

THE ROLE OF BANK'S INNOVATIVENESS IN BUILDING MARKET EFFICIENCY – THE CASE OF POLAND

Monika KLIMONTOWICZ

*University of Economics in Katowice
1 Maja 50 St., 40-287 Katowice, Poland
mklimontowicz@ue.katowice.pl*

Abstract. *New technology has already influenced almost all aspect of human life. Innovativeness is considered one of the most important requirements for both companies and employees. Even such traditional entities like banks should develop their propensity and ability to incorporate changes in business practices through the creation and adoption of new ideas, solutions, and technology. The purpose of the paper is to investigate to what extent bank's innovativeness impacts a bank's market performance. It presents banks' innovativeness and other competitive advantage factors, their assessment from the perspective of their potential in the process of building bank's competitive advantage and a correlation between the level of bank's innovativeness and market efficiency. The majority of the innovativeness research concentrate on developed countries and very little is known about developing, transition countries. Moreover, few of them explore banks as a specific entity. On the banking market, they focus rather on distribution channels or product innovations. To the best knowledge of the authors, this is the first attempt to empirically examine the relationship between a bank's innovativeness and market efficiency in a transition banking market in Europe. The paper uses data retrieved from the research survey. The survey's target group consisted of all retail banks operating in Poland defined as banks that offer a broad range of financial services to different segments of individual customers. The research was conducted under the auspices of the Polish Banks Association. The data was collected by two methods – PAPI (personal and pencil interviews) and CAWI (computer assisted web interviews). The questionnaire was applied to executive managers of retail banks operating on Polish banking market and banks' customers. The data used for assessing banks' market performance were derived from banks' annual reports. The results provide direction for banks' decision makers concerning innovativeness' factors that should be taken into account in the process of building competitive advantage and market performance.*

Keywords: *bank's innovativeness; competitive advantage; knowledge-based intangibles; financial technology; market performance*

Introduction

Financial technology is thought to be one of the most disruptive factors influencing the banking market all over the world. It is an exciting area of change and development with an unclear impact on banking products, service delivery, and banking market structure at this time (Walker, 2018). Undoubtedly, today the development of bank's market performance, competitiveness and effectiveness is strictly connected with innovativeness (Aghion, Reenen, & Zingales, 2013; Chava et al., 2013; He & Tian, 2013; Bernstein, 2015; Cornaggia et al., 2015). Banks have to be able to create systems that implement new technologies and applications, optimize processes of providing banking products and services, develop financial infrastructure and allow them to exchange

information about customers and their behavior in all distribution channels. The traditional attitude to bank's management focused on resilience and safety might not be enough to face new market challenges (Sullivan, 2009). Lowering the entry barriers and the threats of a necessity to compete with technology-oriented market players (FinTech companies) combined with changes in customers' expectations will require adjusting banks' market strategy and business models (First Data Corporation, 2010; Williams & Page, 2011; BMO Wealth Institute, 2014). All these processes make building bank's innovativeness enormously important.

The majority of the innovativeness research concentrate on developed countries and very little is known about transition countries. Moreover, the few of them explore banks as a specific entity. On the banking market, they instead focus on distribution channels or product innovations and their adoption (Nekrep, 2013; Norden, Buston & Wagner, 2014; Akhisar, Tunay & Tunay, 2015; Mullan, Bradley & Loane, 2017; Priya, Gandhi & Shaikh, 2018; Salampasis & Mention, 2018). To the best authors' knowledge, this is the first attempt to empirically examine the relationship between a bank's innovativeness and market efficiency in a transition banking market in Europe.

The purpose of the paper is to investigate the contribution of the bank's innovativeness to bank's market efficiency. Achieving the purpose of the paper requires answering the following research questions:

- RQ1: What is the importance of a particular bank's competitive advantage factors from the perspective of building market position?
- RQ2: Does a bank's innovativeness influence its market efficiency?

The paper uses a two-fold methodology. The range of assets influencing a bank's competitive advantage and market performance was prepared as a result of a literature review. Then they were verified by empirical research. The strategic assets' structure was verified using a principal axis factor analysis. Afterward, the impact of verified assets' groups on banks' performance was examined.

The remainder of this paper is structured as follows: the first section presents the literature review concerning innovativeness and other bank's competitive advantage factor, the second section considers the competition on the Polish banking market, the third section shows the empirical results and include the assessment of innovativeness importance for building bank's competitiveness and the correlation between innovative capability and market efficiency. The paper concludes with the summary evidence of the study and its limitations.

