Ekonomia Międzynarodowa 22 (2018) http://dx.doi.org/10.18778/2082-4440.22.03

The Impact of Innovation on the Improvement of The Competitiveness of Banks – an Analysis of Case Studies

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Introduction

In recent years, the phenomenon of the increasingly competitive banking market has become particularly noticeable. Banks have been forced to use more and more innovative marketing strategies, to diversify their range of services and target customer groups. In the era of modern technology, banks have been forced to introduce systems that will ensure the use of innovative applications and the optimization of processes providing products or services. Dynamic changes can be observed in the financial infrastructure and in the approach to the exchange of information between banks and customers, as well as in the sales process.

For banks managed in a way that limits the introduction of changes, as they have recognized such a strategy as being secure and stable, every innovation has become a challenge. An analysis of the banking sector shows that innovation has become a key factor in strengthening the competitive position useful among all in the struggle for the acquisition of new customers. The aim of the paper is to show the impact of innovation on a bank's competitiveness. Such innovation in banking is becoming more and more important, and banks that do not follow the prevailing tendency significantly decrease their market position. Increased activity in the introduction of innovations that have been recognized on both the international and national forum by numerous awards, and transparent and easily available financial data, has led to a need for an overview of the research problem on the example of PKO BP, mBank, Idea Bank and ING Bank Śląski. The paper assumes that banks, thanks to the innovations introduced, achieve a higher competitive position and a better level of performance indicators than other banks in the sector.

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Competition and competitiveness – definitional comments

In the literature on the subject, a clear distinction between the terms 'competition' and 'competitiveness' is made. According to economists, the condition necessary for the emergence of the phenomenon of competition is the existence of autonomous companies in the market economy, which make independent decisions and guide their activities in a way that enables them to earn a profit and stand out from other companies actively participating in the market (Przybyciński 1998, p. 24).

Competition is a fairly well-defined and sufficiently described area on both the theoretical and practical level (table 1). In numerous studies, there is the designation that competition is a process in which entities compete with each other to achieve the same or similar objectives. The remaining definitions of competition, apart from rivalry, which is its essence, indicate the tools of competition as well as the ways it occurs and at what level. Competition permeates all areas of human activity. It appeared in the literature thanks to independent enterprises making autonomous decisions and being guided by the criterion of profit making, the existence of private means of production, and commodity management (Przybyciński 1998, p. 32).

Competition can take one of four basic models on individual markets, such as perfect competition, monopolistic competition, oligopolistic competition, and pure monopoly. They differ mainly in the number of competitors, product or offer diversification, market size, difficulty in entering the market, and transparency of market information (see table 1). It is impossible to create perfect competition conditions in the modern world in which the same products are offered at the same price without the use of advertising to gain customers.

Table 1. Features of competition models in the market economy

Feature	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Number of producers	Several, close to infinity	Many	Several	One
Price control	None, the market determines prices	Limited by the presence of substitutes	High price impact from the leader	Very big
Diversity of products	Very small; products of similar quality	Big; products addressed to various segments	For some markets large, for others small	None
Barriers to entry	Great ease of entering the market	Relatively high ease of entry	It's difficult to enter the market; large financial expenditures are required	It's very difficult to enter the market
Market information	Excellent transparency, sellers and buyers have full knowledge of the market	The high degree of market opacity is limited by knowledge of the market	High level of opacity of information	A large range of information
Competing methods	Only price competition	Competition based on promotion and quality	Competition based on promotion, quality and diversity of products	No competition

Source: A. Jonas (2002), *Strategie konkurencji na rynku usług bankowych*, Biblioteka Menadżera i Bankowca, Warszawa, pp. 11–12.

Researchers dealing with the issue of enterprise competitiveness try to explain, first of all, why some companies are successful and others are not, even though they operate in the same environment. The concept of competitiveness can mean the ability to achieve and maintain a competitive advantage. Competitiveness understood in this way can be treated as a synonym for the competitive ability of an enterprise. In a simplified way, according to Godziszewski, one can assume that competitiveness means the ability to compete, and therefore act and survive in a competitive environment (Godziszewski 2001, pp. 69–70).

The competitive potential of an enterprise is all the material and non-material resources necessary for the company to compete. The company's acquisition of the best resources and their effective use are the main goals of management decisions in the organization. The potential it has affects the achievement of a specific competitive advantage, but it is attained by the company using various instruments of competition. Porter stated that a company gains an advantage over its competitors when it offers a product or service of a quality not lower than the competition, but at a definitely lower price, and when offering a product or service of a higher quality than the competition, but at a price no higher than the competitors' price (Pawłowski 2005, p. 28).

In terms of microeconomics, competitiveness is usually analyzed on the basis of the following relationship: business entity, its potential, capabilities and skills, the market structure, as well as strategic chances. It means the ability to design, manufacture/create and sell goods/services whose prices, quality and other advantages are more attractive than the respective qualities of the goods/services offered by the competitors. Nowadays, especially in relation to entities in the services sector (including banks), it is reasonable to consider competitiveness in a systemic view, or as a system including competitiveness potential (resources), ability to compete (instruments and tactics), competitive advantage (values determining the advantage of on offer in relation to competitors), and competitive position in the stabilized market industry (Rosińska-Bukowska 2012, p. 92).

The specificity of competition in the banking sector

The banking sector is now considered to be an economic area particularly vulnerable to a high level of competition. This may mean the increased risk of a crisis developing. Thus, banks have been limited in terms of strong regulations relating to the extent of interest rates, geographical coverage and the activity in question. The free banking market has also remained limited by the presence of the central bank as a lender of last resort or systems of guaranteed deposits (Miklaszewska 2010, pp. 10–12).

Flejterski said that the competitiveness of a modern bank can be considered its long-term ability to design and sell products whose quality and other values are more attractive than the corresponding product features offered by domestic or foreign competitors (Flejterski 1999, p. 39). Competitiveness is not a lifetime asset of the bank, it changes over time, and it must be constantly built to remain at a satisfactory level. Therefore, maintaining a competitive advantage is a problem for every bank, especially in selected segments of the banking, deposit, credit, and payment and settlement banking market.

Deregulation, which provided banks with free access to develop their business, has become a process which initiates the development of competition in the banking sector. The rapidly changing banking environment has become one such factor, as well. The phenomena and processes that affect the banking sector have become more intense and have led to them being forced to continuously adapt to the changing reality so as to not diminish this competitive advantage. However, we can talk about real competition in the banking sector in the case when saturation with services and banking products is so huge that the competition begins to have an impact on the operations and financial results of the bank (Kosiński 2001, p. 121).

Nowadays, a bank can achieve a sustainable competitive advantage thanks to a more extensive system of providing services to clients or making employees with their own initiative more efficient and flexible in customer service. Each bank may also be distinguished by the reach of the activity, the number of clients and the possibility of offering a service related to its basic operation more easily and at costs lower than the competitors. The decentralization of the organization, which affects faster and more efficient customer service, is conducive to building a competitive advantage. The transformation processes in the environment of the banking sector have an impact on competition in that market. The complexity of the nature of the banking business contributes to it being a complicated phenomenon. Strong competition, which is a driver of the economy, does not result in positive action in the banking sector. It may contribute to high-risk induction for individual banks as well as the stability of the entire sector (Szpringer 1994, p. 65).

