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ATMS - DECLINE OR DEVELOPMENT OF E-BANKING SERVICES

Summary

The paper is devoted to one of the channels of electronic banking – terminal banking. It presents the efforts of banking sector towards reducing the presence of cash in the financial turnover and lowering the costs of cash transactions thanks to development of high-tech ATM devices. The author points to the dynamics of changes related to the advances in this particular channel of contact, draws attention to the risks accompanying this form of contact and presents alternative forms of communication between a bank and its clients. The paper quotes data obtained from the Polish National Bank, the Polish Banks Association and EAST.

Key words: e-banking, terminal banking, electronic money, ATMs

Introduction

The end of the 20th century was a period of sudden transformation in functioning of companies all over the world. The period is now referred to as ‘post-industrial revolution’ or ‘information revolution’. The dynamics of these changes called upon companies a new style of operations which required greater flexibility in order to achieve success on the market. Strategic elements of the new order became: information management (IM) and knowledge management (KM).

The style of communication between market participants was also transformed. The processes using convergence of teleinformation technologies and electronic media systems started to dominate and became significant attributes of the new economic phenomenon known as *net-based economy*. It was the catalyst of dynamic changes leading to technical convergence of products and their markets as well as to

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liberalization of the market of electronic business services (including electronic banking services).

Against this background electronic banking has been developing dynamically and this development, which started about fifty years ago, exerted a strong social impact changing the way we live all over the globe. The paper concentrates on changes on the market of ATMs which is a vital channel of contact between a bank and its clients and it also discusses the situation on the Polish market and enumerates changes that have taken place due to the introduction of EMV standard. The author uses his own research as well as literature sources.

1. The beginnings of e-banking

The term electronic banking (or *e-banking*, *i-banking*, *on-line banking*, *home banking*) is often presented in literature as a mode of conducting banking operations from outside the premises of the bank¹. E-banking is also defined as a tool for interaction between a bank and its customers enabling exchange of services and information through electronic channels and tools integrated with organizational and technical structure of the bank². Another frequently encountered interpretation of e-banking focuses on complex application of information and communication systems for facilitating customer service³. Yet another interpretation highlights the possibility of applying electronic telecommunication devices (including wireless) to render bank services remotely. In the literature on the subject e-banking is also defined as a holistic concept of functioning of a bank which assumes in its operational policy application of information systems to improve and speed up customer service and, at the same time, to speed up cashless money turnover.

¹ Dziuba, D. *Wirtualizacja działalności gospodarczej w oparciu o sieć Internet. W stronę gospodarki usieciowionej*. Warszawa, Wydział Nauk Ekonomicznych UW, 1998.

² Stryczyński, J., Zarzycki T., *Bank ery gospodarki elektronicznej*, Bank, nr 9, 2000.

³ Janc, A., Kotliński G., *Determinanty wykorzystania bankowości elektronicznej w rozwoju wybranych usług bankowych*, A. Gospodarowicz, *Zastosowanie rozwiązań informatycznych w bankowości*. Wrocław, Wydawnictwo AE, 1999.

According to the Electronic Banking Council⁴, an organization operating within the Polish Bank Association, e-banking is understood as a set of banking services facilitating access to accounts thanks to ICT devices such as telephone, computer or ATM. The term was also defined in Article 29 point 1 of the Act on Electronic Payment Instruments of 12 September 2012, which says that *under a contract for electronic banking services the bank shall be under obligation to provide access to funds held on the account via wire or wireless communication devices used by the holder, and also to perform other actions ordered by the holder*⁵.

As results from what was said above, unequivocal definition of the term *electronic banking* is impeded by dynamic processes occurring at the meeting point of the world of finance and technology. Easy access to new technologies such as laptops or smart phones and the drive of companies to render services 24/7 from every place on earth, makes this term even more complicated to define. Having said that however, all the above quoted definitions and interpretations point to the supportive role of ICT solutions in speeding up the turnover of cashless money and improving the communication processes between:

- clients and banks,
- banks and their organizational units,
- financial institutions and banks.

It can be thus said that e-banking aims at modifying the existing system of financial settlements towards reducing or even eliminating paper money. These aims are being implemented by conducting communication both inside the bank premises and also outside through ICT solutions supported by bank management systems⁶.