Bank's innovativeness as competitive advantage factor

Today as never before banks market environment has a crucial impact on banks' business decisions. Many factors make gaining competitive advantage more and more difficult. Among them, the most important is new technology. Its continuously increasing complexity and the development of information and communication's techniques has resulted in a social revolution that has changed customer behavior and expectations concerning banking services. The technology development has a profound effect on retail banking services all over the world. The primary motivation for using modern technology has been to reduce costs (Delafrooz, Taleghani & Taghineghad,

2013; Persson, 2013), increase efficiency, speed, and control of customer-bank interactions (Honebein & Cammarono, 2006). The contemporary motivation is to add value to the overall customer experience (Blount, 2010). In recent years, the technological landscape has been additionally enriched by social media development that has influenced markets, companies, institutions, and customers' behavior and expectations (Kaplan & Heinlein, 2010; Hanna, Rohm & Crittenden, 2011; Durkin, Mulholland & McCartan, 2015).

Obtaining a sustainable competitive advantage requires developing the bank's innovativeness. The banks' innovativeness is an organization's propensity and capability to rapidly incorporate change in business practices through creation and/or adoption of new ideas, that decrease costs, reduce risks, and improve product what results in adding value in the form of increased competitiveness and sustainability (Frame & White, 2002; Guimaraes, Brandon & Guimaraes, 2009). It is an aspect of organizational culture that reflects the internal receptivity to new idea and innovations (Hult, Hurley & Knight, 2004; Menguc & Auh, 2006; Tsai & Yang, 2013). A firm oriented toward innovation makes individuals, teams, and management more open to ideas generation, creativity and risk-taking (Zhou & Wu, 2010). Following resource-based view (RBV) bank's innovativeness is one of internal resources and capabilities that, if matched appropriately with to environmental opportunities, help organizations to gain competitive advantage. The basic assumption of RBV is that resources and capabilities are heterogeneous across firms, and the firms that have superior resources gain sustainable competitive advantage (Hamel & Prahalad, 1990; Barney, 1991; Peteraf, 1993; Acur & Bitici, 2004; Cheng et al., 2010; Zubac, Hubbard & Johnson, 2010). Innovation capability includes strategic capability, product development capability, and technological capability (Vicente, Abrantes & Teixeira, 2015). It requires adequate leadership style, efficient customer knowledge management, and proper investment in technology implementation. Thus such a capability results from the efficient management of a bank's strategic resources and concurrently influences the strategic resources (Figure 1).

The basic nature of the banking business is knowledge intensive (Mavridis, 2005). From that perspective, the most important asset category is human capital. It also influences the efficiency of market capital's usage, especially the reputation, long-term relationship with customers and their trust.

Concurrently, meeting customers' expectations regarding speed, flexibility, access to banking services and usage convenience, is impossible today without organizational capital. Additionally, during the last few decades, as a result of fast technology development, many financial innovations have been implemented and have become a source of competitive advantage.

Nowadays, banks are allowed to underwrite insurance, while other financial entities are given a possibility to offer some financial products that have been traditionally provided by retail banks (Nejad & Estelami, 2012).

