketing strategy – social networks can enhance the recognition and perception of a brand and further build the bank's credibility and reputation. [10]

III. A new normal for the financial services sector

As already mentioned, the banking sector is changing rapidly. Market forces, due to regulatory and customer behaviour changes supported by technological advances, have led to large changes in financial systems and will affect almost every aspect of financial institutions' activities, including revenues and costs.

Additionally, the competition in the financial services sector is tougher than ever. From alternative financial service providers to non-bank entrants such as technology vendors like Apple, Google, and Facebook or telecoms and retailers, many new players are nimbler in developing new financial services. Freed from the burden of legacy infrastructure, a less stringent regulatory regime and a better position to exploit the opportunities offered by technology change, they are innovating around the traditional bank business model. They are ready to take advantage of digital technology and improve traditional ways of delivering banking services. Relatively small start-ups can take on large incumbents by taking revenues and market share in profitable niches, cherry-picking pieces of the value chain and shaping customer experience. They charm the most attractive customers by offering price transparency and clarity on fees. The challenge grows more complex by different applications that offer payment or foreign currency exchange services. One of the most famous examples in Estonia and in the world is TransferWise.

If financial institutions should concentrate on optimization and simplification to reach agility and innovation, then new entrants and so-called disruptions can concentrate only on innovation. There are different winning models. It can be in the form of a redefined interface between service providers and customers, new innovative sales and customer relationship management approaches (for example marketing through mobile and social media, especially Facebook) or offering a better experience for targeted segments by providing alternative products and services.

The only solution for banks is to re-invent themselves, with a new vision of how they can best serve the financial need of customers, innovate and offer game changing technology to retain existing customers and gain a competitive advantage in attracting new ones. The changing environment will force radical changes in banks' business strategies, organisational structures, business models and core operations. Respectively, traditional operating models should be replaced by new strategies to rethink the usual levers around enabling new or increased revenue streams and cost reduction but also to consider a wider economic and social role. The effects range across the organisational structure and culture, risk governance, product development, investment strategies and even customer service and marketing.

The cornerstones of the bank of the future or the new normal for the financial services sector will be on the one hand compliance, technology and customer demands (see Figure 2).

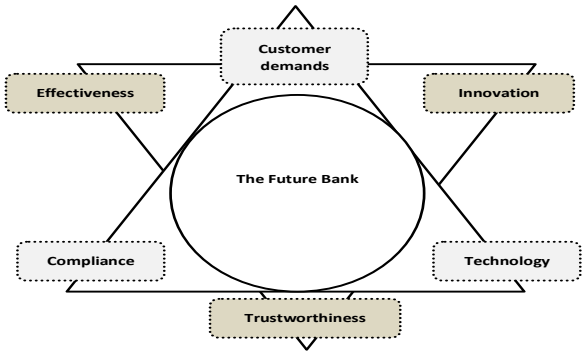

Figure 2. Cornerstones and pillars of the future bank (author's illustration)

On the other hand, the bank of the future is built on three pillars: effectiveness, trustworthiness and innovation. An effective bank is run efficiently, takes the informed risks needed to steadily increase earnings over time and delivers value to its customers, employees and shareholders. Key elements are optimization, standardization, digitalization, back-office automation and integrated CRM systems. Banks need to become the lowest-cost producer as their processes and systems are redesigned for the digital age that is structurally changing their cost base.

The most important pillar is trust. The loss of trust can directly impact the prosperity and sustainability of an individual bank. Customers are increasingly connected to each other. The recommendations of friends and family are the primary source of information. Banks need to act in the best interests of their customers, provide the best possible solutions and be transparent and secure. The intention is to focus on two-sided communication. Banks have tailored relationships with clients on personal interests and led the customers to feel that they are part of the co-creation of the bank's future. The bank can subsequently become a daily partner able to answer client needs and offer suitable customer-centric solutions.

The third pillar is innovation – the necessity to survive in the rapidly changing environment. Innovations, especially when they are transparent and consistent with the interests of customers, can reduce costs and mitigate risks. Parts of the innovation will be solutions like advanced multichannel integration, pervasive analytics based on effective customer data collection and advanced advisory services leveraging digital channels and personal analytics.

To achieve the future of banking according to cornerstones and pillars the project should be broken down into manageable

pieces. The most challenging of them are organizational culture, the technological platform and communication principles. According to the subject of this article the author will have a closer look at the technological platform.

Banks have spent a great deal of time focused on growth – getting bigger, doing and offering more, becoming more risk averse, but now is also the time to become automated, leaner and more efficient. In the growth years with high margins and strong returns banks rarely had to worry about operational efficiency. New activities could be started quickly with limited supporting infrastructure and root causes were put off to some point in the future. Banks just added organizational complexity (e.g. people, operational procedures, systems and data flows) to cope with growing, new and constantly changing businesses.

In 2014 it is all too complicated. The current economic challenges are forcing financial institutions to resize and restructure their infrastructure for leaner operations, which means working as efficiently and effectively as possible in the existing structure. It all begins with optimization and simplification - banks should increase the number of automated processes and standardise operations in order to drive efficiency across the organization and thereby to reduce complexity, reduce costs and enhance customer service. The changed processes have to match or surpass the previous performance as the customer willingly accepts positive innovation (for instance faster or cheaper processing) but is very rarely willing to accept restrictions of known functionality at the same time. [11]

The spread of electronic devices available to customers means that it is becoming too expensive to design services based on a specific device interface. Banks will have to embrace technologies which are intelligent and adaptive enough to automatically account for the interface that the customer happens to be using at a given time and place. One of the possible solutions for meeting the changing environment is service-oriented architecture to integrate disparate channels and create an agile infrastructure where back-end systems can be exposed to new services and channels as they emerge or evolve and front offices will be analytically powered.

The current economic challenges are forcing banks to take a longer view of technology investments to ensure strategic value of investments. But transformation from traditional banking to omni-channel and digital banking means for many banks overcoming some key challenges and a multiyear roadmap of changes to systems and infrastructure. Additionally, this must be accompanied by a reduction of operational costs and synergies from a more flexible infrastructure. First of all, banks face challenges around their existing legacy applications, systems and processes. These are complex and the upgrade is a challenging and expensive task. Therefore, these investments shouldn't just fulfil today's functional needs but should also support the achievement of the organisation's broader strategic goals around cost reduction and right-channelling (using insights about the customers through various touch points). As the risks and costs of core system replacement are significant and it is hard to deliver, a few banks have chosen to replace their core systems at once. Others are mitigating risks, staging the transition and exploring opportunities to achieve their IT goals at a lower cost level. On the one hand, funding these changes in terms of decreasing revenues is a major challenge to the management of financial institutions. But on the other hand, cost reduction resulting from using new technology and automation and increasing efficiency can usually be realized in the medium- or long-term perspective, especially in the case of larger investments.

IV. Conclusion

As mentioned in previous sections there are some significant strategic challenges for the banking sector. Financial institutions have to adapt to a very different and rapidly changing economic, regulatory and business environment. The key drivers of the financial services sector are meeting the rising expectation of customers, heightened and costly regulatory changes and burdens, searches for operational efficiency through technology innovation and competition from low-cost digital-only entrants who are responding to customers' needs and banking behaviours. Therefore, financial institutions urgently need a new and lower-cost business model and technological platform that can generate sustainable and predictable revenues.

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