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**THE MEASUREMENT OF INFLUENCE
OF INNOVATIONS' IMPLEMENTATION
ON THE RESULTS OF ACTIVITIES
OF COMMERCIAL BANKS**

**ВІМІРЮВАННЯ ВПЛИВУ ВПРОВАДЖЕННЯ
ІННОВАЦІЙ НА РЕЗУЛЬТАТИ ДІЯЛЬНОСТІ
КОМЕРЦІЙНИХ БАНКІВ**

Urgency of the research. A significant level of competition in the banking sector requires a continuous improvement of the forms and methods of conducting economic activity, which determines the growth of the role of innovations in the functioning of banks. At the same time, innovations in the banking activities are characterized both by the new products and services as well as innovations aimed at improving the quality of customer service.

Target setting. The goal of the activity of commercial banks is to obtain positive financial results, which necessitates the consideration of banking innovations as a tool for increasing the efficiency of functioning of commercial banks.

Actual scientific researches and issues analysis. The essence of banking innovations and their role in the functioning of commercial banks are studied in the works of such scholars as S. B. Yegorycheva, Z. Shmigelska, I. Y. Karcheva, S. V. Ostash.

Uninvestigated parts of the general matters defining. The issues of quantitative assessment of the impact of introduction of innovations in banking activities on the performance indicators of banks remain unexplored.

The research objective. Estimation of financial effect from the introduction of innovations for commercial banks, as well as the time lag, which is necessary for its achievement.

The statement of basic materials. The article offers classification of banking innovations dividing them into three types: innovative products, service innovation and organizational innovation. Using the instruments of panel regression modeling we assess the overall impact of banking innovations and innovations of various types on the return on assets, asset growth, the growth of loans and customer debt, the growth in customers' resources and the growth in interest income of 9 commercial banks of Ukraine. We have also estimated the influence of banking innovations on the results of banks' activities taking into account a time lag from one to five years.

Conclusions. Banking innovations lead to the reduction in the performance of banks in the first year of their introduction. We have demonstrated the presence of a delayed positive financial effect, the term of attainment of which varies from two to five years for different types of banking innovations.

Keywords: banking innovations; innovative products; innovation in services; organizational innovation; bank performance; time lag.

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Актуальність теми дослідження. Значний рівень конкуренції у банківському секторі вимагає постійного удосконалення форм та способів провадження економічної діяльності, що обумовлює зростання ролі інновацій у функціонуванні банку. При цьому інновації в діяльності банків характеризуються як новими продуктами та послугами, так і інноваціями, спрямованими на підвищення якості обслуговування клієнтів.

Постановка проблеми. Метою діяльності комерційних банків є отримання позитивних фінансових результатів, що обумовлює необхідність розгляду банківських інновацій як інструмента підвищення результативності функціонування комерційних банків.

Аналіз останніх досліджень і публікацій. Дослідженням сутності банківських інновацій та їх ролі у функціонуванні комерційних банків присвячені роботи таких вчених як С. Б. Єгоричева, З. Шмігельська, І. Я. Карчева, С. В. Осташ.

Виділення недосліджених частин загальної проблеми. Залишаються недослідженими питання кількісного оцінювання впливу впровадження інновацій у банківській діяльності на показники функціонування банків.

Постановка завдання. Оцінювання фінансового ефекту від впровадження інновацій для комерційних банків, а також часового лагу, необхідного для його досягнення.

Виклад основного матеріалу. У статті здійснено класифікацію банківських інновацій на три типи: інноваційні продукти, інновації в обслуговуванні та організаційні інновації. За допомогою інструментарію панельного регресійного моделювання оцінено загальний вплив банківських інновацій та інновацій різних типів на рентабельність активів, приріст активів, приріст кредитів та заборгованості клієнтів, приріст коштів клієнтів, приріст процентних доходів 9 комерційних банків України. Визначено вплив банківських інновацій на результати діяльності банків з урахуванням часового лагу від одного до п'яти років.

Висновки. Банківські інновації обумовлюють скорочення результативності функціонування банків у рік їх запровадження. Доведено наявність відстроченого позитивного фінансового ефекту, термін досягнення якого варіюється від двох до п'яти років для різних типів банківських інновацій.

Ключові слова: банківські інновації; інноваційні продукти; інновації в обслуговуванні; організаційні інновації; результати функціонування банків; часовий лаг.