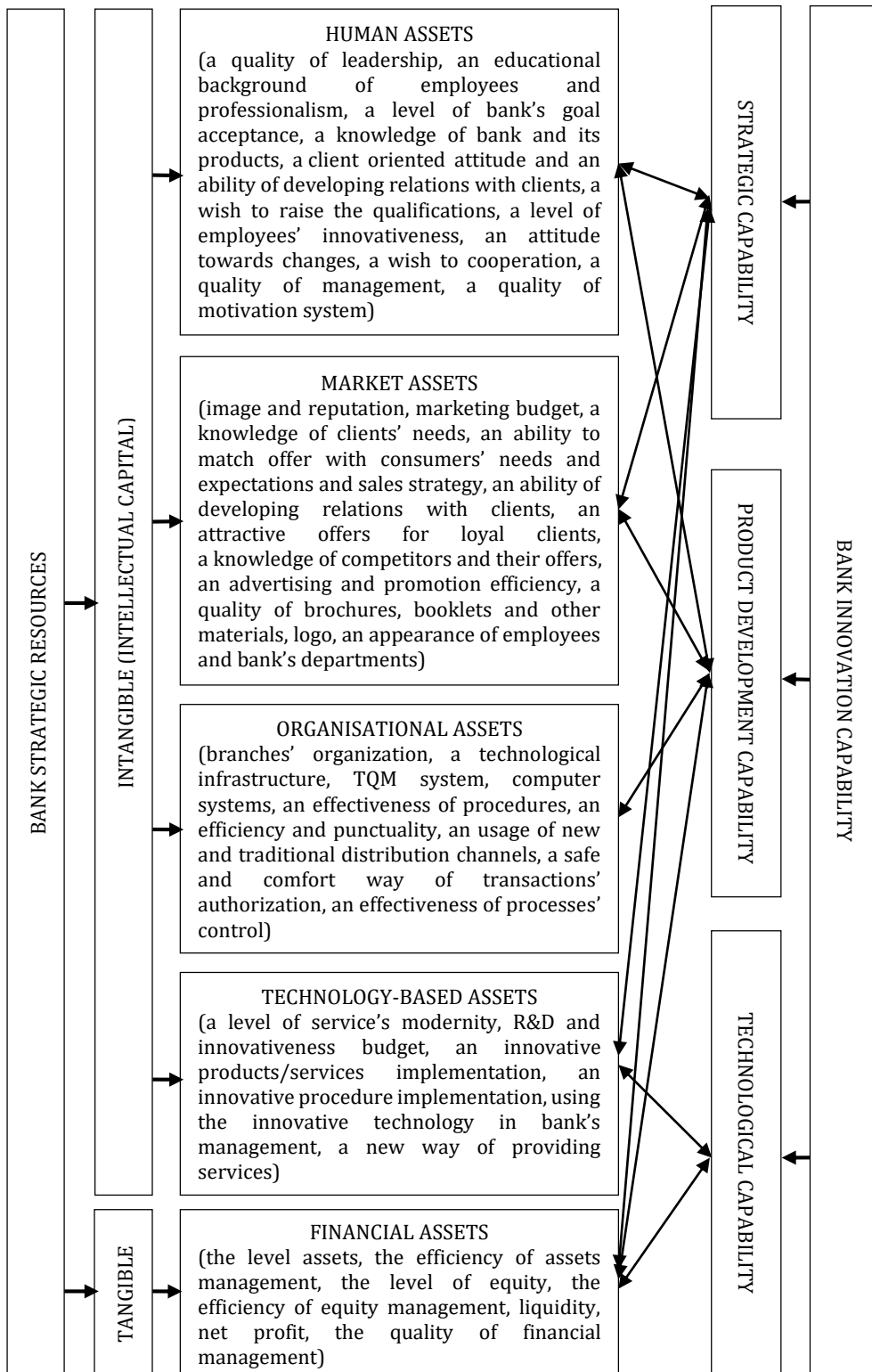


Figure 1. The relations between the bank's strategic resources and innovation capability

The emerge of crowd-funding business models, and the introduction of payment services by companies originating from other sectors have contributed to the alteration of the landscape of the banking industry.

All these developments make banks to rethink their market strategy and business models basing them on the resources which are of strategic importance from the perspective of their ability to create bank's competitiveness and market performance.

The competition in the Polish banking market

The banking market plays a significant role in the Polish financial sector. Although the assets of the non-bank financial institution have been systematically growing, the dominant share of the banking sector's assets in the assets of all financial entities remain stable. During the last decade, it has been ranging between 66.7% and 73% (Figure 2).

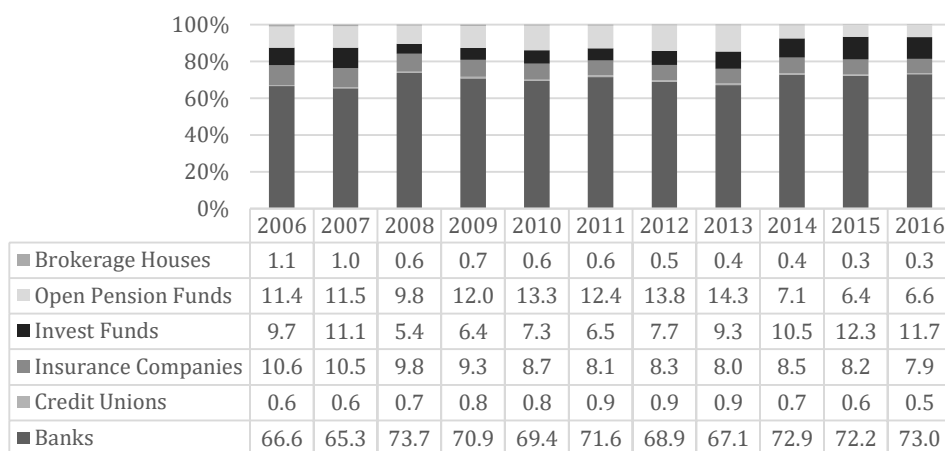


Figure 2. The structure of the Polish financial sector's assets (NBP, 2007-2017)

Taking into account the assets' structure, the Polish market is representative for the Middle-East European financial sector (Figure 3) and for most countries in European Union where banking market is the crucial segment of the financial market. Despite Cyprus, Netherland, Ireland, Luxemburg and Malta, banks as financial intermediaries have key functions in the domestic economy.