The diversity of definitions and interpretations of the analyzed issue also results from the range of implementation of ICT solutions in banks

⁴ Electronic Banking Council was established in 2004, it facilitates the cooperation between banks and representatives of the world of business and administration.

⁵ Journal of Laws 2012 item 1232 was binding in Polish legal system since 2002 and was waived on 7 October 2013 by the Act of 12 July 2013 amending the Payment Services Act and certain other Acts. Subsequent amendments to the Act were introduced on 28 November 2014 (Journal of Laws 2014, item 1916).

⁶ Knosala R., *Komputerowe wspomaganie zarządzania przedsiębiorstwem*, Warszawa, PWE, 2007.

and bank services. Taking this into account, the term e-banking can be considered:

- in a complex way – as an entirety of teleinformation processes related to the basic function of bank activity and also to accompanying activities such as: marketing, distribution, safeguarding the communication between the user and the bank,
- in a simple way - as ...a form of providing bank services by means of remote access channels available thanks to ICT technologies without the need of face to face contact of the client with the bank staff^{7,8}.

The common element of all quoted definitions is EDI (*Electronic Data Interchange*) which means the exchange of text and graphic information between ICT devices with minimum human assistance. Taking the above into account it can be stated that electronic banking has the following characteristics:

- no need of physical presence in the bank,
- 24/7 availability of services,
- none or minimal need of intervention from bank staff,
- limited contact of the bank staff with clients,
- virtualization of some services,
- automation of order processing.

The difficulties in providing a coherent definition of e-banking may be explained by over fifty years of its dynamic development. It was in 1964 when the first electronic ATM termini connected to the central computer system were introduced. The synergy of technological, economic and social transformations triggered further changes leading to virtualization of cash operations.

2. The role of ICT technologies in development of e-banking services

Past centuries witnessed various transformation periods such as the Renaissance or Enlightenment. Other kinds of transformations such as progress in science and information technologies has had a considerable impact on our civilization. The rise of economy communicated with the

⁷ Nosowski, A., *Technologie informacyjno-telekomunikacyjne jako katalizator zmian*, [in:] Bankowość elektroniczna, A. Gospodarowicz, pp. 19-35. Warszawa, PWE, 2005.

⁸ Infovide, www.infovide.pl/docs/, 2005.

net⁹ is closely related to the possibilities of ICT technologies and to the degree of their uptake what allows for effective *consumption* or the so called *network effect*¹⁰. The processes are accompanied by emergence of new segments and the loss of importance of existing ones. The dynamics of changes as well as strong competition between teleinformation companies for stable competitive advantage have led to the creation of a wide spectrum of services. Electronic transactions on the world stock markets produce *the domino effect* – the reactions of stock markets resulting from their respective behaviour are only delayed due to different time zones. These examples show how considerable is the impact of information technologies on all layers of life all over the globe. Hence the expressions: *global information village*, *information highway* or *information society*. It is a consequence of noticing the importance of teleinformation technologies as an integrator of electronic and information technology capabilities which allows for offering wider and wider range of information services, including typical ICT services. Technological progress is a driving force behind the development of *information society*, it transforms almost all aspects of people's existence. Technological boom, which we are witnessing, is a resultant of development tendencies within equipment, software and means of communication.

The pace of growth of modern technologies carries a number of challenges and dilemmas for business environment, mainly with respect to management styles. The world of business dictates the speed to the information revolution in management because it uses state-of-the-art solutions in which knowledge is a tool of strategic importance. New technologies, especially telecommunication technologies play essential role with respect to:

⁹Treated in a multi-faceted way as: a system of new principles explaining the functioning of business entities on the market, behaviour of business entities in considerably new conditions, economy seen as a subject i.e. defining how business entities operate within IT sector.

¹⁰ The so called *net effects* embrace: *the fax effect* (the more users of the net the more valuable the net becomes for the users), achieving desired results by means of *dissemination*, increasing efficiency by means of *decentralization*. See also Kelly, K.: *Nowe reguly nowej gospodarki*, WIG-Press, Warszawa, 2001.

- combining design, production, supply, sales, administration, technical services of companies and office which allows for creation of organizations integrated electronically,
- electronic surveillance system leading to improvements such as cost-effectiveness or labour efficiency,
- combining networks of suppliers, materials and spare parts or companies and manufacturers, wholesalers and retailers which generates savings with respect to storage on each phase of production, distribution and allows for prompt reaction to day-by-day changes in the demand for goods or services,
- greater flexibility within development and production of new models of goods, which is sometimes defined as the economy of scale.