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Urgency of the research. The dynamic development of a market economy necessitates a constant change in the forms and methods of doing business, which manifests itself in the introduction of innovative products and ways of providing them in all sectors of the economy. The role of innovations in ensuring the effectiveness of the companies' functioning is particularly important in the service sector, especially in the banking business, which is characterized by the high level of competition. The result of the functioning of banks depends on the spectrum and the quality of the offered banking products and services as well as the level of customer services, that implies the directions for innovations implementation.

Target setting. In planning and implementing banking innovations the profitable character of the activities of commercial banks causes the necessity to take into account the financial effect they can generate as well as to assess the period necessary to achieve such effect. That is why quantitative research aimed at identifying interconnections between banking innovations and the general parameters of the functioning of commercial banks is extremely relevant.

Actual scientific researches and issues analysis. It is worth noting that the studies of the role of innovations in the banking business and the development of the banking system have been conducted by a number of foreign and domestic researchers aimed at systematizing the types of innovations and determining the results from their introduction. In particular, the theoretical aspects and the general principles of management of commercial banks' innovations are offered in the works of S. B. Yegorycheva [1], Z. Shmigelska [2], and others. At the same time, I. Y. Karcheva [3], S. V. Ostash [4] disclose the problems of the efficiency of banking innovations at the theoretical level highlighting positive effects of the introduction of innovations on the activities of banks.

Uninvestigated parts of the general matters defining. In spite of the widespread coverage of the positive role of innovations in ensuring the effectiveness of commercial banks, the issue of identifying quantitative effects from the introduction of banking innovations on the parameters of their functioning remains unexplored. That is why the scientific significance and practical relevance of the empirical study of the quantitative effect from the introduction of various types of innovations on the performance indicators of commercial banks grow in importance.

The research objective is to identify the quantitative effect from the introduction of innovations on the results of functioning of commercial banks as well as the time needed to achieve it by using the tools of econometric analysis.

The statement of basic materials. The necessary condition for the study of the role of innovations in ensuring the performance of commercial banks is the quantitative formalization of innovations introduced by banks. For this purpose, the most significant innovations implemented by 9 commercial banks in Ukraine, whose activities were accompanied by the highest number of innovations implemented during the period 2012-2016 were analyzed. An overview of the information published in the scientific works, media information materials and official websites of banks has shown that innovations can be divided into three groups:

- innovative banking products and services are banking products or banking services that were first offered by one bank on the domestic market, or products and services that the bank begins to provide for the first time (activities in the area, which is new for a particular bank);

- innovations in customer services – the use of new software by the bank that can be used by bank clients, introduction of new approaches to customer services, expansion of remote self-service capabilities for customers, etc.;

- organizational innovations – innovations that relate mainly to the internal structure of banks, the opening of bank branches of a new type, reorganization of the banking business, etc.

Quantitative formalization of the analyzed data for practical calculations involves the building of four factor variables:

- innovative products (PI) is a fictitious variable whose value is equal to the number of innovative products and services implemented by a particular bank in a given year, or zero in the absence of innovations during the year;

- service innovations (SI) is a fictitious variable whose value equals the number of innovations in customer services implemented by a certain bank in a certain year, or zero in the absence of innovations during the year;

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- organizational innovations (OI) is a fictitious variable whose value equals the number of organizational innovations introduced by a certain bank in a certain year, or zero in the absence of such innovations during the year;

- banking innovations (BI) is a fictitious variable whose value is equal to the sum of values of the three previous fictitious variables.

In order to determine the effect from the introduction of innovations by commercial banks as effective variables, the following indicators of the banks' functioning were selected:

- return on assets is the ratio of post-tax profit to the bank's assets in the reported year expressed as percentage illustrating the overall performance of the bank;

- asset growth is an indicator of annual growth expressed as percentage, which reflects an aggregate growth rate of the activity of a certain bank;

- growth of loans and customer debts is an indicator of annual growth expressed as percentage, which characterizes the dynamics of customer demand for credit services of a certain bank;

- growth of customer resources is a growth rate expressed in percentage, the value of which reflects the dynamics of customer demand for deposit services of a certain bank;

- growth of interest income is an indicator of growth expressed as percentage, which reflects the dependence of the bank's value on the change in demand for banking services.