The Polish banking market consists of commercial banks, credit institutions, and co-operative banks. The competition in all segments has appeared in the 90. last century, but the history of the banking sector is dated on the 15th century when the first banking houses were established. Despite the turbulent history and the loss of independence, the first issuing bank, called the Polish Bank, stated the activity in 1828. Some banks established at that time are still operating on the Polish banking market. Bank Handlowy, the first commercial bank in Poland, has been operating for a continuous period till now. The other banks, as PKO Bank Polski and PeKaO SA, stopped their activity during the Nazi German occupation and reestablished market activity after the Second World War. A centrally planned economy was not conducive to the development of competition and did not require customer-oriented strategy. The bank's market behavior started to change in 1989 after introducing the new Act of Banking that

enabled the establishment of non-state banks in Poland. The market response was immediate. By the end of 1992, there were 54 domestic banks. Since then the process of mergers and acquisitions has become the essential methods for gaining a more significant market share, as well as restructuring some of them. Poland's entrance to the European Union also resulted in cross-border consolidation (Klimontowicz, 2016). Mergers and acquisitions influence not only the number of banks and the sector's ownership structure but also impact the level of market concentration.

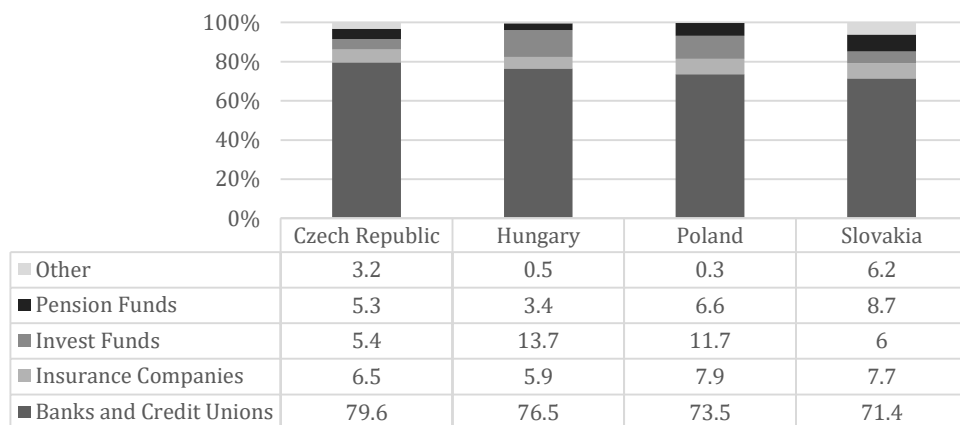


Figure 3. The structure of the Polish financial sector's assets (NBP, 2007-2017)

The most frequently used measures of banking market concentration are Herfindahl-Hirshmana index (HHI) and concentration ratio (CR5). They are also considered to be an indicator of the level of market competition. The selected market data is presented in Table 1.

Table 1. The structural characteristic of the Polish banking market (NBP, 2007-2017)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of banks											
commercial banks	48	47	49	49	49	47	45	41	38	38	37
co-operative banks	584	581	579	576	576	574	572	571	565	561	560
credit institutions	12	14	18	18	21	21	25	28	28	27	26
Banking distribution network											
branches	3 735	4 073	4 511	6 507	6 933	7 092	7 534	7 336	7 352	7 230	7 137
subsidiaries and agencies	4 854	5 217	5 789	7 290	7 246	6 802	4 876	5 019	4 872	4 660	4 135
Number of employees (in thousands)											
	157,9	167,2	181,3	175,2	176,9	176,7	175,1	174,3	172,7	170,9	169,3
Market concentration											
HHI	0,599	0,640	0,562	0,574	0,559	0,563	0,568	0,586	0,656	0,670	0,659
CR5	46,1	46,6	44,2	44,2	43,9	44,3	45,0	46,01	48,5	48,8	48,5

The level of HHI and CR5 ratios reflect that till 2010 big banks had been developing their operating activity slower than small and medium-size banks. Since 2010 both indexes, to a small degree, but systematically, has been growing. However, in comparison with other European countries the level of market concentration is relatively low (Figure 4).