In developed countries, the typical banking services market is structured similarly to an oligopoly. It is characterized by a large group of major banks (participants, vendors) functioning within the market, and its concept involves a considerable share in the total volume of supply, economic strength and a dominant role in the market. Smaller banks present within this structure play a complementary role, and are often specialized in specific market niches. Entering the market is difficult for new entities due to significant entry barriers in the form of capital, cultural, technological or commodity requirements (Pawłowska 2014, p.17).

Due to the way an oligopoly functions, large banks have the possibility to strongly impact the struggles undertaken in the market. They may additionally cause the desired reactions among clients as well as lead to a delayed reaction of the other market participants. What is also characteristic is the interplay between actors that affects the quality of products and services, distribution, prices and promotions. To sum up, larger banks relevant to the banking market are able to stabilize the whole sector, due to the conviction that they are safer. In addition, their advantage is reflected in the quality and diversity of services and applied innovation. These banks may also have an impact on the banking sector; on the behavior of smaller entities by introducing, e.g., changes in the level of interest rates or indicating new forms of deposits and loans.

A competitive advantage can be built with distinguishable abilities. These are the basic skills that lead to distinguishing the bank from its competitors and it may become a source of competitive advantage. The term 'innovation' as a factor of competitiveness is conditioned by the fact that the processes associated with the development of innovation include an element of novelty and change, and they have a dynamic and creative character. Innovation is a factor closely linked to the effectiveness of a bank's activities. The impact of innovation on other factors of competitiveness tends to have a positive character, and it strongly influences the shaping of market demand (Davidson 1989).

Competition in the banking sector has no chance to create a form of destructive rivalry, leading to drastic actions, because as institutions of public trust, they cannot allow their image to be ruined. This would lead to lower trust among stakeholders and destabilization of the financial sector (Pawłowska 2005, p. 31). It may be appropriate to use the phrase "coopetition" with regard to the banking sector. It defines a way of competing based on a cooperation which is simultaneously rivalry and collaboration (Rosińska-Bukowska 2012, p. 31).

One of the basic areas of cooperation in the field of coopetition is the creation of regulations covering the entire banking sector. Legal standards are set by legislators, while banks can take the role of opinion-makers in environmental consultations and limit the probability of introducing ineffective and harmful standards (Marcinkowska 2013, p. 218). It can be concluded that coopetition is a situation in which banks compete in certain areas, but in others, they are able to cooperate in sharing knowledge and exchanging experiences. It also results from the sense of their own strength of key competencies, as well as knowledge about the requirements of the functioning of the modern market. The coopetition strategy is based on both the analysis of ever-changing standards and the search for the concept of creating new added value. The coopetition strategy also allows all innovative economic entities, even those that do not have sufficient potential, to internationalize their discoveries, to start cooperation with a larger entity, which will enable them to develop a unique innovative solution (Rosińska-Bukowska 2014, p. 8).

To a large extent, a theory explaining the effect of competition in the financial markets is J.M. Clark's theory of "workable" (or effective) competition. Decision makers don't look for the best possible solutions, only those that bring the greatest satisfaction are significant. A huge role in causing a financial entity to be attractive relies on the increase in the level of trust and the ability to compete on quality rather than price. Banks do not maintain products at a high price level, as this would encourage new participants, e.g., insurance companies or investment funds, to join the market. This does not mean, however, that there is no competition among banks. As mentioned previously, one area of mild competitive rivalry could be a minimally invasive pricing policy that consists of an interest rate policy of deposits, loan cost, as well as the cost of intermediary operations (Bednarska-Olejniczak 2011, p. 24; Grzegorczyk 1997, pp. 32–33).

The quality of customer service can also become a key tool in the competitive struggle, as it is of great importance in the modern world. This is emphasized in particular by the large number of rankings and surveys created in order to check the status of employee competence and their relationship with the customer. In the case of banking services, customers pay special attention to the efficiency of the process, familiarity with the procedure, the ability to make quick decisions and the bank's flexibility in determining the conditions of the product's use. The components of competitive struggle for a large bank-up can also include a wide range of banking services offered, various means of distribution and an increase in importance of marketing (Pierścionek 2007, p. 36; Kisiel 2007, pp. 15–17).

Scientific research on competition in the banking sector is currently conducted within the framework of the microeconomic theory of a banking enterprise, named an aftermarket organization, and competition in the banking sector. In this approach, the banking sector is modeled as an independent set of individuals that respond optimally to changes in the environment. Competition is determined here by such measures as market power and efficiency. Efficiency, according to the traditional concept, is based on indicators such as ROA (return on assets), ROE (return on equity) or NIM (net interest margin) (Van Hoose 2010, p. 8).

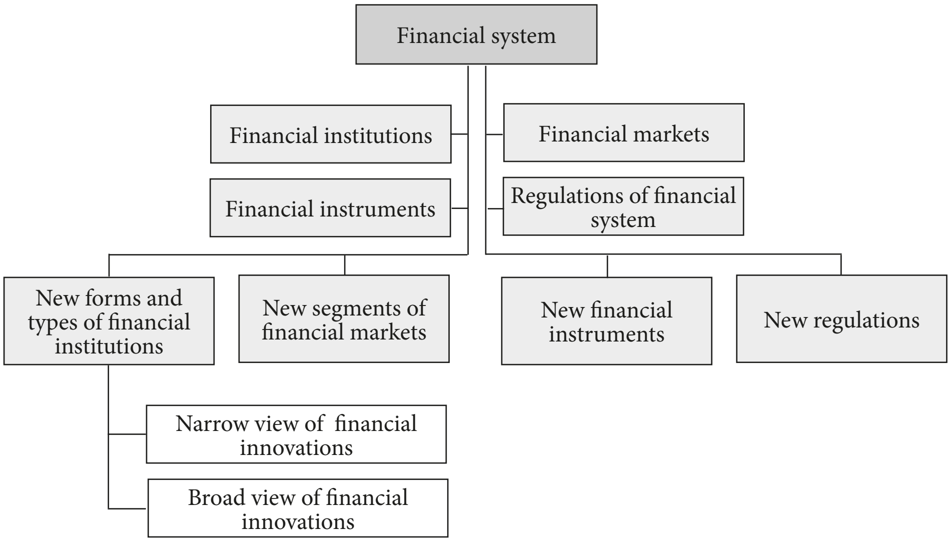
Financial innovations

The modern economy could not function without an efficient financial system, referred to as a set of markets, institutions, and regulations, by means of which financial services can be provided, and interest rates and securities can be managed. This is considered the most important achievement of the economic system. It determines the cost of capital and the availability of funds in daily transactions of purchasing and selling. The modern financial system is characterized by the continuous implementation of innovative financial solutions (Grzegorczyk 1997, p. 36).

Financial innovations can thus be defined as financial services which offer certain customers a new product. They also refer to actions which aim at introducing or improving financial instruments, making changes in the organizational structure of the system and implementing modern technology and computerization (Kisiel 2007, p. 15).

Financial innovations, despite their long history, are not uniformly described and defined in the literature of the subject. The concept can be understood in two views: narrower and wider (see diagram 1). The narrower meaning of the term is applied only to financial instruments and new solutions, which may include new instruments, combining traditional instruments, new services, and financial techniques. The wider meaning of financial innovation refers to the entire financial system and to the functioning of any of its elements, i.e., new financial intermediaries, new financial instruments, new financial services, and new financing techniques (Marcinkowska 2012, p. 73).