It should be noted that the value of the parameters chosen as dependent indicators depends to a large extent on the overall performance of both the commercial bank and the banking system as a whole while the introduction of banking innovations serves only as a catalyst or inhibitor of the influence of such factors. Therefore, in order to build adequate and statistically significant econometric models for determining the impact of innovations on banking indicators a number of additional factor (control) variables were identified, such as:

- profitability of assets of the banking system (ROAS), which reflects the efficiency of the banking system as a whole;

- authorized capital of the bank (SCL), which reflects the level of financial stability of a certain bank;

- the bank's size (SB), which reflects the role of a certain bank in the banking system and, accordingly, its ability to influence the market conditions;

- increase in the general administrative expenses (ACG), which reflects the dynamics of spending money on the bank's maintenance and promotion of its image;

- increase in expenses on personnel (PCG), which reflects the dynamics of spending of funds on the development of skills of the bank's employees and, accordingly, the quality of banking services;

- the level of interest income (IIL), which reflects the role of credit and deposit operations for the effective functioning of the bank;

- the level of the general administrative expenses (ACL) reflecting the degree of the bank's commitment to ensure a high level of the maintenance of its branches and promotion of the bank's image.

The source of statistical information was a database posted on the official website of the National Bank of Ukraine [9].

The calculations were carried out by using the Stata SE 12 software for the tools of panel regression modeling. For evaluation we selected a specification of the panel regression model with the corrected standard error, which makes it possible to consider the possibility of heteroscedasticity and the correlation of regression balances between the data panels. In order to determine the duration of achieving the necessary effect from the introduction of innovations, we built models with different time lags for the parameters of introduction of innovations in relation to other variables. The results of assessment of the impact from the introduction of banking innovations in general and in terms of different groups on the profitability of banks' assets are presented in Tab. 1.

The results of the calculations showed that an introduction of banking innovations has a negative impact on the dynamics of profitability of assets of commercial banks in the year of their introduction and in the next three years after the implementation of such innovations. At the same time, the positive effect of introducing innovations for the profitability of banks' assets is observed with a time lag of five years causing an increase in the effective indicator by an average of 2.01%. It should be noted that profitability of the banking system's assets and the bank's size are parameters-catalysts both of

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the profitability of assets of commercial banks and the positive effect of implementation of banking innovations on the dynamics of this indicator, while the level of the bank's authorized capital in this model acts as an inhibitor. The results of calculations of the influence of certain types of innovations on the results of functioning of the investigated banks are presented in Tab. 2.

Table 1

The results of assessment of the general impact from the introduction of banking innovations on the profitability of assets of Ukrainian banks

Parameters	Impact coefficients			
	time lag is missing	The model has a set time lag for the parameter of innovations		
		2 years	3 years	5 years
BI	-1,25*** (0,44)	-1,34*** (0,35)	-3,25*** (0,44)	2,01*** (0,53)
ROAS	0,59*** (0,16)	0,55*** (0,15)	0,39** (0,15)	0,63*** (0,11)
SCL	-0,29*** (0,11)	-0,31** (0,11)	-0,32** (0,12)	-0,29*** (0,09)
SB	0,08* (0,04)	0,06* (0,03)	0,07* (0,04)	0,06** (0,03)
ACL	0,00 (0,01)	0,00 (0,01)	0,01 (0,01)	0,01 (0,01)
PCL	0,00 (0,01)	-0,00 (0,01)	-0,00 (0,01)	-0,01 (0,01)
Obs	104	103	102	84
Parameters of the model's adequacy				
Wald chi2	43,51	62,24	82,01	114,27
Prob > chi2	0,00	0,00	0,00	0,00

Notes: Obs – the number of observations; presented in the brackets are the standard error's values; *** – significance at the level of 99%, ** – significance at the level of 95%, * – significance at the level of 90%
Source: calculated by the authors.

Table 2

The results of assessment of the impact of different types of banking innovations on the profitability of assets of the Ukrainian banks