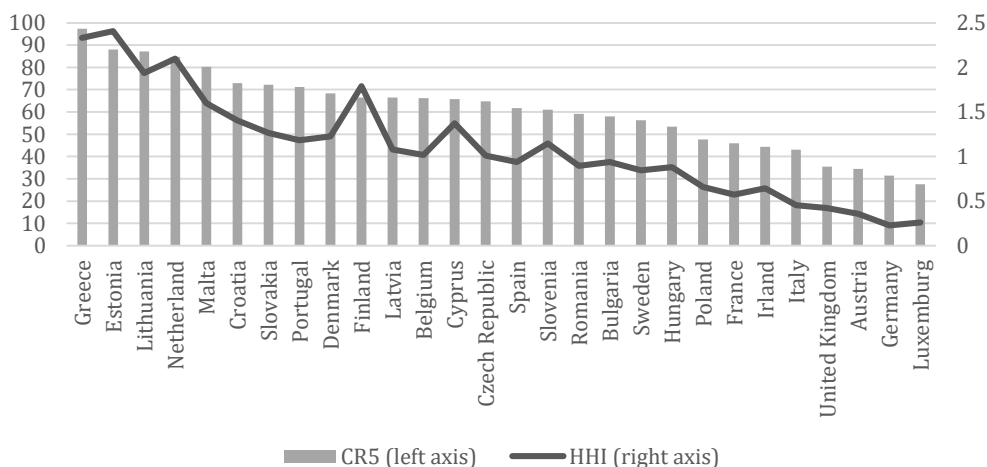


Figure 4. The concentration of the Polish banking market in 2016 (ECB)

The concentration ratio is one of the lowest in Europe and significantly lower of the European Union, the Eurozone, and the CEC-5 average. Understandably, it is higher in countries with developed co-operative banks' sector as Austria, Germany, and Italy. The low HHI index and the relatively low market share of big banks enhance the market competition. Many factors have influenced the intense competition in the Polish banking market. Today, in post-crisis reality it is quite difficult to point out the most important of them (Pawłowska, 2010). Undoubtedly, the competition occurs in the inter-bank space. The level of competition influence both banks' innovativeness and market performance (Anning-Dorson, Nyamekye & Odoo, 2017). Although banks have already noticed new market players, most of them do not treat them as crucial rivals. Whereas in many worlds markets they are thought to be the biggest threat (Worthington, 2011).

Bank's innovativeness and market performance

Bank's innovativeness is strictly connected with its strategic assets. As a category, it results from strategic capacity, product development capacity and technological capacity. The broad range of possible assets that might be the foundation for creating those capacities in the context of gaining competitive advantage and market performance led to the question what strategic assets have the crucial importance on contemporary banking market in Poland.

The list of potential strategic resources was prepared on the basis of a literature review. Then they were verified by empirical research. The research was conducted under the auspices of the Polish Banks Association. The survey's target group consisted of all retail banks operating in Poland defined as banks that offer a broad range of financial services to different segments of individual customers and fulfill all their financial needs and expectation. The questionnaire was applied to executive managers of retail banks

operating on the Polish banking market. 51 statements in the questionnaire were chosen to examine the significance of intangible and tangible assets. A seven-point Likert scale from 1 to 7 was used in the research. The importance was graded from 1 which meant that the item is not essential at all to 7 which meant the enormous influence. Reliability analysis for competitive advantage components, measured with Cronbach's alpha, ranged between 0,81 and 0,90 for each construct what confirmed adequate reliability levels for all of the scores. The assets of banks which responded to the questionnaire correspond to 79.5% assets of all retail banks operating in Poland. Two methods collected the data – PAPI (personal and pencil interviews) and CAWI (computer assisted web interviews).

The strategic assets' structure was verified using a principal axis factoring analysis with varimax rotation. The analysis resulted in the identification of four factors that correspond to strategic assets and banks' innovation capability. The pattern matrix of the empirical strategic resources' item is shown in Table 2. Only items with a factor loading at least 0.60 were considered. Factor loadings of less than 0.6 have been deleted. Four factors of presented items account for 79% of the variance, with factor 1 which explains 24% of the total variance. The verified structure of banks' strategic resources includes 38 items.

Table 2. The pattern matrix for strategic assets

Items	Factor 1	Factor 2	Factor 3	Factor 4
The level and efficiency of assets			0.77	
The level and efficiency of equity			0.89	
The sources of funding			0.94	
Net profit			0.87	
Liquidity/			0.82	
The quality of financial management			0.80	
The level of service modernity	0.89			
The implementation of innovative products	0.78			
The implementation of innovative procedures	0.80			
Using technology in the bank's management	0.79			
The quality of leadership		0.88		
The number of employees	0.66			
Educational level of employees				0.63
Professionalism				
The employees' identification with the bank's objectives				0.88
The level of knowledge regarding a bank and its offer				
Customer-oriented attitude				0.78
The ability to develop long-term relations with clients				0.77
The willingness to self-development				0.75
The level of employees' innovativeness				0.68
The will to cooperation and knowledge sharing		0.76		
The quality of executive management		0.94		
The quality of mid-level management		0.97		
The level of managers' acceptance		0.95		