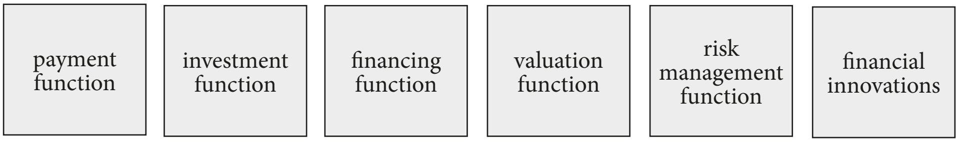
Diagram 1. Financial innovations in the narrow and broad sense



Source: M. Marcinkowska (2012), *Innowacje finansowe w bankach*, "Acta Universitatis Lodziensis. Folia Oeconomica", No. 266, p. 73.

In the literature, different categories of functions are assigned to financial innovations. Thus, they can assume functions corresponding to the financial system (see figure 3). For example, three categories of financial innovations arising from their function highlighted by the Economic Council of Canada can be presented: innovations in risk management, instruments and processes of arbitration, and market expanding instruments (Krzyżkiewicz 1996, p. 10). The last of the mentioned categories is related to increasing the liquidity of financial markets and enabling the use of new investment opportunities. As a result of innovations in risk management, risk is diverted to entities with less risk aversion or to those that are better prepared (Rose 2009, p. 65). Instruments and arbitration processes allow banks to gain profit through the difference in costs and rates of increase in markets.

Figure 1. Functions of financial innovations



Source: Z. Krzyżkiewicz (1996), *Innowacje bankowe*, Wyższa Szkoła Ubezpieczeń i Bankowości, Warszawa, p. 10.

A commonly known classification of innovation is the one presented by the OECD. It stands out due to its product, process, organizational and marketing innovations. It should be noted that financial innovations are often difficult to assign to one category, because the process of their creation requires changes in various areas of activity. In this sense, they are systemic in nature (Marcinkowska 2012, p. 75).

The changes that occur in the microeconomic and macroeconomic environment mean that banks and other companies operating in the market face the challenges and changing conditions of competition. Taking into account the specificities related to the functioning of banks and the immateriality of the products that they deliver onto the market, it appears that how they build a competitive advantage is a complex process (Skawińska 2002, p. 76).

Financial innovations, which may become a factor that distinguishes a bank, should not involve only new innovations, but also hitherto unused banking operations and new financial instruments. Innovation should also be characterized by a change in the areas that determine a bank's activities, including processes, organization or marketing. It can, however, be noted that due to the complexity of implementing the same financial innovation, building a competitive advantage by using this ability is not easy. This is due to the specificity of financial innovations (Rzempała 2012, p. 2012).

The innovativeness of Polish banks – in the light of the research

The banking sector in Poland is becoming more and more innovative. This is evidenced by numerous awards in international competitions and the results of research from 2014 conducted by Forrester Research where European Internet banks were analyzed in terms of functionality. In that study, Polish banks received the best scores. *American Banker* pointed out that the services of modern Polish banks are a good model to follow for US banks (Kostecka 2014).

For the purpose of the study, four Polish banks which are distinctive in terms of asset size, number of customers and international successes in the field of innovations were chosen. The banks which have received the most awards in this area are PKO BP, mBank, Idea Bank and ING Bank Śląski (see table 2).

Table 2. Bank awards for innovative solutions

Bank	Awards	Year
PKO BP	Mobile Trends Awards Gold Bell of Mobile Bank Mobile Bank of the Year The Best Finance Brand IT Leader	2016
mBank	World Best Internet Bank Digital Marketing Global Innovation Innovation and Emerging Techniques EMFA-Accenture Innovation	2015
ING Bank	IAB MIXX Digital Bank of Distinction IT Leader Banking star Forbes: Best Online Banking and Mobile Application	2016
Idea Bank	Fintech Innovation Awards Innovation Excellence The Best Digital Innovation Innovation Ad Award	2016

Source: main website of mBank, ING Bank, Idea bank and PKO BP.

The subject of the study presented in this article is the analysis of the competitiveness of four Polish banks: PKO BP, ING Bank Śląski, mBank and Idea Bank against the background of the entire Polish banking sector. It was recognized that the key determinant of their competitive position could be the advanced level of innovations introduced by banks. An empirical study proving the impact of innovativeness on the competitiveness of banks will be supported by a detailed analysis of the basic numerical data in the form of assets, deposits and loans. Further analysis will be based on performance indicators in the form of ROA, ROE, CIR, NIM and interest spread. The article presents the value of assets, deposits and loans in the analyzed banks. Attention is also focused on net profit, the number of clients, bank branches and the number of key innovators.

This was also compared with the values in the banking sector. This should prove that innovative banks are able to sell them more products thanks to the amenities for customers they have introduced. These banks also significantly increase the number of new customers, and at the same time give out a larger profit. In addition, an innovative bank should increase its values in particular features faster than the banking sector and significantly increase its market share.

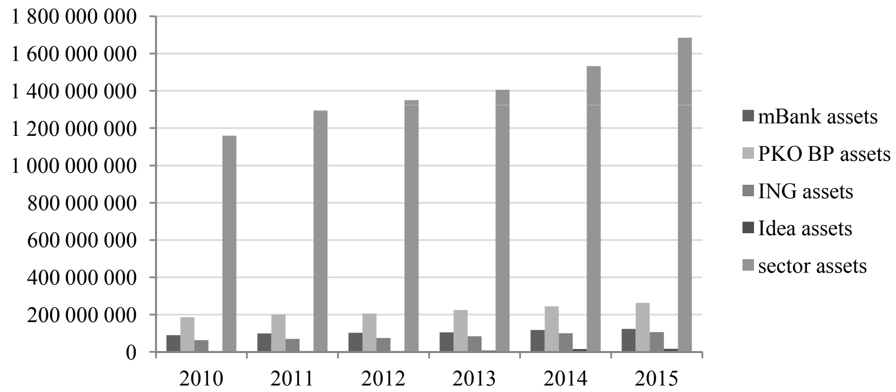
It can often be found in scientific studies that the implementation of innovative products in banks improves its profitability and competitive position. The impact of innovation on the basic indicators characterizing a bank's activity and financial results is not specified. According to the literature, innovations fulfill the marketing functions of maintaining the bank's image, but they are not reflected in a translation into profit. The basic characteristics of the numerical data of the analyzed banks have not proved that innovative banks have a larger share of loans and deposits in relation to the banking sector, or significant increases in the number of clients at a level higher than the competition.