Parameters	Impact coefficients								
	time lag is missing	The model has a set time lag for the parameter of innovations							
		1 year	2 years	3 years	4 years	5 years			
PI			-2,62*** (0,85)				-3,24*** (1,08)	2,78*** (0,76)	
SI	-1,32** (0,59)				-2,61*** (0,56)	-7,14*** (0,81)			
OI		-3,55*** (1,25)		-3,36*** (0,95)					2,66*** (1,02)
ROAS	0,59*** (0,16)	0,57*** (0,14)	0,61*** (0,15)	0,57*** (0,16)	0,51*** (0,15)	0,30* (0,15)	0,55*** (0,18)	0,62*** (0,10)	0,65*** (0,11)
SCL	-0,29*** (0,10)	-0,30*** (0,10)	-0,28*** (0,10)	-0,30*** (0,10)	-0,31*** (0,11)	-0,31*** (0,11)	-0,30*** (0,01)	-0,30*** (0,08)	-0,29*** (0,09)
SB	0,07* (0,04)	0,06* (0,03)	0,04 (0,03)	0,06* (0,03)	0,10*** (0,03)	0,09 (0,06)	0,04 (0,04)	0,06** (0,03)	0,06** (0,02)
ACL	0,01 (0,01)	0,00 (0,01)	0,01 (0,01)	0,01 (0,01)	-0,01 (0,01)	-0,00 (0,01)	0,01 (0,02)	0,00 (0,01)	0,00 (0,01)
PCL	-0,00 (0,01)	-0,00 (0,01)	-0,00 (0,01)	-0,00 (0,01)	0,00 (0,01)	0,00 (0,01)	-0,00 (0,01)	-0,01 (0,01)	-0,00 (0,01)
Obs	104	104	104	103	102	93	84		
Parameters of the model's adequacy									
Wald chi2	38,63	51,60	46,82	71,59	126,37	103,39	47,42	125,96	111,25
Prob > chi2	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Notes: Obs – the number of observations; presented in the brackets are the standard error's values; *** – significance at the level of 99%, ** – significance at the level of 95%, * – significance at the level of 90%
Source: calculated by the authors

A positive impact of innovative banking products and services on the profitability of assets of commercial banks is observed only if there is a time lag of five years, which confirms the results of the pre-

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vious stage of the study. It was also discovered that an introduction of innovative technologies in customer services does not provide a positive effect of increasing the profitability of banking assets. In models built without a time lag or with a lag of two, three or four years there is a statistically significant inverse relationship between the introduction of banking innovations of the specified type and the changes in the level of profitability of banking assets, while the relationship between variables in models with a time lag of one or five years is not characterized by a level of statistical significance sufficient for interpretation. Calculations of the impact of organizational innovations on the profitability of assets of commercial banks showed a negative impact in the year of their introduction and the next two years, while the positive impact was recorded five years after the implementation of such innovations, which is characterized by an increase in the effective indicator by an average of 2.66%.

The next set of calculations is related to determining the impact of banking innovations on the growth of bank assets (Tab. 3). On average banking innovations cause a reduction of the commercial bank's assets by 4.39% in the year of implementation of such innovations, while calculations made with addition of a time lag did not make it possible to obtain statistically significant results that reflect the effect for subsequent periods. It is worth noting some interesting results obtained during the analysis of the influence of control variables on the dependent sign. Therefore, it is logical that the growth of profitability of the banking system leads to the expansion of banking activities. There is also a positive impact on the growth of assets from the growth of costs on commercial banks' employees. It should be noted that a high share of the interest income in the bank's revenues as well as a significant level of administrative expenses in relation to its assets cause a substantial reduction in the bank's total assets.

Table 3

**The results of assessment of the impact of introduction of innovations
on the growth of assets of the Ukrainian banks**

Parameters	Impact coefficients					
	time lag is missing		The model has a set time lag for the parameter of innovations			
			3 years		4 years	
BI	-4,39** (2,19)					
PI				10,90* (6,54)		
SI		-6,35** (2,90)	-5,51* (2,83)		-12,56** (5,99)	
OI						-15,02** (6,06)
ROAS	1,87** (0,79)	1,87** (0,80)	1,61** (0,75)	1,81** (0,73)	1,69** (0,74)	1,71** (0,75)
IIL	-3,39** (1,36)	-3,56*** (1,34)	-3,54** (1,44)	-3,76** (1,53)	-3,10** (1,48)	-3,13** (1,43)
ACL	-15,37*** (3,05)	-14,53*** (2,83)	-15,39*** (3,14)	-14,76*** (3,25)	-15,44*** (3,15)	-15,10*** (3,15)
PCG	0,18*** (0,03)	1,17*** (0,03)	0,22*** (0,05)	0,20*** (0,05)	0,22*** (0,05)	0,22*** (0,05)
Obs	104		102	93		
Parameters of the model's adequacy						
Wald chi2	103,20	101,18	89,88	83,04	75,93	101,02
Prob > chi2	0,00	0,00	0,00	0,00	0,00	0,00

Notes: Obs – the number of observations; presented in the brackets are the standard error's values; *** – significance at the level of 99%, ** – significance at the level of 95%, * – significance at the level of 90%

Source: calculated by the authors

The results of the study of the impact of banking product innovations on the growth of bank assets showed that four years after their introduction there is a statistically significant positive effect on the dynamics of the effective indicator (the results of the built models for assessing the relationship between the indicators in the context of other time periods were statistically not significant). It should be noted that introduction of innovative technologies in customer services in general leads to the reduction of the commercial bank's assets both in the year of introduction of such innovations and with time lags of three

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and four years, while statistically significant influence of organizational banking innovations on the growth of assets of commercial banks is observed with a lag of four years and has an inverse relationship.