Items	Factor 1	Factor 2	Factor 3	Factor 4
The quality of the motivation system		0.84		
The number of branches	0.60			
The number of ATMs	0.77			
The branches' organization and working hours				0.88
Employees' equipment		0.73		
Internal IT systems and procedures				
The level of quality management				
The effectiveness of procedures		0.69		
User-friendly procedures		0.68		
Efficiency and timeliness of services	0.78			
The usage of traditional distribution channels	0.93			
The usage of modern distribution channels	0.91			
The safe and comfortable way of transactions' authorization	0.89			
The effectiveness of internal control				
The knowledge of clients' needs		0.74		
Matching products to clients' needs				
The ability to develop long-term relations with customers				0.65
Interesting proposals for customers				
The understanding of competitors			0.78	
Brand value			0.73	
Branches' appearance				0.68
% of explained variance	24	22	18	16
Cumulative % of explained variance	24	46	63	79

The first factor has loadings from all the items related to the bank's product development capacity and includes items allowing a bank to serve the right products in the right place and at the right time. It incorporates the factors influencing both the product (service) and the process innovations.

The second factor represents the strategic capability based on human assets. It is worth to stress that the most significant factors are connected with the quality of leadership and management. These and other items influence the organizational culture and employees' work conditions.

All the analyzed items representing financial aspects of banks' market activity had noticeably high loadings on the third factor. From the perspective of the bank's innovativeness, they are the source of financing the process of creating and implementing the innovations.

The analysis of the last factor items leads to the conclusion that most of them impact banks' ability to create long-term relations with customers.

Reliability test on the factor groupings confirms achieved good results.

Due to a particular role in the economy banks' market activity is influenced by many factors of a political, legal, economic, sociological, and technological nature. To examine

the relationships between competitive advantage factors and banks' financial efficiency a multivariate regression analysis was conducted. ROE and ROA measured the bank's market efficiency. The data used for assessing banks' market performance were derived from banks' annual reports. Before conducting a multivariate regression analysis, the correlation between independent and dependent variables, and test of multicollinearity using the VIF (variance inflation factor) was conducted.

The following equations show regression models:

Model 1: $ROE = \beta_0 + \beta_1 (\text{Factor 1}) + \beta_2 (\text{Factor 2}) + \beta_3 (\text{Factor 3}) + \beta_4 (\text{Factor 4}) + e$

Model 2: $ROA = \beta_0 + \beta_1 (\text{Factor 1}) + \beta_2 (\text{Factor 2}) + \beta_3 (\text{Factor 3}) + \beta_4 (\text{Factor 4}) + e$

Models were estimated for ROE and ROA from 2012 till 2016. Table 3 presents the regression results only for 2013 as any significant positive relation has been observed in the subsequent years.

Table 3. Regression results

	Model 1	Model 2
Intercept	10,940*** (10,30580)	1,112 (5,236)
Factor 1	0,493 (0,443)	-0,026 (-0,117)
Factor 2	2,938** (2,639)	0,346 (1,553)
Factor 3	3,684** (3,309)	-0,230 (-1,034)
Factor 4	1,381 (1,241)	0,329 (1,477)
Adjusted. R ²	0,610	0,143
F-value	4,914	1,420
Significance	0,0421	0,333

Notes: ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels respectively. The figures in the parentheses are the t-statistics.

The results of the regression analysis show that there was a significant positive correlation between strategic capability based on human assets and financial assets of the banks operating in the Polish banking market and their efficiency measured by ROE. Concurrently, there is no a significant correlation between any factor category and the efficiency of assets' management measured by ROA.

Discussion and conclusions

During the last few decades, the Polish banking market has changed remarkably. Opening the market for foreign investors has increased the number of bank and credit institutions. The assets of the Polish banking market have been systematically growing and has become one of the most competitive markets in Europe. Although the new market player has already entered the banking market, banks remain the most crucial market player with over 70% of market assets share. Such a situation corresponds to other banking markets in Europe. The market condition has made banks to search for factors enabling them gaining competitive advantage.

The factors analysis proved that in contemporary economy banks should base building competitive advantage on those strategic resources that are strictly connected with their innovation capability. Among them, the most important are those that allow a bank to improve products, services, and processes. The findings are relevant to Shih (2008) who recognized the importance of innovations and IT. They correspond with some previous research conducted on the banking market and others markets that showed the dominance of human capital (Blazevic & Lievens, 2004; Jong & Hartog, 2007; Curado, 2008; Liao et al., 2017; Waheed, Kabiru & Umair, 2018) and the impact of strategic management on the ability to create long-term relationship with customers and value creation (Kianto, Andreeva & Pavlov, 2013).