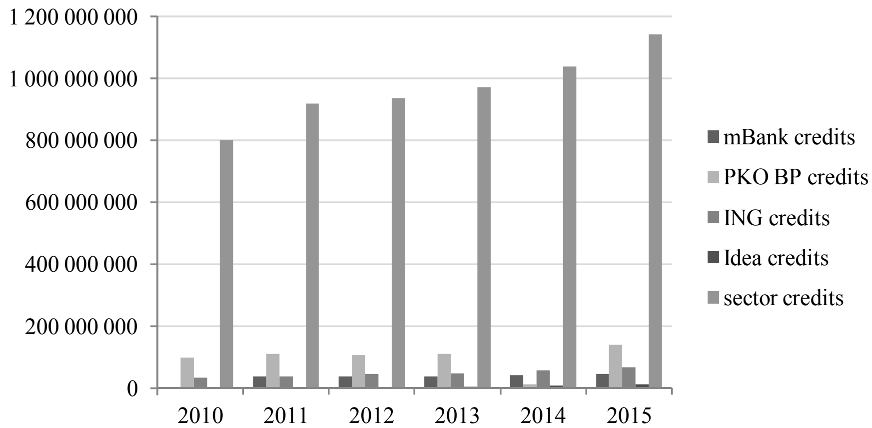
The increase in the number of accounts in the analyzed banks also took place at a level similar to that of the whole sector. Performance indicators in the form of NIM, interest spread, and interest margin were at a lower level than the banking sector indicators. A higher level of innovation is therefore not a determinant of better financial results achieved by the bank. Profitability ratios were at a similar level. The indicators of the analyzed banks were, on average, a few percentage points higher than the banking sector, which could be the result of effective bank management rather than the implementation of innovations. A visible connection between the increasing efficiency of the bank and the amount of innovation does not occur.

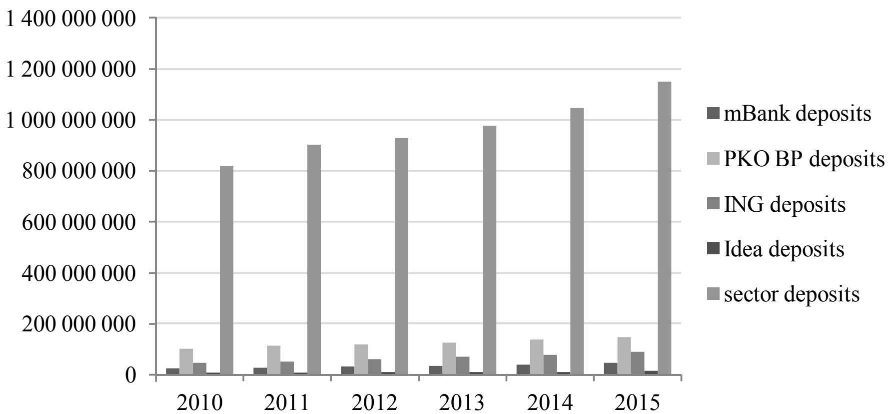
From 2010 to 2015, there was an increase in the size of assets in each analyzed bank by an average of 6% over the entire period (table 3). In the banking sector, the level of assets changed by 9% in each of the analyzed years. The value of assets in the sector grew faster than PKO BP, Idea, ING and mBank. The largest share of assets in the banking sector in 2015 was observed in PKO BP and accounted for 11%. Idea bank in 2015 had a 0.3% share of assets relative to the banking sector. This figure has changed by 0.05% since 2014. ING Bank Śląski recorded a 7% share in the value of assets of the banking sector in 2015, while 8% was observed in mBank. ING Bank Śląski increased the value of assets by 60%, mBank by 72%, and Idea Bank by 27% (KNF Report 2015)

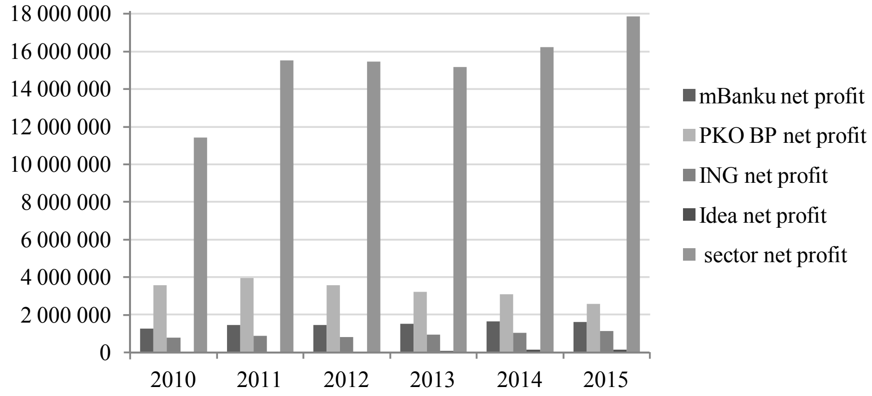
The loan market in the Polish banking sector gradually increased in the period from 2010 to 2015. In 2015, it can be observed that this value exceeded one trillion PLN. In the analyzed period, the value of loans in the banking sector increased by 4.2% per annum. The highest growth rate was observed in 2015, when it reached a value of 10% (table 3). The situation on the credit market in this period is connected with the good macroeconomic situation of Poland, the weakening of the Polish currency and a record low level of the Lombard rate (NBP Report 2015). PKO BP had the highest value of loans compared to the banking sector with 12% in 2015 while the smallest was observed in the case of Idea with 1%. ING and mBank were at a level of 6% and 7% respectively (table 3). The value of granted loans also increased to a greater extent than the entire banking sector, but also fell in 2011, due to a decrease in interest in consumer loans (KNF Report 2015).

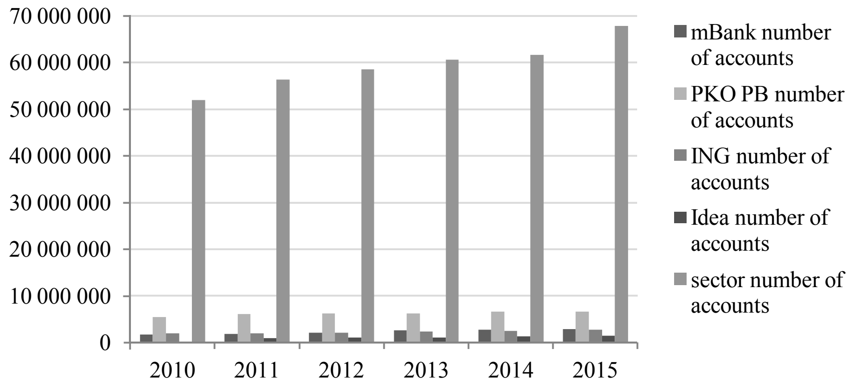
Table 3. The volume of ING Bank, mBank, PKO BP, and Idea Bank loans, deposits, assets, clients and accounts compared to the banking sector (2010–2015)