The next block of the research of the impact of innovations on the results of commercial banks' functioning was the assessment of effects from the introduction of various types of innovations on the dynamics of loans and customer debts, the results of which are shown in Tab. 4.

Table 4

The results of assessment of the impact of introduction of innovations on the growth of loans and debts of customers of the Ukrainian banks

Parameters	Impact coefficients					
	time lag is missing		The model has a set time lag for the parameter of innovations			
			3 years		4 years	
BI	-8,46** (3,76)			-8,24* (4,86)		
PI						
SI		-9,53* (5,45)	-13,81*** (4,09)		-28,61*** (10,34)	
OI						-17,73** (8,81)
IIL	-1,19 (2,09)	-1,55 (2,11)	-1,34 (2,30)	-1,21 (2,65)	-1,45 (2,50)	-1,63 (2,53)
SCL	-0,84** (0,39)	-0,85** (0,38)	-0,80** (0,34)	-0,76** (0,36)	-0,80** (0,38)	-0,75** (0,35)
ROAS	2,42* (1,26)	2,45* (1,32)	1,98* (1,16)	2,38* (1,34)	2,46** (1,25)	2,49* (1,37)
ACL	-22,33*** (4,40)	-20,53*** (4,16)	-21,66*** (4,34)	-20,49*** (4,17)	-20,48*** (4,10)	-19,91*** (4,12)
PCG	0,20*** (0,06)	0,18*** (0,06)	0,23*** (0,09)	0,23** (0,09)	0,23*** (0,09)	0,22** (0,09)
Obs	104		102	93		
Parameters of the model's adequacy						
Wald chi2	62,64	59,03	68,28	56,89	60,40	70,43
Prob > chi2	0,00	0,00	0,00	0,00	0,00	0,00

Notes: Obs – the number of observations; presented in the brackets are the standard error's values; *** – significance at the level of 99%, ** – significance at the level of 95%, * – significance at the level of 90%

Source: calculated by the authors

An introduction of banking innovations causes a reduction in the effective indicator by an average 8,46% in the year of their introduction as well as 8,24% in the period after 4 years. The study of different groups of banking innovations showed that innovative products do not have a lasting impact on the growth of loans and customer debts, an introduction of innovations in services leads to the reduction of loans in the year of introduction as well as in the period after 3 and 4 years, and organizational innovations are also characterized by inverse relationship with an effective feature, which manifests itself after four years after their introduction.

The influence of control variables is quite interesting. For example, an increase in personnel costs leads to an increase in loans and customer debts, while the level of administrative costs has an opposite effect. At the same time, the profitability of assets at the level of the banking system stimulates the growth of loans and arrears of customers of individual banks, while the level of the bank's authorized capital restrains them. The level of interest income does not have a lasting effect on the effective feature.

Another parameter that was used to reflect the attraction of commercial bank customers as a result of introduction of banking innovations is the growth of bank customers' funds (both individuals and legal entities). The results presented in Tab. 5 have shown that, in general, banking innovations have a statistically significant effect on the effective feature in the period of four years after their introduction while the obtained relationship is reversed. At the same time, the introduction of innovative banking products and services makes it possible to obtain a positive effect on the growth of funds of commercial banks' customers in the period of two years after their introduction on the market. Innovative banking technologies as well as organizational innovations lead to the reduction in customers' funds 4 years after their introduction. The coefficients obtained with the control variables used in this block of research show

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that the growth of effective feature is ensured by the positive increase in personnel costs while the level of general administrative costs and the level of the bank's authorized capital have an inverse effect. At the same time, the level of interest income was a statistically insignificant variable.