Dynamic development of new technologies considerably influences the structure of the economy (emergence of new sectors of industry and services), internal structure of organizations, management style and the kinds of ties between companies. There are tendencies towards horizontal linking of design, production and marketing in contrast to the Taylor's system of vertical and hierarchical control. The flow of information inside and outside the company becomes more uninhibited and new channels of communication are being created.

Introduction of information technologies into business activity is one of the most difficult undertakings because these technologies radically change the very foundations and principles of business as they apply knowledge from the field of cybernetics and Information Technology. The factors which determine the technological development are subordinated to the following principles:

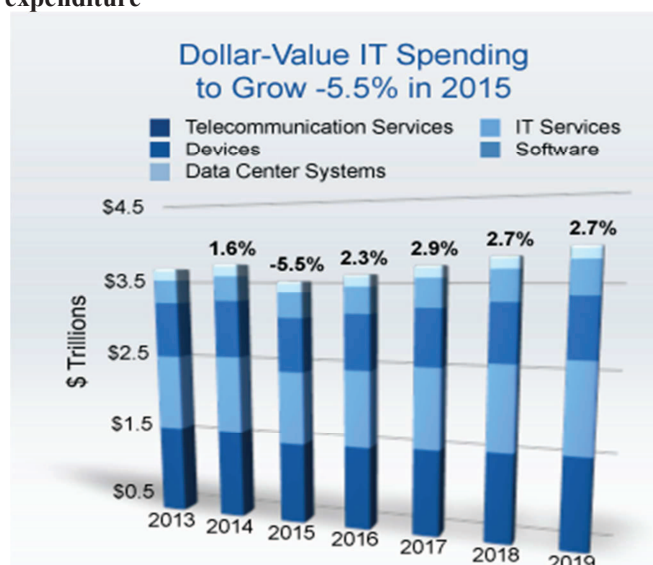
- Moore's law¹¹ – technologies and technological conditionings age disproportionately fast as compared to planning processes, financing and development of infrastructure which will render the services,
- Metcalfe's law – the value of a telecommunications network is proportional to the square of the number of connected users of the system.

Taking the above into account, it can be said that the economy has changed more in the last decade than in the previous five decades. The

¹¹ Gordon Earle Moore – co-founder of Intel Corporation.

pioneers of these changes were companies who first spotted the opportunities in ICT technologies. In 1999 American companies invested in innovation in teleinformation technologies as much as 5% GDP¹². But the later financial crisis slashed the forecasts for 2009 investments in IT from 4,2% GDP to about 0,9% GDP. Part of investment plans was cancelled; another part was postponed (especially in Europe) due to the dollar exchange rate. A British research centre Gartner Group published a study which argued that in the first quarter of 2009 about 42% of companies reduced their budget on maintenance and development of IT environments as compared to 2008¹³. Increase in IT expenditure was observed in the years 2012 - 2014. However, in the following year the figures were corrected and the total expenditure on IT projects in 2015 amounted to only 3.5 billion dollars. The expenditure was 5,5% lower than in 2014. The situation was caused by strengthening dollar¹⁴,

Image 1. IT expenditure



Source: own work based on¹⁴

¹² Stępień, A. J., *Atrakcyjność wirtualnej gospodarki* [in]: *Zarządzanie organizacjami gospodarczymi w warunkach globalizacji*, p. 328. Łódź, Politechnika Łódzka, 2000.

¹³ Waszczuk P., <http://www.computerworld.pl/news/346414/Gartner.Budzety.na.IT.mniejsze.o.4.7.proc.html>

¹⁴ Forecast Alert: *IT Spending, Worldwide, 2Q15 update*. Gartner, Inc. and/or its Affiliates, Gartner, Inc. and/or its Affiliates, 2015.

The dynamics of IT sector growth in the long perspective depends on the global economic situation and on the way the IT tools are used. According to OECD experts the growth in investment in IT will be triggered by the growth in interest in special business applications, modern and highly specialized communication systems and IT outsourcing services.