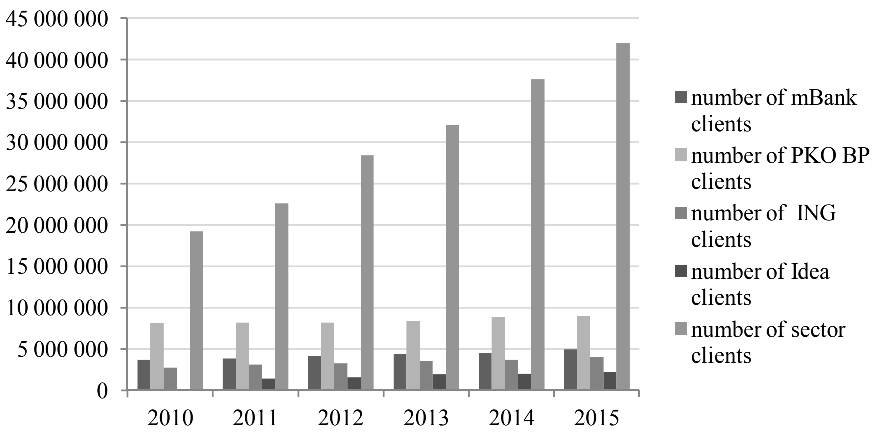












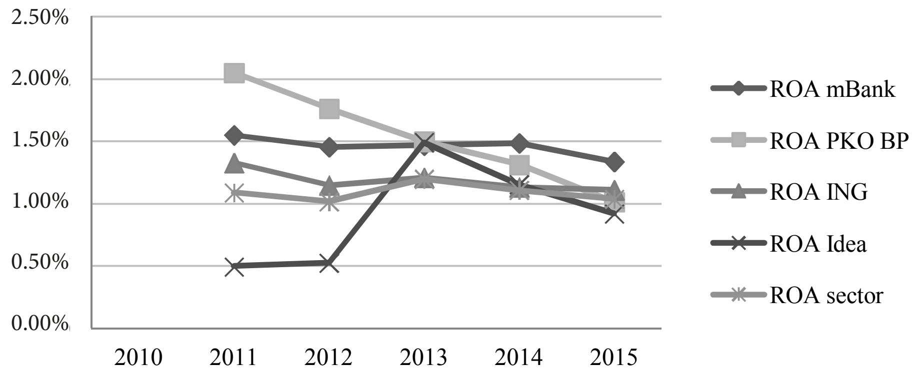
Source: Związek Banków Polskich, *Raport o sytuacji ekonomicznej sektora bankowego* 2014, www.wib.org.pl/uploaded/publikacje/Raport_BANKI_2014_[2015].pdf [accessed: 15.12.2014] and KNF, *Raport o sytuacji banków 2010–2015*, www.knf.gov.pl/opracowania/sektor_bankowy/raporty_i_opracowania/publikacje_sektora_bankowego/index.html [accessed: 10.05.2015] and *Raportów z działalności Zarządu banków PKO BP*, *ING*, *Idea Banku w latach 2010–2015*.

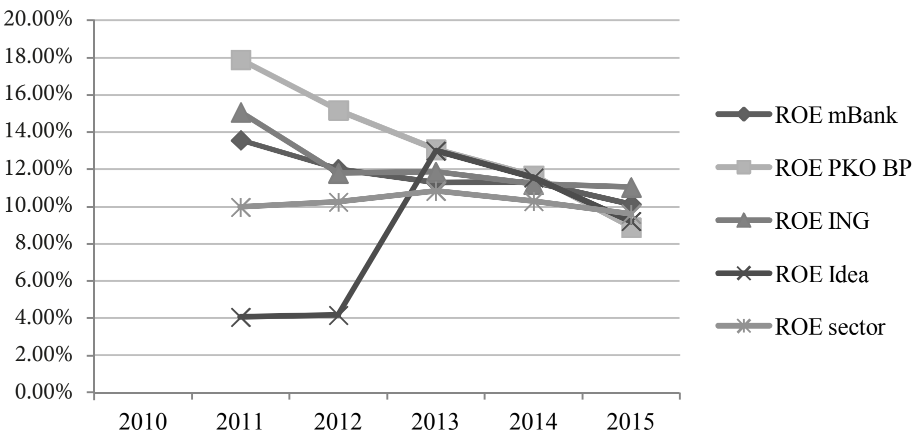
The value of the deposit market in the Polish banking sector between 2010 and 2015 increased by 30%. The largest increase of 6% can be observed in 2015, and this is related to the improving situation on the labor market and a significant deterioration of the rate of return on investment funds. Despite the low interest rates, consumers more willingly deposited their money in the bank. The smallest value of deposits in relation to the banking sector was held by Idea Bank, which was at the level of 0.5%. This was due to the bank's business profile, which includes the business sector and low-level acquisition of clients for the first 6 years of operation (table 2). Initially, the bank limited itself mainly to granting loans, but later expanded its functionality (KNF Report 2015). PKO BP has a dominant position in terms of deposits compared to the banking sector market, and in 2015 this value was 13%. This value changed on average by 0.8 percentage points each year, which is slower than in the entire Polish sector. ING Bank Śląski had a 9% share in the deposit market in 2015 and mBank had 11%. Also, these values changed more slowly than in the whole sector (NBP Report 2015).

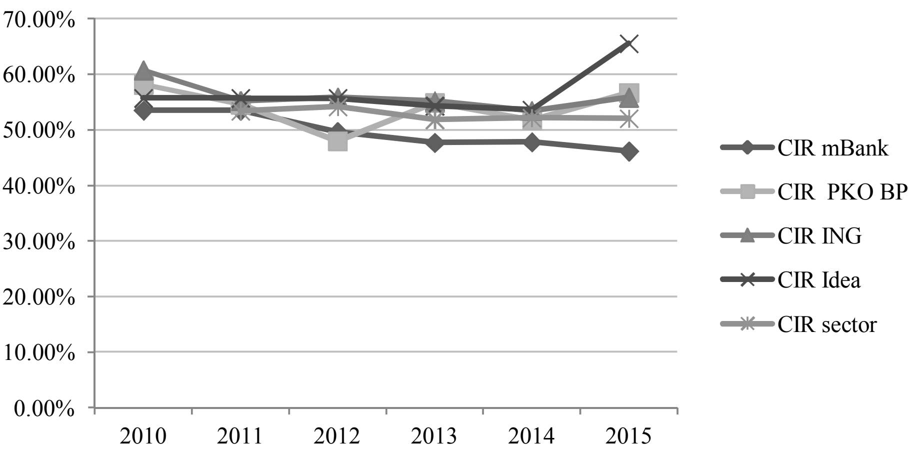
The profit of the banking sector in 2015 reached the highest result (over 160 billion PLN) in the analyzed period of 2010–2015, despite the significant costs that banks had to incur due to the suspension of the activity of Spółdzielczy Bank Rzemiosła i Rolnictwa in Wołomin and making expenditures of PLN 2 billion for the payment of guaranteed deposits (KNF Report 2015). The costs decreasing the dynamics of net profit growth are the stabilization of the situation on the housing loans market related to the destabilization of the Swiss franc exchange rate. In comparison with the banking sector, the highest level of profit was recorded by PKO BP at 14% (table 2). PKO BP noted a drop in profits within 5 years due to the high share of costs in the bank's entire structure and a lower level of revenues from basic banking operations. In 2013, the largest increase in financial profit (25%) was recorded by Idea Bank, and it was related to the bank's restructuring, reduction in the number of employees, and the increase in the share of IT systems and increased marketing action (table 2). mBank and ING Bank Śląski successively increased their net profit, the former by 4% and the latter by 3% per annum.