Table 5

**The results of assessment of the impact of introduction of innovations
on the growth of funds of customers of the Ukrainian banks**

Parameters	Impact coefficients			
	The model has a set time lag for the parameter of innovations			
	2 years	4 years		
BI		12,56*** (3,96)		
PI	17,72** (8,73)			
SI			-15,79** (7,69)	
OI				-25,51*** (7,75)
IIL	-3,09 (2,29)	-0,20 (1,54)	-1,49 (1,47)	-1,56 (1,41)
ACL	-13,76*** (4,82)	-17,77*** (3,93)	-17,21*** (4,14)	-17,09*** (4,25)
SCL	-2,34** (1,02)	-1,96*** (0,75)	-2,11*** (0,73)	-2,48*** (0,73)
PCG	0,06 (0,12)	0,24*** (0,05)	0,13 (0,08)	0,12 (0,09)
Obs	103	93		
Parameters of the model's adequacy				
Wald chi2	36,77	52,27	43,88	51,74
Prob > chi2	0,00	0,00	0,00	0,00

Notes: Obs – the number of observations; presented in the brackets are the standard error's values; *** – significance at the level of 99%, ** – significance at the level of 95%, * – significance at the level of 90%

Source: calculated by the authors

The growth of interest income of commercial banks serves as a cost indicator for the attraction of customers as a result of introduction of innovations. According to the data in Tab. 6 it can be noted that, in general, banking innovations are not characterized by statistically significant effect on the effective feature while control variables have a lasting negative effect on the dynamics of interest income of commercial banks.

Table 6

**The results of assessment of the impact of introduction of innovations
on the growth of interest income of the Ukrainian banks**

Parameters	Impact coefficients			
	The model has a set time lag for the parameter of innovations			
	3 years	4 years	5 years	
PI		42,07*** (13,88)	12,72** (6,19)	
SI				-18,12*** (6,64)
OI	34,49** (14,31)			-16,04** (7,32)
SCL	-1,18*** (0,42)	-1,35*** (0,40)	-0,67*** (0,25)	-0,75*** (0,24)
ACL	-17,56** (7,29)	-19,39*** (7,12)	-15,86*** (2,98)	-15,30*** (2,77)
Obs	102	93	84	
Parameters of the model's adequacy				
Wald chi2	18,92	26,52	29,35	34,55
Prob > chi2	0,00	0,00	0,00	0,00

Notes: Obs – the number of observations; presented in the brackets are the standard error's values; *** – significance at the level of 99%, ** – significance at the level of 95%, * – significance at the level of 90%

Source: calculated by the authors.

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Product innovations have a steady positive impact on the growth of interest income in 4 and 5 years after their introduction while innovative banking technologies in customer services are characterized by a negative impact on the dynamics of interest income of commercial banks within a period of 5 years after their introduction. The influence of organizational innovations on the dynamics of interest income of commercial banks is quite interesting – within 3 years after the introduction of innovations of this group there is a positive effect on the effective feature while in 5 years after the implementation of organizational innovations we have a reverse effect demonstrating the potential of this group of innovations.

Conclusions. The conducted research makes it possible to make a number of conclusions about the role of innovations in the management of quality of banking products and, consequently, the implications of the introduction of innovations for the functioning of commercial banks:

- the combined positive impact from the introduction of banking innovations on the profitability of banks' assets is manifested in five years after their introduction; the interest income of banks does not depend on the introduction of banking innovations; in the year of introduction of banking innovations there is a reduction in banks' assets as well as loans and debts of banks' customers; in four years after the introduction of banking innovations there is a reduction in loans and arrears of banks' customers as well as the funds of banks' customers;

- the introduction of innovative banking products and services leads to a decrease in the profitability of banks' assets in a year and four years after their introduction on the market, whereas a positive effect is obtained in five years, an increase in bank assets as a result of banking products innovations takes place in four years, the growth of customers' funds – in two years, the dynamics of loans and customer debts does not depend on the introduction of innovative banking products while the growth of interest income of banks is ensured in the fourth and fifth years after their introduction;

- the introduction of banking innovations in customer services leads to the reduction in performance indicators of commercial banks, which is observed for the profitability of banks' assets in the year of introduction of such innovations as well as in two three and five years after their introduction, for the growth of bank assets and the growth of loans and debts of customers – in the year of introduction of innovations as well as in three and four years after their introduction, for the growth of customers' funds – four years after the introduction of this group of innovations, for the increase in interest income – five years;

- organizational innovations have a positive effect on the profitability of banks' assets with a time lag of five years while in the year of their introduction and the next two years there is an inverse relationship, at the same time there is a negative dynamics in the growth of banks' assets, loans and debts of customers and customers' funds as a result of the introduction of innovations of this group in the period after four years, a the positive influence of organizational innovations on the growth of interest income three years after their introduction changes is replaced by a negative influence after five years.

The results of the research create a scientific basis for managing banking innovations both in the process of raising the quality of banking products and in using the reserves to increase the performance indicators of banks. They also provide the basis for further research on determining the role of banking innovations in ensuring the efficiency of commercial banks.

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