The factors determining the shape of this sector are offshoring¹⁵ and outsourcing¹⁶ of selected business processes. Their share market is translated into development of local teleinformation sector. The main providers of IT offshoring services are Central-Eastern Europe countries. IT departments of companies have, thus, the choice of services rendered by local or foreign providers whenever they have to put in practice their corporate strategic development plans.

The previously predominant concern about high costs of development of new IT solutions has been replaced by deep confidence that IT functions equip the services with considerable added value. A KPMG study showed that for 33% of respondents the aforementioned added value is more significant than the cost aspect (23% of respondents). The reason behind purchase of IT outsourcing services, in the opinion of respondents of the KPMG study, is related to cost cutting programmes (26% of respondents). The second and third important aspects were: improving the quality of services (21%) and access to knowledge and know-how (19%)¹⁷.

3. The market of IT services in Poland

Against this background the situation of Poland, especially in the post crisis period, looks promising. It can be even forecasted that if the present pace of growth does not slow down, Poland may be the second main player in the ECE countries. The most important group of the recipients of IT services in Poland are big companies (50%). Higher expenditure on IT can also be observed in dynamically developing areas of public and local administration. The analysis of the industry situation

¹⁵ Offshoring – a shift of certain business processes (production and services) to another country in order to cut costs.

¹⁶ Outsourcing – some parts of an organisation are extracted from its structure and their functions are passed on to external entities to take care of.

¹⁷ kpmg.com/pl/OutsourcingIT, 2015.

carried out by PMR shows considerably high value of the ratio: 38,7% (increase by 1.4% as compared to 2014), so the condition of IT sector in Poland is healthy. PMR also emphasizes that the biggest segment of IT sector is the equipment. Its share, together with income from mobile phones sales stands at about 60%.

Further increase in expenditure on IT is expected due to dynamically developing cloud computing. ABSL report for 2015 shows that the share of IT services in Poland in the value of IT market amounts to 29%. The share of the same services in the global market is about 1.7%¹⁸. Such positive results can be, to some extent, credited to the financial sector (24% of the market share), then there is administration (20,5%) followed by media and communication (16.4%)¹⁹, Image 2. The forecasts for the IT market and cloud computing predict that in 2016 the market will reach the value of 207 billion dollars. Performance of ICT market, according to Central Statistical Office, is equally optimistic. By 2020 the share of companies from this sector will constitute about 9.5-13.1% of GDP, now the value stands at about 5%.

The ratios for Poland and the EU show dynamic processes of computerization of small and medium-sized enterprises. In Poland these companies contribute about 50% to GDP²⁰. This sector of companies is also one of the main recipients of modern electronic bank services (for example cashless transactions). And although these companies do not employ a large number of dedicated IT specialists (just like in other EU countries), the technologies of electronic data exchange with external entities are widely used there (ratio about 71%). The functionalities are most frequently used for contacts with public administration (about 71%) and for payment orders (about 53,3%)²¹.

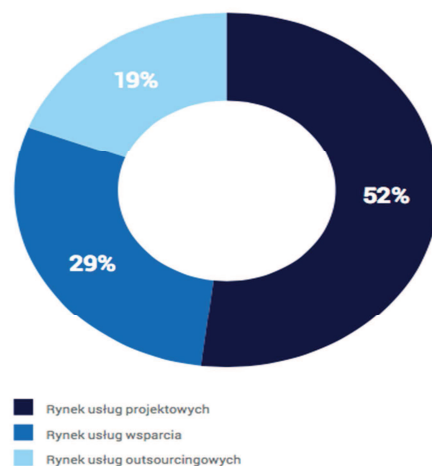
¹⁸ *Rynek IT w Polsce 2015. Prognozy rozwoju na lata 2015-2020.*, PMR, 08.2015.

¹⁹ *Poland IT Services Market 2014–2018 Forecast and 2013 Analysis*. IDC, IDC CEE Black Book, Q3/2014.

²⁰ The sector of small and medium-sized enterprises generated 47.6% of Polish GDP in 2010, in 2011 micro-enterprises generated 29.6% of Polish GDP, medium-sized and small 10.4% and 7.7% respectively.

²¹ *Maturity of B2B electronic system in Poland on the example of experiences from implementation of measure 8.2 of Operational Programme Innovative Economy 2007-2013*, 2013.