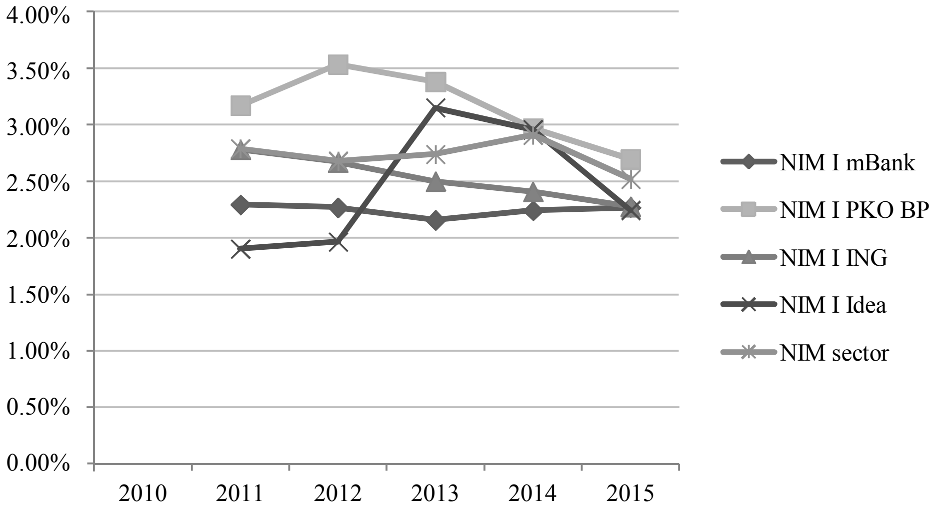
Growth in the CIR index in 2015 is recorded in three of the four analyzed banks. The biggest increase in the value of the indicator can be observed in the case of Idea Bank, as it was close to 10%. The increase in the ratio results from additional contributions to the Bank Guarantee Fund and an increase in administrative costs as well as outlays on restructuring work related to the change of IT systems and employment costs. At ING Bank Śląski, this ratio remained at a relatively constant level, very close to the CIR level in the sector. The smallest CIR is mBank, which dropped by 6% from 2010. This is the result of the bank's management activities, primarily the reduction of the number of management employees. In most cases, banks maintained a very similar level of performance in the banking sector. Innovative banks in this case do not show a significant increase in the efficiency of the indicator, exceeding the sector, as exemplified by Idea Bank, and a significant increase in the index in 2015.

Table 4. Selected efficiency ratios of ING Bank, mBank, PKO BP, and Idea Bank compared to the banking sector (2010–2015)









Source: Związek Banków Polskich, *Raport o sytuacji ekonomicznej sektora bankowego 2014*, www.wib.org.pl/uploaded/publikacje/Raport_BANKI_2014_[2015].pdf [accessed: 15.12.2014] and KNF, *Raport o sytuacji banków 2010–2015*, www.knf.gov.pl/opracowania/sektor_bankowy/raporty_i_opracowania/publikacje_sektora_bankowego/index.html, [accessed:10.05.2015] and *Raportów z działalności Zarządu banków PKO BP*, *ING*, *Idea Banku w latach 2010–2015*.

In 2015, ROA in the sector was 1.3%, which represents a 0.2 percentage points increase from the previous year. In the years 2010–2015, ROA in the analyzed banks decreased. The biggest changes are related to 2015 and are connected with the increasing costs of the banking sector and the complex situation on the housing loan market (KNF Report 2015). The highest value in 2011 was recorded by PKO BP bank, which amounted to 2.1%. This resulted from a complete modernization of the bank and its image, and thus, also with more intense credit action. ROA in ING Bank Śląski was at a similar level to the banking sector; in 2015, it increased by 0.4 percentage points and amounted to 1.3%. ROA of mBank in the last year also recorded a decline. It was at a level of 0.4 percentage points, which was due to a decrease in net profit and large exposure to Swiss franc loans. Idea Bank increased its ROA in 2013 by increasing its sales and net income from banking operations. The following year's decline in ROA is due to an increase in the cost of the banking sector (table 4). Over a period of 5 years, the analyzed banks showed a higher ROA than the banking sector. This indicates effective management of the analyzed banks' assets. Additionally, the average annual growth of ROA in the analyzed banks is higher than in the sector (NBP Report 2015).

We see a decline in ROE in all banks. In ING, this was a drop of 2 percentage points, while mBank decreased by 1 percentage point, and Idea showed the lowest ROE. In 2013, it recorded a threefold increase due to growth in the company's equity and profit from banking operations. Declines in all analyzed banks may mean a decrease in net profit, an increase in costs or low efficiency with the use of equity. The ROE of PKO BP, mBank and ING Bank Śląski in the whole period was higher than the ROE of the sector (table 4). The ROE of banks also grew faster than the sector average over the reviewed period by an average of 2.4 percentage points, which may be due to effective management (NBP Report 2015).

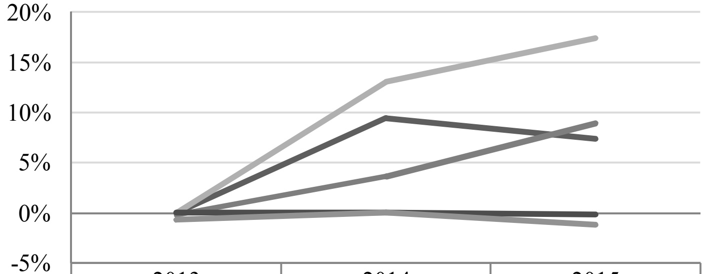
The value of NIM among the other banks does not exceed 2.5%. An exception was Idea bank in 2013, in connection with restructuring and changes in the table of fees and commissions. Banks reported a decline in NIMs due to low interest rates and regulations that do not allow them to obtain higher credit income. The interest margin of the sector since 2012 is higher than the interest margin of ING, Idea Bank and mBank. The interest rate in the banking sector has increased by 0.3 percentage points since 2012 (KNF Report 2015).

The rest of the analysis will be based on quantitative and qualitative indicators determining the competitiveness of banks in the context of key innovations. The analysis used indicators such as net profit, ROA, ROE, the number of deposits and loans, and the number of clients. The analysis period covered the introduction of ING, Idea, mBank and PKO BP banks. Product innovations include new electronic and mobile banking systems, i.e., Idea Cloud, Idea Mobile, IPKO and IKO, mBank online and mBank mobile, as well as INGBankonline and INGBank-mobile.

Case study of mBank. Determining the impact of innovation on the effectiveness of the bank can be demonstrated by analysing the market share of the bank at a given time. Since 2010 mBank has had a similar market share in loans, deposits and bank accounts. This value remained in the range of not more than 8%. The value of assets, loans and number of accounts in relation to the banking sector over five years grew by 0.5 percentage points. Market share has not grown since 2013, when the bank implemented its key innovations. Since 2013, the ratio of the number of users of electronic and mobile banking for the whole sector has gradually declined. A similar trend is observed in terms of profit and the number of customers.

In the case of mBank, it can be observed that the number of users of key innovations is growing although the dynamics of growth is decreasing. In the same period, there was a noticeable increase in net profit; however, financial reports indicate a new strategy of cost management and cooperation with new entities as being the reason for this trend. The issue of innovation is not mentioned. However, ROA and ROE, show negative growth against other indicators, which is due to the macroeconomic situation (figure 2).