The regression analysis proved the importance of human assets for the bank's efficiency of equity management. The second factor that impacts the bank's efficiency includes financial parameters as the level of equity, the level of assets, profits and liquidity. The results gave no evidence for a direct correlation between any of competitive advantage factors and the efficiency of asset management. They correspond to the research conducted by Nekrep (2013) that did not prove the influence of a bank's internal innovation capability on their market performance.

The results provide that building innovation capability is strictly connected with organizational culture and require specific leadership encouraging employees to be creative and motivated to create long-term relations with customers. Concurrently, the findings indirectly proved the complex character of factors influencing banks' market performance and show that it is difficult to extract particular factors influencing banks' market efficiency. It may be an inspiration for further research aimed to build a model taking into account more both external and internal factors influencing banks' market efficiency and performance.

The practical implication of the finding is the recommendation for banks' decision makers to base their market strategies only on factors that help to gain a long-term competitive advantage, market performance and efficiency. As those factors are related to fulfilling customers' needs and expectations, such a market attitude will also be beneficial for society.

As many factors influence the bank market performance, the scope of the research might be its limitation. Although the Polish banking market is one of the most competitive and stable banking markets in Europe, the results cannot be directly extrapolated to other banking markets.

References

- Acur, N., & Bitici, U. (2004). A Balanced Approach to Strategy Process. *International Journal of Operations & Production Management*, 24(4), 388-408.
- Aghion, P., Reenen, J., & Zingales, L. (2013). Innovation and institutional ownership. *American Economics Review*, 103, 277-304.
- Akhisar, I., Tunay, K.B., & Tunay, N. (2015). The Effects of Innovations on Bank Performance: The Case of Electronic Banking Services. *Procedia - Social and Behavioral Sciences*, 195, 369-375.
- Anning-Dorson, T., Nyamekye, M.B., & Odoom, R. (2017). Effects of regulations and competition on the innovativeness-performance relationship: Evidence from the

- financial services industry. *International Journal of Bank Marketing*, 35(6), 925-943.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bernstein, S. (2015). Does going public affect innovation?. *Journal of Finance*, 70, 1365-1403.
- Blazevic, V., & Lievens, A. (2004). Learning During the New Financial Service Innovation Process: Antecedents and Performance Effects. *Journal of Business Research*, 57, 374-391.
- Blount, Y. (2010). Employee management and service provision: a conceptual framework. *Information Technology and People*, 24(2), 134-157.
- BMO Wealth Institute (2014). *Wealth Generation. The Financial Challenges for Generations X & Y*, BMP Wealth Institute Report, Canadian Edition, www.bmo.com/wealthinstitute, 3-7.
- Chava, S., Oettl, A., Subramanian, A., & Subramanian, K.V. (2013). Banking deregulation and innovation. *Journal of Financial Economics*, 109(3), 759-774.
- Cheng, M.-Y., Lin, J.-Y., Hsiao, T.-Y. & Lin T. W. (2010). Invested resources, competitive intellectual capital and corporate performance. *Journal of Intellectual Capital*, 11(4), 433-450.
- Cornaggia, J., Mao, Y., Tian, X., & Brian, W. (2015). Does banking competition affect innovation? *Journal of Financial Economics*, 115(1), 189-209.
- Curado, C. (2008). Perceptions of knowledge management and intellectual capital in the banking industry, *Journal of Knowledge Management*, 12(3), 141-155.
- Delafróoz, N., Taleghani, M., & Taghineghad, M. (2013). The impact of service innovation on customer satisfaction. *International Journal of Marketing and Technology*, 3(5), 127-144.
- Durkin, M., Mulholland, G., & McCartan, A., (2015). A socio-technical perspective on social media adoption: a case from retail banking. *International Journal of Bank Marketing*, 33(7), 944-962.
- First Data Corporation (2010). Tapping into Generation Y: Nine Ways Community Financial Institutions Can Use Technology to Capture Young Customers, A First Data White Paper, 2-7.
- Frame, W.S., & White, L.J. (2002). Empirical Studies of Financial Innovations: Lots of Talk, Little Action?, *Federal Reserve Atlanta Working Paper*
- Guimaraes, T., Brandon, B., & Guimaraes, E.R. (2009). Empirically Testing Some Major Factors for Bank Innovation Success. *Journal of Performance Management*, November 2009, 20-34.
- Hamel, G., & Prahalad, C.K. (1990). The Core Competence of Corporation. *Harvard Business Review*, May-June 1990, 79-91.
- Hanna, R., Rohm, A., & Crittenden, V.L., (2011). We're all connected: The power of the social media ecosystem. *Business Horizons*, 54, 265-273.
- He, J., & Tian, X. (2013). The dark side of analyst coverage: the case of innovation. *Journal of Financial Economics*, 109(3), 856-878.
- Honebein, P.C., & Cammarano, R.F. (2006). Customers at work. *Marketing Management*, 15(8), 26-31.
- Hult, G.T.M., Hurley, R.F., & Knight, G.A. (2004). Innovativeness: its antecedents and impact on business performance. *Industrial Marketing Management*, 33(5), 429-438.
- Jong, J.P.J., & Hartog, D.N.D. (2007). How leaders influence employees' innovative behavior. *European Journal of Innovation Management*, 10(1), 41-64.