Image 2. Structure of IT services market in Poland (value focus)



Source: own work based on²²

Wider and wider access to new technologies (especially the Internet) speeds up the development of electronic banking solutions. In the future the structure of IT market will be gradually evolving from equipment/hardware segment to service segment. The effect of such evolution will be launch of the National Cloud Computing in 2020.

These prospects have a serious influence on shape and pace of changes occurring on the market of bank services and especially electronic services as banks concentrate their efforts on development of mobile applications which will allow mobile payments. The functionalities of devices and channels through which banks are going to target wide audiences are being intensively expanded. The role and place of a mobile channel in the strategy of banks is also changing, the mobile channel becomes a natural extension of the Internet strategies of banks. However, thus defined strategy requires advanced technologies opening access to mobile banks services.

A KPMG report *Efficiency of IT organization in banks* stated that in 2010 neither commercial banks nor cooperative banks in Poland planned any considerable reductions of investments in IT in their budgets (as

²² *Rynek IT w Polsce 2015. Prognozy rozwoju na lata 2015-2020*, 08.2015.

compared to the previous year)²³. The analysis of the results presented in the report proved on the contrary, the budgets even foresaw increased operational expenditure on IT solutions, whereas other investments were slightly reduced or frozen. Banks, despite visible economic slowdown, did not give up on IT projects with the view of future profits to be generated thanks to building competitive advantage and stable position on the market. In search of cost-cutting opportunities banks started to outsource IT operations which resulted in lowering the costs of IT departments and better usage of internal resources. It should be noted that IT staff of Polish banks make up only 4-9% of the total number of bank workforce. According to KPMG it is a value much below the world average which amounts to about 10%.

Other constituents of bank strategies which help to build a stable market position and competitive advantage are: IT service model and customer satisfaction surveys. These constituents offer a valuable feedback for banks with respect to their offer of products and services and efficiency of ways of accessing existing and potential clients. As the KPMG report reads, about 96% of digital consumers use bank services and 72% of them use electronic banking while outside home. These findings prove that banks are right implementing elements of IT service model and conducting customer satisfaction surveys. IT technologies have allowed banks to overcome the time and place barrier in rendering their services. The results of studies commissioned by the bank sector help to measure the level of maturity of banks and assess the quality of their customer care²⁴.

Nevertheless, the development of teleinformation services is gruesome and risky in economic sense. It takes a chain of technical solutions and related services whose universality and usefulness is connected to social availability of modern technology, measured by price, demand and scale of the enterprise (economy of scale)²⁵. Their share of benefits for companies in the total value of benefits fluctuates and depends on the sector, current condition of the company or social

²³ Tomkiewicz M., <http://www.computerworld.pl/news/354863/Polskie.banki.nie.beda.oszczedzac.na.IT.html>, 2010.

²⁴ *Bankowanie i klikanie. Czego doświadcza i oczekuje od banku polski klient cyfrowy*, 2015 KPMG Advisory Spółka z o.o., 2015.

²⁵ Economies of scale – creates the so called *experience curve* through reduction of fixed costs per unit and maximizing the market share.

demand for particular solutions. New business models related to provision of IT services may also have considerable impact on the achieved results. Their flexibility, user-friendliness and affordable price may be of strategic importance. A new business model based on a technology which allows to render services on a cloud is a good example. Among many benefits of this solution is reduction of costs on the customer's end because he only pays for using the infrastructure (for range of the usage and the time spent). The main advantages of the solution are its functionality and cost flexibility. It is also worth mentioning, though it may seem obvious, that only such undertakings have a chance to obtain a healthy return on investment which enjoy full social acceptance.

Conclusions

The market of ATM devices is constantly evolving despite the advances in elimination of cash money in favour of electronic money. It stems from the fact that the original function of an ATM being nothing more than just a cash dispenser was enriched by a portfolio of other electronic services. The issue of providing security for the operations made by use of ATMs is also a vital engine for introducing changes. And the switch from magnetic strip cards towards EMV solutions may be a good example here. The American card market is the leader in the dynamics of progress occurring in the field of instruments of cashless turnover. In the light of the figures quoted throughout the paper the assumption that the ATM market is constantly developing is given credibility. This development goes in two directions; firstly, the costs of cashless turnover are reduced; secondly, the levels of functionality and security of using ATM devices increase.

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