Figure 2. Increase in annual net profit, ROA, and ROE of mBank and key innovations in 2013–2015



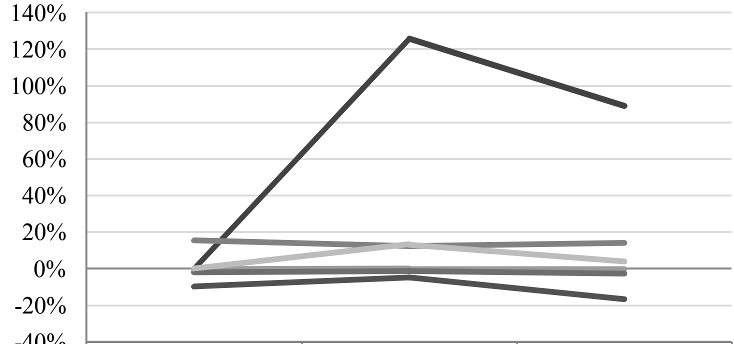
	2013	2014	2015
mBankMobile	0%	9%	7%
mBankOnline	0%	13%	17%
Net profit mBank	-0.16%	3.61%	8.89%
ROA mBank	0.01%	0.02%	-0.15%
ROE mBank	-0.72%	0.01%	-1.18%

Source: *Raport o sytuacji ekonomicznej sektora bankowego 2014*, www.wib.org.pl/uploaded/publikacje/Raport_BANKI_2014_[2015].pdf [accessed: 15.12.2014] and KNF, *Raport o sytuacji banków 2010–2015*, www.knf.gov.pl/opracowania/sektor_bankowy/raporty_i_opracowania/publikacje_sektora_bankowego/index.html, [accessed: 10.05.2015] and *Raportów z działalności Zarządu mBanku w latach 2010–2015*, *Raportów z działalności Zarządu banków PKO BP*, *ING*, *Idea Banku w latach 2010–2015*.

Case study of PKO BP. The market share of the bank PKO BP has decreased since 2013, which is when it started to implement key innovations – IKO and PKO Junior, as well as a change of image. The ratio of deposits to the deposits of the banking sector has increased by 2% over the years (figure 3). From 2013, the ratio of the number of bank accounts to the number of accounts in the sector, as well as the value of PKO BP loans to loans in the sector increased by 3%. When analyzing the percentage of market share, the number of electronic banking users and the number of clients of the PKO BP bank since 2013 has reduced by an average of 2%.

The analyzed graph shows annual increases in the period from 2013 to 2015 in net profit, ROA, and ROE of PKO BP. Furthermore, the growth of innovative products such as IKOmobile banking, IPKObanking and PKO Junior can be observed. Net profit in the period decreased with an increase in users of key innovations. In 2014, in terms of IKO, the number of users increased by nearly 130% (figure 3). Based on the data, a trend of developing new innovations can be noticed – although the dynamic growth related to the beginning of the operations decreased, these solutions are still gaining new users. Profitability ratios as well as the increase in net profit show that the banking sector is affected by many market factors that cannot be accurately separated and evaluated, and it is not possible to say which of them is crucial. The figures below show the percentage changes in the key indicators ROA and ROE, as well as net profit, and the percentage change in the number of users of key innovations. This should show the direct relationship between the declines and increases in various ratios and net profit in relation to the development of the given innovation and increase in the number of users.

Figure 3. Increase in annual net profit, ROA and ROE of PKO BP and key innovations in 2013–2015



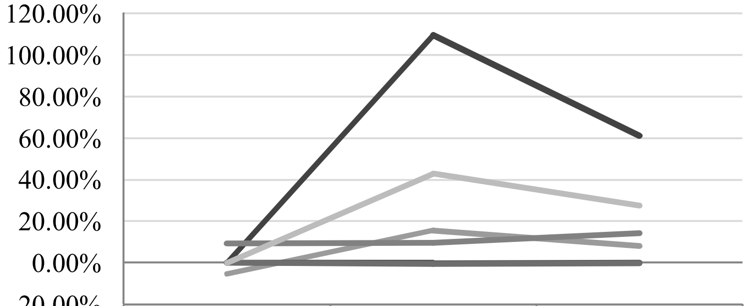
	2013	2014	2015
Net Profit PKO BP	-10%	-5%	-16%
ROA PKO BP	-0.26%	-0.19%	-0.30%
ROE PKO BP	-2.11%	-1.39%	-2.79%
IKO	0%	126%	89%
IPKO	15%	12%	14%
PKO Junior	0%	13%	4%

Source: Związek Banków Polskich, *Raport o sytuacji ekonomicznej sektora bankowego 2014*, www.wib.org.pl/uploaded/publikacje/Raport_BANKI_2014_[2015].pdf [accessed: 15.12.2014] and KNF, *Raport o sytuacji banków 2010–2015*, www.knf.gov.pl/opracowania/sektor_bankowy/raporty_i_opracowania/publikacje_sektora_bankowego/index.html, [accessed: 10.05.2015] and *Raportów z działalności Zarządu mBanku w latach 2010–2015*, *Raportów z działalności Zarządu banków PKO BP*, *ING*, *Idea Banku w latach 2010–2015.*

Case study of ING. The market share of ING Bank has increased since 2013. The ratio of the number of accounts to the number of accounts in the sector increased to 4.5%, which is an increase of 0.2% since 2010. Since 2013, the market share of assets, net income, loans and deposits has increased by an average of 0.3% per year (figure 4). However, the market share of customers and users of electronic banking has dropped by 2% per year. The decrease in the share of users of electronic banking might also be a result of the increasing number of users of the sector and the increased use of this functionality among customers.

In the years 2014 and 2015, ING Bank Śląski recorded significant growth in net profit, which resulted in a positive increase in ROA and ROE. The bank's net profit increased through intensive activity in the range of the credit and deposit segments as well as a significant increase in individual customers and corporate clients. Key innovations are popular among customers and new users. The increase in the number of mobile banking users was nearly 10-fold higher than the increase in users of electronic banking in 2014 (see figure 4).

Figure 4. Increases in annual net profit, ROA, and ROE of ING bank, and key innovations in 2013–2015



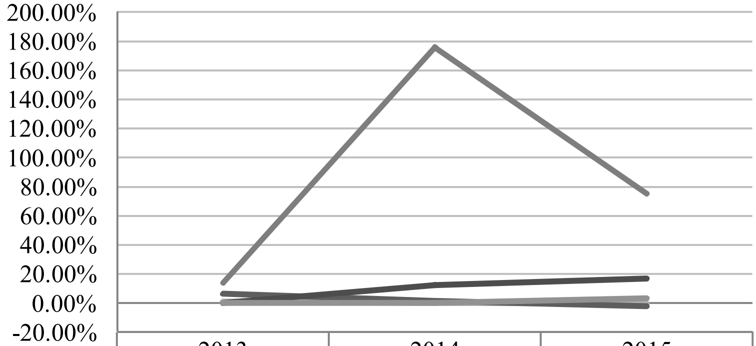
	2013	2014	2015
Net profit ING	-5.43%	15.52%	8.24%
ROA ING	0.06%	-0.08%	-0.02%
ROE ING	0.07%	-0.66%	-0.16%
INGBankMobile	0.00%	109.52%	61.08%
lNGBankOnline	9.15%	9.59%	14.38%
Aleo	0.00%	42.86%	27.62%

Source: *Raport o sytuacji ekonomicznej sektora bankowego 2014*, www.wib.org.pl/uploaded/publikacje/Raport_BANKI_2014_[2015].pdf [accessed: 15.12.2014] and KNF, *Raport o sytuacji banków 2010–2015*, www.knf.gov.pl/opracowania/sektor_bankowy/raporty_i_opracowania/publikacje_sektora_bankowego/index.html, [accessed: 10.05.2015] and *Raportów z działalności Zarządu mBanku w latach 2010–2015*, *Raportów z działalności Zarządu banków PKO BP*, *ING*, *Idea Banku w latach 2010–2015.*

Case study of Idea Bank. The market share of Idea Bank is insignificant. The ratio of the number of accounts of Idea Bank to the number of accounts in the entire sector amounted to 2.2%, and since 2013 it has increased by 1.2 percentage points. The market share in 2015 was at a similar level of about 1%, regardless of the measure considered, be it assets, loans or net profit. Starting in 2013, these figures increased by 0.4 percentage points. Participation in the deposit market remains at an even level of 1%.