- Kaplan, A.M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons*, 53(1), 59-68.
- Kianto, A., Andreeva, T., & Pavlov, P. (2013). The impact of intellectual capital management on company competitiveness and financial performance, *Knowledge Management Research & Practice*, 11, 11-122.
- Klimontowicz, M. (2016). Knowledge as a Foundation of Resilience on Polish Banking Market. *Electronic Journal of Knowledge Management*, 14(1), 60-74.
- Liao, S.-H., et al. (2017). Assessing the influence of leadership style, organizational learning and organizational innovativeness. *Leadership & Organization Development Journal*, 38(5), 590-609.
- Mavridis, D. (2005). Intellectual capital performance drivers in the Greek banking sector. *Management Research News*, 28(5), 43-62.
- Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the Academy of Marketing Science*, 34(1), 63-73.
- Mullan, J., Bradley L., & Loane S. (2017). Bank adoption of mobile banking: stakeholder perspective. *International Journal of Bank Marketing*, 35 (7), 1154-1174.
- Nejad, G.M., & Estelami, H. (2012). Pricing Financial Services Innovations. *Journal of Financial Services Marketing*, 17(2), 120-134.
- Nekrep, M. (2013). Innovativeness of banks and insurance companies in developing markets: guidelines for success. *Our Economy*, 59(3), 39-49.
- Norden, L., Buston, C., & Wagner, W. (2014). Financial Innovation and bank behaviour: Evidence from credit markets. *Journal of Economic Dynamics & Control*, 43, 130-145.
- Pawłowska M. (2010). Konkurencja na polskim rynku bankowym na tle zmian strukturalnych i technologicznych – wyniki empiryczne [Competition on the Polish banking market against the background of structural and technological changes - empirical results]. In Miklaszewska, E. (ed.), *Bank na rynku finansowym*, ed. Oficyna Ekonomiczna Wolters Kluwer Polska Sp. z o.o., Warsaw, 385.
- Persson A. (2013). Profitable customer management: reducing costs by influencing customer behavior. *European Journal of Marketing*, 4 (5/6), 857-876.
- Peteraf, M.A. (1993). The cornerstones of competitive advantage: a resource-based view. *Strategic Management Journal*, 14(3), 179-191.
- Priya, R., Gandhi, A.V., & Shaikh A. (2018). Mobile banking adoption in an emerging economy: An empirical analysis of young Indian consumers. *Benchmarking: An International Journal*, 25(2), 743-762.
- Rozwój systemu finansowego w Polsce*, NBP 2007-2017, Warsaw, www.nbp.pl.
- Salampasis, D.G., & Mention, A.-L. (2018). Open innovation in financial institutions: individual and organisational considerations. *International Journal of Transitions and Innovation Systems*, 6(1), 62-87.
- Shih, K.H. (2008). Is e-banking a competitive weapon? A causal analysis. *Internal Journal of Electronic Finance*, 2(2), 180-96.
- Sullivan, M.B. (2009). Post Crisis, Innovation Will Rule. *ABA Banking Journal*, April 2009, 30-32.
- Tsai, K.-H., & Yang, S.-Y. (2013). Firm innovativeness and business performance: the joint moderating effects on market turbulence and competition. *Industrial Marketing Management*, 42(8), 892-902.
- Vicente, M., Abrantes, J.L., & Teixeira, M.S. (2015). Measuring innovation capability in exporting firms: the INNOVSCALE. *International Marketing Review*, 32(1), 29-51.

- Waheed, A.U., Kabiru, M.K., & Umair, A. (2018). Corporate entrepreneurship and business performance: The moderating role of organizational culture in selected banks in Pakistan. *PSU Research Review*, 2(1), 59-80.
- Walker, A. (2018). Preface, *The FinTech Edition*, 1, 2.
- Williams, K.C., & Page A.R. (2011). Marketing to Generation. *Journal of Behavioral Studies in Business*, 3. Retrieved from <http://www.aabri.com/jbsb.html>.
- Worthington, S. (2011). Banking without The Banks. *International Journal of Bank Marketing*, 29(2), 190-201.
- Zhou, K.Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, 31(5), 547-561.
- Zubac, A., Hubbard, G., & Johnson L. W. (2010). The RBV and Value Creation: A Managerial Perspective. *European Business Review*, 22(5), 515-538.