From 2010, Idea Bank has focused mainly on gaining new customers and increasing the effectiveness of their credit offer. Net profit significantly increased in the period 2013–2015, which was the result of a number of marketing activities of the bank aimed at attracting entrepreneurs starting a business. It also resulted from implementing a new banking system and reducing the levels of risk, and preparing for entry on the stock exchange. ROA and ROE indicators remained low, while the number of users of key innovations increased with low dynamics due to scepticism on the subject of the new Cloud system (see figure 5).

Figure 5. Increase in annual net profit, ROA, and ROE of Idea Bank and key innovations in 2013–2015



	2013	2014	2015
ROA IDEA	0.65%	-0.02%	-0.24%
ROE IDEA	6.06%	1.32%	-2.34%
net profit IDEA	14%	176%	75%
mobile banking	0%	12%	17%
Cloud	0%	0%	3%

Source: Związek Banków Polskich, *Raport o sytuacji ekonomicznej sektora bankowego 2014*, www.wib.org.pl/uploaded/publikacje/Raport_BANKI_2014_[2015].pdf [accessed: 15.12.2014] and KNF, *Raport o sytuacji banków 2010–2015*, www.knf.gov.pl/opracowania/sektor_bankowy/raporty_i_opracowania/publikacje_sektora_bankowego/index.html, [accessed: 10.05.2015] and *Raportów z działalności Zarządu mBanku w latach 2010–2015*, *Raportów z działalności Zarządu banków PKO BP*, *ING*, *Idea Banku w latach 2010–2015*

In scientific studies, the statement that the implementation of innovative products in banks improves profitability and the competitive position can be encountered very often. The impact of innovation on basic indicators characterizing the bank's business and financial results is not specified. According to the literature on the subject, innovations meet the marketing functions of supporting the bank's image, but they are not reflected in the profit ratio (Hansen 2016).

The basic characteristics of the figures of the analyzed banks have not proven that innovative banks have a larger share of loans and deposits in relation to the banking sector, nor do they cause significant increases in the number of customers at a level higher than the competition. The increase in the number of accounts in the analyzed banks also took place at a level similar to the sector. Efficiency ratios in the form of net interest margin (NIM), interest spread and interest margin remained at a lower level than those of the banking sector. A higher level of innovation is thus not a determinant of better financial results achieved by the bank. Profitability indicators remained at a similar level. Indicators of the analyzed banks were, on average, higher by several percentage points than those of the banking sector, which could have been the result of effective bank management, and not the implementation of innovations. A visible relationship between increasing the efficiency of the bank and the amount of innovation does not occur.

It cannot be clearly stated that innovative products in banks contribute to the increase of efficiency ratios, bringing profit and an unassailable competitive position. The aim of implementing innovations is to realize a marketing strategy that would allow a bank to stay on the market and provide comfort to customers who feel that the bank they use guarantees modern solutions. Continuous development of the system of payment products is expected to show that the bank is flexible and can adapt to the market. The creativity of banks in this area aims at keeping customers. This can also be achieved by the bank receiving prestigious awards in the form of honors and titles. Implementing innovations also affects the image of the Polish banking market abroad. An increase in customer satisfaction with the availability of modern banking products and services leads to a situation in which foreign banks struggle with significant barriers to enter the Polish market.

Conclusion

The analysis of indicators and basic figures compared to the sector leads to the conclusion that the banking business is strongly affected by external factors and macroeconomic changes resulting from the functioning of the banking sector. First of all, banks are dependent on political changes and strengthening of regulations, as well as the correlation between individual banks in connection with the operation of, i.e., The Bank Guarantee Fund.

Innovative banks don't have a higher market share or better value efficiency ratios. An innovative bank is also not characterized by outstanding sales results, nor can it manage its costs and interest income better than its competition in the banking sector. The hypothesis that banks which introduce innovations have a higher competitive position and improved performance efficiency in comparison with their competitors in the Polish banking sector has been positively verified, based on the analysis of the discussed case studies. ING, PKO BP, mBank and Idea Bank, by implementing further innovations, particularly influenced their image and attractiveness to regular and potential customers. In order to keep their customers, banks are trying to offer various solutions, i.e., in the form of innovative products, just as attractive as those offered by the competition. However, the introduction of innovations has neither affected the market share of the analyzed banks, nor improved their efficiency ratios.

To sum up, introducing innovation in banks gives immeasurable benefits in the form of prestige, popularity and recognition. Therefore, it seems reasonable to focus more on the direction of „measurement". Using the word innovative with reference to a bank is a PR exercise aimed at improving the image of the bank, which may receive prizes at prestigious international competitions.

PKO BP, Idea Bank, ING Bank and mBank, have been recognized in the implementation of innovation, as evidenced by the numerous awards at the national and international level. These banks have also gained media coverage, improved their image, as well as provided customers with access to modern solutions. However, it did not result in an increase in market share or an improvement in efficiency.

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Summary

An analysis of the banking sector shows that innovation has become a key strategy for banks to strengthen their competitive position and the struggle to win customer base. Innovativeness is becoming more and more important and banks which do not adjust to this trend tend to lose their market share. Their numerous innovative activities and wide international recognition in that matter convinced the Author to focus on PKO BP, ING Bank, mBank, and Idea Bank to illustrate the research problem. The aim of the article is to show the impact of innovation on the competitiveness of banks. The article represents a broad discussion of the definition of the concept of competitiveness, the types of financial innovation, and an analysis of the indicators of efficiency of selected banks. It also links the relevant indicators of the introduced innovations.

Keywords: innovation, competitiveness, banking

Streszczenie

Wpływ innowacyjności na poprawę konkurencyjności banków – analiza case studies

Analiza sektora bankowego wskazuje, że wprowadzanie innowacji stało się jedną z kluczowych strategii wzmacniania pozycji konkurencyjnej, w tym walki o pozyskanie grona nowych klientów. Innowacyjność w bankowości nabiera coraz większego znaczenia, a banki niestosujące się do panującego trendu znacząco obniżają swoją pozycję rynkową. Nasilone działania pod względem wprowadzania innowacji, które zostały docenione na forum międzynarodowym i krajowym licznymi nagrodami, skłoniły autorkę do zobrazowania problemu badawczego na przykładzie banków PKO BP, mBank, Idea Bank oraz ING Bank Śląski. Celem artykułu jest ukazanie wpływu innowacyjności na konkurencyjność banków. Artykuł przedstawia szeroki przegląd definicyjny pojęcia „konkurencyjność”, przybliża specyfikę konkurencyjności w sektorze bankowym, rodzaje innowacji finansowych oraz analizę case studies wybranych banków, odnoszącą się do wskaźników efektywnościowych a także skutków wprowadzanych innowacji.

Słowa kluczowe: innowacyjność, konkurencyjność, bankowość

JEL: G2, G21